



2014

Annual Activity Report

**Directorate-
General for
Research and
Innovation**



Foreword

This Annual Activity Report covers the activities of the Commission's Directorate-General for Research and Innovation (DG RTD) in 2014.

2014 was marked by important changes with a new Commission taking office on 1 November presided by Mr Jean-Claude Juncker, and Mr Carlos Moedas as the new Commissioner in charge of Research, Science and Innovation. In the Political Guidelines he has set for the new Commission, President Juncker emphasises that promoting jobs and growth will remain at the heart of the new political agenda. Research, science and innovation are, and will remain, core elements to help delivering on this.

DG RTD has been taking initiatives aimed at boosting research and innovation in Europe and, in particular, those activities that improve the framework conditions for research and innovation and that increase the level and quality of research and innovation investment.

A Communication on '*Research and Innovation as Sources of Renewed Growth*', which had been prepared jointly with the Directorate-General for Economic and Financial Affairs (DG ECFIN), was adopted in June 2014. It stressed the importance of research and innovation for boosting sustainable growth and for Member States to prioritise investment in research and innovation in their fiscal consolidation strategies. It also identified priority reforms for Member States to increase the quality and impact of their investments through improved strategies, programmes and research-performing institutions. These main messages were endorsed by the December Competitiveness Council and have been included in the 2015 Annual Growth Survey as a priority structural reform to boost growth.

DG RTD continued to promote the reforms needed at national level, through the proposals for Country-Specific Recommendations in the framework of the European Semester. DG RTD also continued to be the main player in the delivery of the Europe 2020 flagship initiative 'Innovation Union'. All commitments linked to this initiative have been delivered or are on track to be delivered by their target date. The innovation output indicator, a commitment on which DG RTD had delivered in 2013, can now give us an indication where the EU stands vis-à-vis its main trading partners.

This was also a landmark year in the development of the European Research Area (ERA) with an in-depth analysis of the state-of-play. The *2014 ERA progress report* noted how ingrained ERA principles have become in the EU's and Member States' general policies and strategies and how much more ERA is reflected in stakeholder activities.

In 2014 DG RTD also successfully steered the adoption of the Innovation Investment Package by the European Parliament and the Council which intended to significantly contribute to the development of ERA and to leverage private funds through the partnerships it will create. Thanks to this package, more than EUR 22 billion will be invested over the next seven years in innovation for sectors that deliver high quality jobs in order to support Europe's industrial competitiveness, economic growth and job creation. These initiatives are expected to deliver major societal benefits such as cleaner, greener aircraft, alternatives to fossil fuels and new treatments to combat the growing threat of antimicrobial resistance. The first calls were launched in July 2014.

After the adoption of the Horizon 2020 legislative package at the end of the year 2013, 2014 was the first year of implementation of Horizon 2020. The launch of the Work Programme 2014-2015, with a budget of EUR 15.5 billion, was a great success with 46 097 proposals being received by 25 February 2015. For 79 concluded calls, 25 903 proposals were eligible, 3 765 were retained for funding and 1 410 grant agreements were signed. The calls published took full

account of the key elements and novelties of Horizon 2020 embedded in the Work Programme (e.g. the societal challenge-based, cross-disciplinary approach).

These calls mostly respected the new time-to-grant limit of a maximum of eight months, the challenge set by the European Parliament and the Council during the inter-institutional negotiations for Horizon 2020, reducing it from what it was in FP7. This was possible thanks to one of the main features of Horizon 2020: simplification. Simplification now is embedded in all aspects of the Framework Programme, in its structure, its rules for participation and its administrative procedures and harmonised business processes (such as the use of the electronic signature for grants).

Thanks to the new rules, a greater flexibility and responsiveness towards changing circumstances was achieved: this was the case with the launch of the 'Ebola call' following the emergency appeal of the World Health Organisation. In view of the urgency and the deep public concern at the situation, DG RTD was able to launch the call very quickly, announce its results and have projects up and running in less than two months, while fully respecting Horizon 2020 and financial rules.

In 2014, DG RTD has fully implemented the principles pursued by the Commission for the MFF 2014-2020, i.e. better use of human resources, focusing on core institutional tasks and guaranteeing the most effective and efficient implementation of spending programmes for which it remains ultimately responsible. This is reflected in the implementation of Horizon 2020 by DG RTD, where much greater recourse to management modes (i.e. Executive Agencies and other external bodies) different from direct, in-house management is made. These developments permitted DG RTD to embark upon the process of converting itself from a DG primarily focused on programme implementation into a DG primarily focused on policy-related work. This means that, to the maximum extent possible, programme implementation is separated from policy-related work and from other implementing bodies. Adapting to its new role, DG RTD underwent a significant reorganisation, which took effect on 1 January 2014.

Finally, DG RTD continued with its tasks in connection with the implementation of the Seventh Framework Programme for research, technological development and demonstration activities (2007-2013) (FP7). The cumulative total of grant agreements for the whole FP7 now stands at 26 078 of which a total of 9 627 have been closed. The implementation of FP7, which is now at its peak point, is foreseen to be completed in 2020.

Part 1 of this report sets out the policy achievements of the DG, and gives a flavour of the wide range of activities being carried out in the DG and what these can add to the research landscape and to the provision of growth and jobs in the EU.

Parts 2-4 give information on the management of the resources allocated to the DG, and on the way the DG gathers assurance on their correct use. These sections explain the control system and its performance, with such indicators as the error rates found in the project that we fund, the opinion of different audit services or the costs and benefits of the different stages of the grant management.

The report gives a clear overview of the DG's operations and helps in understanding the different challenges that are faced. For more information please see our website:

<http://ec.europa.eu/research/index.cfm?lg=fr>

Robert-Jan Smits
Director-General
DG Research and Innovation

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INTRODUCTION

The DG in brief

The Directorate-General for Research and Innovation (DG RTD) defines and implements European Research and Innovation (R&I) policy with a view to achieving the goals of the Europe 2020 strategy and its key flagship initiative, the Innovation Union.

To do so, the Directorate-General (DG) contributes to the European Semester by analysing national R&I policies, by assessing their strengths and weaknesses, and by formulating country specific recommendations where necessary. It monitors and contributes to the realisation of the Innovation Union flagship initiative and the completion of the European Research Area (ERA). It funds excellent R&I through Framework Programmes taking a strategic programming approach¹.

The DG's long-term objective is to make Europe a better place to live and work, by developing and implementing R&I policy to improve Europe's competitiveness, boost its growth, create jobs, and tackle the main current and future societal challenges.

Following a reorganisation which came into effect on 1 January 2014, the DG is now generally strengthening its role as a policy-oriented DG. In addition to the ones mentioned above, it carries out Horizon 2020 policy-related activities (e.g. definition of work programmes, coordination of the Research family of DGs, etc) while reducing its direct involvement in contract management (e.g. calls, contract finalisation, payments, etc). Many of the implementation functions related to Horizon 2020 have now been delegated to the Executive Agencies², Joint Undertakings³ and 'Article 185 initiatives'⁴.

The implementation of the Seventh Framework Programme for research, technological development and demonstration activities (2007-2013) (FP7) continued in 2014 in parallel with the launch of Horizon 2020. The cumulative total of grant agreements for the whole FP7 stands at 26 078 (of which a total of 9 627 have been closed). For DG RTD specifically, the total number of grant agreements amounts to 4 964, of which 2 253 have been closed.

¹ Art. 183 of the Treaty on the Functioning of the European Union (TFEU).

² DG RTD is lead DG for the European Research Council Executive Agency (ERCEA) and the Research Executive Agency (REA). The ERCEA implements the Horizon 2020 Specific Objective *'To focus funding on excellence through the European Research Council'*. REA implements *'Innovative, Inclusive and Reflective Societies'*, *'Secure Societies'*, *'Spreading Excellence and Widening Participation'* and *'Science with and for Society'*. The European Agency for SMEs (EASME) and the Innovation and Networks Executive Agency (INEA) implement parts of the Horizon 2020 budget falling under the responsibility of DG RTD but these Agencies are under the managerial responsibility of other DGs.

³ Joint Undertakings are Joint Technology Initiatives (JTIs), Public-Private Partnerships (PPPs) based on Art. 187 TFEU.

⁴ 'Article 185 initiatives' are Public-Public Partnerships (P2Ps) based on Art. 185 TFEU which mandates the EU to "make provision, in agreement with the Member States concerned, for participation in research and development programmes undertaken by several Member States, including participation in the structures created for the execution of those programmes".

The year in brief

In recent years, Europe has taken many steps to leave behind the worst economic and financial crisis of the past eighty years. However the economic recovery remains weak and the ability to create growth and jobs in many parts of the EU continues to be an important challenge. This is why the agenda of reforms and smart consolidation needs to be continued. In this particular context, the new Commission took office on 1 November 2014, with a new Commissioner in charge of the Research, Science and Innovation portfolio, Mr Carlos Moedas.

In 2014 important achievements include the adoption on 10 June of the Communication on '*Research and Innovation as Sources of Renewed Growth*', prepared jointly between DG RTD and DG ECFIN, the publication of the *second ERA progress report* in September and the adoption in May of the Innovation Investment Package thanks to which, more than EUR 22 billion will be invested over the next seven years in innovation for sectors that deliver high quality jobs.

2014 was the first year of implementation of Horizon 2020, the framework programme for research and innovation. The launch of the Work Programme 2014-2015, with a budget of EUR 15.5 billion, was a great success with 46 097 proposals being received by 25 February 2015. For 79 concluded calls, 25 903 proposals were eligible, 3 765 were retained for funding and 1 410 grant agreements were signed⁵. Preparatory work is underway for the second Horizon 2020 Work Programme (2016-2017). This will build on the experience gained from the preparation of the 2014-2015 Work Programme, in full alignment with the Specific Programme and the new political guidelines for the Commission.

The implementation of the FP7 continued in 2014 in parallel with the launch of Horizon 2020. 682 grant agreements were signed for proposals received for calls published in previous years. These grant agreements involve 1 856 participants and a total EU contribution of more than EUR 1.3 billion. During the year, there were also 1 760 FP7 projects for which the final report was processed. This brings the cumulative total for the whole of FP7 to 26 078 grant agreements, of which a total of 9 627 have been closed. For DG RTD specifically, the total number of grant agreements amounts to 4 964, of which 2 253 have been closed.

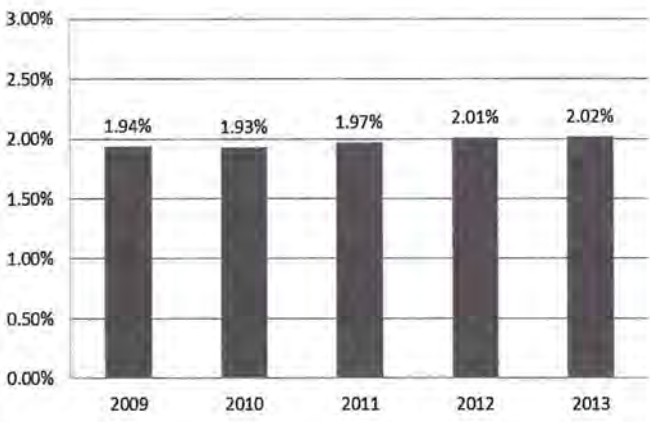
In 2014, DG RTD has fully implemented the principles pursued by the Commission for the MFF 2014-2020, i.e. better use of human resources, focusing on core institutional tasks and guaranteeing the most effective and efficient implementation of spending programmes for which it remains ultimately responsible. This is reflected in the implementation of Horizon 2020 by DG RTD, where much greater recourse to management modes (i.e. Executive Agencies and other external bodies) different from direct, in-house management is made. These developments permitted DG RTD to embark upon the process of converting itself from a DG primarily focused on programme implementation into a DG primarily focused on policy-related work. This means that, to the maximum extent possible, programme implementation is separated from policy-related work and from other implementing bodies. Moreover, in response to these challenges, a so-called Common Support Center (CSC), which will help to coordinate and deliver the programme in an efficient and harmonised manner across seven Commission Directorates-General, four Executive Agencies and six Joint Undertakings, was created. Adapting to its new role, DG RTD underwent a significant reorganisation, which took effect on 1 January 2014.

⁵ 34 836 proposals had been submitted to completed calls by the end of 2014.

Executive Summary

The AAR is a management report of the Director-General of DG RTD to the College of Commissioners. It is the main instrument of management accountability within the Commission and constitutes the basis on which the Commission takes its responsibility for the management of resources by reference to the objectives set in the management plan and the efficiency and effectiveness of internal control systems, including an overall assessment of the costs and benefits of controls.

Key Performance Indicators

Result/Impact indicator (description)	Trend	Target (2020)	Latest results											
3% of the EU's GDP to be invested in R&D	▲	3% (2020)	2.02% (2013) ⁶											
	 <table><caption>R&D investment as a percentage of EU GDP</caption><thead><tr><th>Year</th><th>Percentage</th></tr></thead><tbody><tr><td>2009</td><td>1.94%</td></tr><tr><td>2010</td><td>1.93%</td></tr><tr><td>2011</td><td>1.97%</td></tr><tr><td>2012</td><td>2.01%</td></tr><tr><td>2013</td><td>2.02%</td></tr></tbody></table>			Year	Percentage	2009	1.94%	2010	1.93%	2011	1.97%	2012	2.01%	2013
Year	Percentage													
2009	1.94%													
2010	1.93%													
2011	1.97%													
2012	2.01%													
2013	2.02%													
The EU Innovation Output Indicator	New	To be decided ⁷	101.6 (2012) ⁸ 101.7 (2011) 100.0 (2010)											
Progress in the implementation of the Innovation Union commitments	▲	34 out of 34 (2020)	34 out of 34 (2014) 34 out of 34 (2013) 28 out of 34 (2012)											
Share of Horizon 2020 funds allocated to SMEs ⁹	New	20% (2020)	18.8% (2014) ¹⁰											
Share of grants signed with a time-to-grant within 245 days (8 months)	New	100% (2020)	95% ¹¹											

⁶ Eurostat estimate. The figures for past years are lower than those reported in the 2013 AAR following Eurostat's application of the ESA 2010 corrections to the European System of Accounts. See also section 1.1.2.

⁷ Target to be defined at a later stage based on country-specific progress of Member States with respect to the whole of the indicator and its components.

⁸ Results for the reference year 2013 will be made available in May 2015.

⁹ From the total combined budgets for the specific objective 'Leadership in enabling and industrial technologies' and the priority 'Societal challenges'.

¹⁰ This figure had risen to 19% by 25 February 2015.

¹¹ Source: e-Corda TTG reporting.

The activities of DG RTD are primarily addressed towards the Europe 2020 priorities of smart, sustainable and inclusive growth and the flagship initiative 'Innovation Union' by developing the foundations of a knowledge- and innovation-based economy. This will contribute to achieving the goals of President Juncker's political agenda with its emphasis on promoting jobs and growth.

The first Key Performance Indicator (KPI) and the related target – a gross expenditure of 3% of GDP on R&D – is also one of the five headline targets of Europe 2020. Recent upward revision of GDP rates means that the results for the last few years are all lower. However, the overall trend is unchanged: there is year-on-year improvement but achieving the 2020 target will still be challenging¹².

The second KPI is the innovation output indicator which was delivered in 2013 as one of the Innovation Union commitments. As a whole, there was a slight improvement in the EU's performance over the period 2010-2012. During this time, the EU's performance gap narrowed with Switzerland and the US but increased with Japan. However, the observation period is still relatively short and these trends need to be confirmed over time.

The third KPI concerns the progress made in delivering on the Innovation Union commitments. By mid-2014 all commitments had either been achieved or were on track.

The result for the fourth indicator, on the EU contribution provided to Small- and Medium-sized Enterprises (SMEs) through Horizon 2020, is close to the target for 2020. A small improvement of performance in the coming years should put the achievement of target within reach.

With regards to the Time-to-grant indicator (defined as the period between the call deadline and the signature of the grant agreement) the Commission is committed, under the new Horizon 2020 Regulation, to a combined maximum of eight months (of which five months maximum to inform the applicants on the evaluation result of their proposal). In the case of DG RTD, 100% of the beneficiaries were informed on time (Time to inform < 5 months) and 95% of the grants were signed within 8 months. This is a major advance in performance from previous years, made possible thanks to new and improved IT tools and business processes and the commitment of staff.

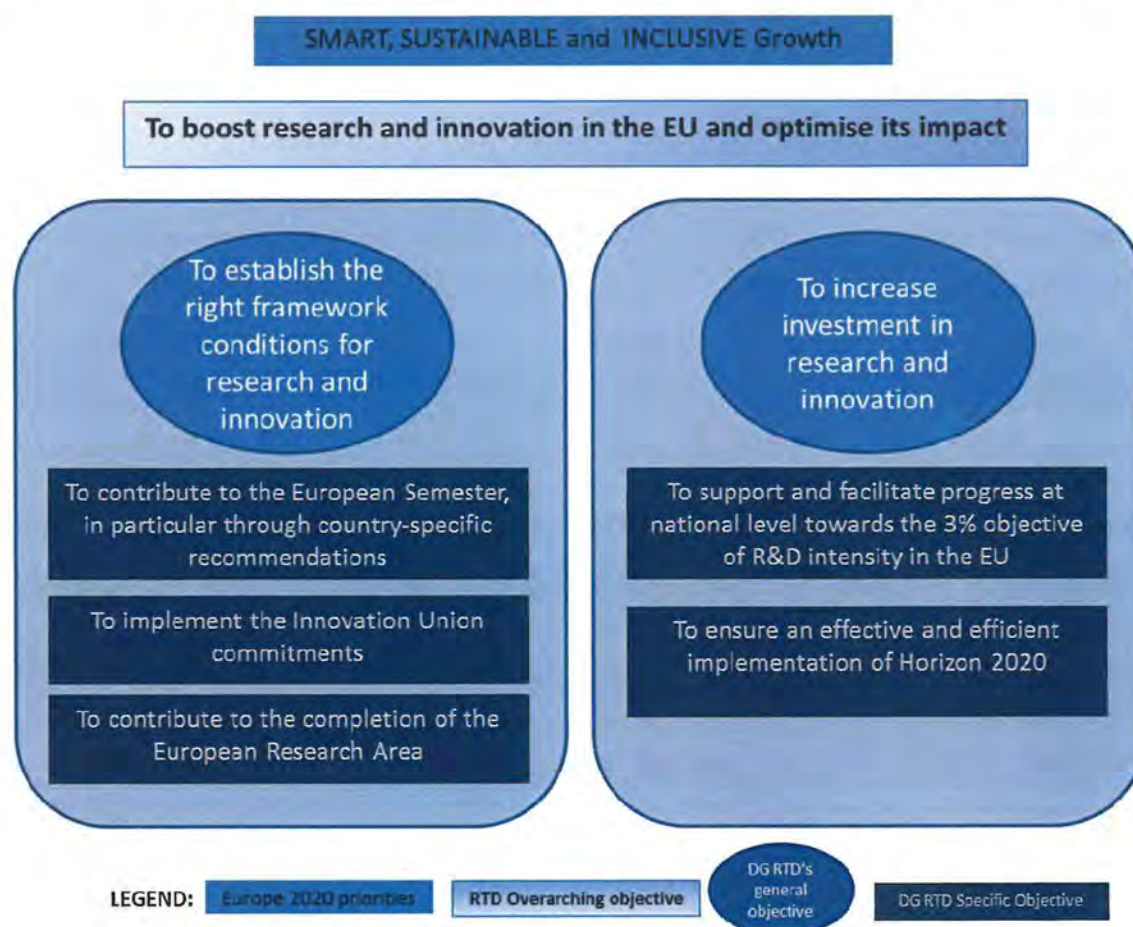
Policy highlights of the year

Despite progress, Europe's economic recovery remains weak and the ability to create growth and jobs in many parts of the EU continues to represent a significant challenge. With the new College of Commissioners taking office in November, incoming Commission President Jean-Claude Juncker reaffirmed in his Political Guidelines the intention to keep the promotion of jobs and growth at the heart of the new political agenda.

As in previous years, DG RTD contributed to promote the reforms needed at national level to unlock the potential of research and innovation policy and investments through its contribution to the Europe 2020 strategy in which R&I play a key role. DG RTD pursues two General Objectives which are, in turn, linked to five Specific Objectives related to the R&I components of

¹² See *Taking stock of the Europe 2020 strategy for smart, sustainable and inclusive growth* (COM(2014) 130, 5.3.2014).

the Europe 2020 strategy¹³. These objectives are structured as shown in the figure below.



Ensuring an effective and efficient implementation of Horizon 2020 will be largely achieved through greater resources made available for new management modes including Executive Agencies and Joint Undertakings. This will allow the DG to focus more its efforts on policy activities which are crucial to ensure that Research and Innovation is supported across Europe.

During 2014 significant contributions were made towards the achievement of these objectives as can be seen from the results for the respective indicators.

In the case of Specific Objective 1, 'To contribute to the European Semester, in particular through country-specific recommendations', the Commission adopted 11 country-specific recommendations¹⁴ of the 16 proposed by DG RTD. Broadly speaking, the recommendations call for higher priority being given to investment in infrastructure, research, innovation and human capital, including through greater cost-efficiency. They also call for accompanying reforms to modernise public-private R&I systems and improve framework conditions for companies to become more knowledge-intensive.

¹³ *Communication from the Commission: Europe 2020 – A strategy for smart, sustainable and inclusive growth* (COM(2010) 2020, 3.3.2010).

¹⁴ The Commission also adopted three more country-specific recommendations related to R&I proposed by other DGs bringing the total number of adopted R&I recommendations to 14.

Concerning the Specific Objective 2, 'To implement the Innovation Union commitments', all Innovation Union commitments have been delivered with the exception of eight which, however, are on track to being achieved by the target date. This means that DG RTD is on the way to fully achieving Specific Objective 2. Thanks to the delivery of one of the commitments in 2013 – the Europe 2020 Headline Innovation Output Indicator – the results for the EU's innovation performance for the past few years are now known and allow for comparison with the EU's main trading partners.

In 2014 the Commission also adopted the Communication 'Research and innovation as sources of renewed growth', accompanied by a Staff Working Document which takes stock of the situation for the years 2010-2014¹⁵. These documents, prepared jointly by DG RTD and the DG ECFIN, note significant progress in keeping the EU at the R&I forefront with other research-intensive countries. It stressed the importance of R&I in boosting sustainable growth and for Member States to prioritise investments within their fiscal consolidation strategies. It also identified priority reforms for Member States to increase the quality and impact of their R&I investments through improved strategies, programmes and R&I-performing institutions. The Communication's main messages were endorsed by the December Competitiveness Council and were included in the 2015 Annual Growth Survey¹⁶.

Regarding the Specific Objective 3, 'To contribute to the completion of the European Research Area', the 2014 ERA Progress Report¹⁷ affirms that the efforts of the ERA partnership have proved to be successful and that the conditions for the completion of ERA are now in place. Contributions to ERA this year include the renewal or launch of 'Article 185 initiatives' as part of the 'Innovation Investment Package' and the launch of new European Research Infrastructure Consortia (ERICs)¹⁸.

The achievement of Specific Objective 4, 'To support and facilitate progress at national level towards the 3% objective of R&D intensity in the EU', depends mainly on the efforts of the Member States. However, the Commission has been active in this regard, first, through implementation of Horizon 2020 (see below) and, second, through activities intended to leverage funds such as Joint Undertakings, contractual PPPs and access to risk finance. These funds include both public (national and regional) and private funds.

Concerning the achievement of Specific Objective 5, 'To ensure an effective and efficient implementation of Horizon 2020', 2014 was the first year of implementation of Horizon 2020. In

¹⁵ *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Research and innovation as sources of renewed growth* (COM(2014) 339, 10.6.2014) and *Commission Staff Working Document: State of the Innovation Union - Taking Stock 2010-2014* (SWD(2014) 181, 10.6.2014).

¹⁶ *Communication from the Commission to the European Parliament, the Council, the European Central Bank, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank – Annual Growth Survey 2015* (COM(2014) 902, 28.11.2014).

¹⁷ *Communication from the Commission to the Council and the European Parliament: European Research Area – Progress Report 2014* (COM(2014) 575, 15.9.2014).

¹⁸ The ERIC is an EU-level legal instrument to facilitate the joint establishment and operation of research infrastructures of European interest. An ERIC qualifies as an international organisation, which implies exemptions on VAT rules and public procurement directives. The ERIC status is awarded by Commission Decision.

May 2014, the Innovation Investment Package, consisting of ten public-public and public-private partnerships, was adopted after intense negotiations with the European Parliament and the Council of the EU. Thanks to this package, more than EUR 22 billion will be invested over the next seven years in innovation for sectors that deliver high quality jobs.

In the implementation of Horizon 2020, while it is too early to interpret any results for the multiannual indicators, the results for the annual output indicators show that the new Framework Programme is off to a good start. The 2014 calls opened on time and the new user-friendly IT systems were functional as from the beginning to the benefit of applicants. The Work Programme took full advantage of the key features and novelties of Horizon 2020, reinforcing the integrated approach of the programme.

Meanwhile, the ex-post evaluation of the FP7, required by legislation to be carried out within two years of the completion of the FP7¹⁹, is ongoing.

The added value, results and impacts of EU programmes and projects in support of R&I

EU support for research and innovation has one single overriding objective: the achievement of impact. Through its support for research and innovation, the EU strives to achieve economic, social and environmental impact and to contribute to competitiveness, growth and job creation as well as the resolution of societal challenges.

This is in full accordance with the new Commission's emphasis on performance in terms of results and impacts rather than inputs. In her November 2014 speech to the European Parliament, Commission Vice-President Kristalina Georgieva affirmed that the Commission is working to develop a new, stronger performance culture, reinforcing effectiveness and efficiency across all policy areas. The Commission, together with other actors in the budget process, has the responsibility to make sure every euro is spent effectively and serves the intended purpose²⁰.

Below, an effort is made to report on the performance of EU programmes and projects in support of research and innovation in terms of European added value, results and impacts.

In a first section, a generic explanation is first of all provided of the different ways in which the EU adds value in the field of research and innovation. This is followed by an overview of interim and ex-post evaluation evidence on the results and impacts of EU research and innovation programmes as well as by a number of statistics on scientific and technological outputs.

A second section provides specific examples of successful projects financed so far, focusing on their societal relevance, the European added value of the support provided, and the concrete results and impacts achieved.

¹⁹ Art. 7(3) of Decision No 1982/2006/EC of the European Parliament and of the Council of 18 December 2006 concerning the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007-2013) (OJ L 412, 30.12.2006, p. 1).

²⁰ Kristalina Georgieva, EU Commissioner for Budget, Speech before the European Parliament Committee on Budgetary Control (5.11.14).

Since the Horizon 2020 programme has just been launched, and research and innovation projects take time to produce results and impacts, the evidence presented below necessarily mainly relates to FP6 and FP7.

The added value, results and impacts of EU support for research and innovation: An overview

EU support to research and innovation is provided only when it can be more effective than national funding. This is achieved through measures to coordinate national funding and by implementing transnational collaborative research and mobility actions.

EU initiatives help coordinate funding across national borders and restructure the R&D and innovation landscape in Europe. For instance, the EU has established the European Research Council (ERC), which promotes an EU-wide competition for funds and encourages higher scientific quality. As a result of EU leadership, a pan-European strategy on research infrastructures is now being implemented (through ESFRI, the European Strategy Forum on Research Infrastructures). The EU helps private companies come together and implement joint strategic research agendas through tailored instruments, such as European Technology Platforms and Joint Technology Initiatives. The EU brings together compartmentalised national research funding using instruments such as the ERA Networks (ERA-NETs)²¹ and Article 185 initiatives, which set common agendas and achieve the funding scale required for tackling important societal challenges.

When it comes to implementing R&I projects, EU actions add value by stimulating transnational collaboration and mobility. These actions generate a series of benefits that could not be achieved by Member States acting alone. Support for collaboration helps achieve the critical mass required for breakthroughs when research activities are of such a scale and complexity that no single Member State can provide the necessary resources (space, security, etc.). The cross-border, cross-sectoral, inter-disciplinary networks created in this way are durable, well-structured, and well-integrated into global innovation networks. FP7 has created over 600,000 collaborative links between research-performing institutions in EU Member States.

The EU supports research which addresses pan-European policy challenges (e.g. environment, health, food safety, climate change, security) and facilitates the establishment of a common scientific base in these areas.

Working in transnational consortia helps firms to lower research risks, enabling certain research to take place. Involving key EU industry players and end-users reduces commercial risks, by aiding the development of standards and interoperable solutions, and by defragmenting existing markets.

Collaborative research projects involving end-users enable the rapid and wide dissemination of results leading to better exploitation and a larger impact than would be possible only at Member State level.

²¹ Under Horizon 2020, the ERA-NET instrument merges the former ERA-NET and ERA-NET Plus into a single instrument with the requirement of implementing one substantial call with top-up funding from the Commission. In addition to this central element, the instrument is designed to support P2Ps in their preparing and establishing networking structures, in the design, implementation and coordination of joint activities as well as topping-up of actions of a transnational nature.

SME involvement in R&I at EU level improves their partnerships with other companies and laboratories across Europe and enables them to tap into Europe's creative and innovative skills potential, develop new products and services and enter new national, EU or international markets.

Companies can collaborate with foreign partners and end-users in projects tested for excellence and market impact on a scale not possible at national level. This induces them to invest more of their own funds than they would otherwise under national schemes.

Cross-border mobility and training actions are of critical importance for providing access to complementary knowledge, attracting young people into research, encouraging top researchers to come to Europe, ensuring excellent skills for future generations of scientists, and improving career prospects for researchers in both public and private sectors.

Cross-border innovation support leads to better policies and tools to help businesses bring innovation to the market.

The evidence from interim and ex-post evaluations on the results and impacts produced by EU Framework Programmes for Research and Innovation through value-added actions is substantial. For instance:

- The FPs involve top researchers and organisations in high-quality research. The FP6 ex-post evaluation concluded that FP6 involved top-quality researchers in first-rate projects performing high-quality research. The FP7 interim evaluation concluded that excellence seemed to have been at the heart of the bulk of FP7-funded projects. Underpinning these conclusions are studies like the FP innovation impact study that found that, compared with the average company in their sector, FP industrial participants are more R&D-intensive, more innovative, better networked and more focused on international markets, and file more patents. Another example is the Dutch FP impact study that found that bibliometric research and over 100 interviews held in the Netherlands confirmed that the European research programmes produce high-quality research and attract the best European researchers.
- The FPs train large numbers of scientists. The FP6 ex-post evaluation noted that FP human resource actions are almost universally judged to be a major success. FP6 human resources and mobility schemes involved 8,000 organisations and supported some 12,500 fellows. The FP7 interim evaluation noted that the specific programme 'People' was making a valuable contribution to the development of researcher human capital and that the Marie Curie actions, through their bottom-up approach, promoted excellence and had a pronounced structuring effect on the research landscape. In the period 2007-10, over 6,400 researchers benefited from individual fellowships and grants to enhance their career prospects. Training and knowledge transfer were provided to more than 6,500 researchers through other schemes.
- The FPs improve participants' R&D capabilities. A UK evaluation of FP6 and FP7 found that the FP has a large impact on the nature and extent of UK researchers' international relationships and networks, as well as on their knowledge base and scientific capabilities. Other notable outcomes include increased scientific reputation, an improved ability to attract and retain world-class researchers and a positive impact on researcher careers. Lastly, and still according to the same evaluation, the FP has a positive impact on the attitudes, outlook and connectedness of individual researchers, as well as serving as a training ground for project management and administration.

- The FPs produce large numbers of high-quality, often collaborative scientific outputs. According to a German evaluation of FP6, scientific personnel participating in FP6 stated that a substantial part of their publications was due to their participation in the FP. According to an Irish evaluation of FP6, each project produced, on average, 12.7 publications (of which 5.3 in refereed journals and books).
- The FPs produce numerous technological outputs and innovations. According to an FP6-wide survey, industrial organisations clearly expected commercial returns. Almost half of them (47%) stated they were likely to very likely, and 60% of this group expected these returns within 2 years (90% within 5 years). According to an FP innovation impact study, a great majority of FP participants reported at least one form of commercialisable output (new or improved process, product, service, standard) stemming from their FP project and a large number even recorded more than one such output. According to a German evaluation of FP6, scientific personnel participating in FP6 stated that a substantial part of their patent applications was due to their participation in the FP. Large, export-oriented companies as well as companies in the field of cutting-edge technologies and the knowledge-intensive service sector were more likely to take part in FP6 than in federal or Länder programmes because, among other reasons, participation tended to have a positive effect with regard to both the extent of their own R&D activities and the commercial success of innovations. A Swedish long-term evaluation of the FP found significant impacts on the ability to compete in vehicles and in electronics (especially telecommunications). In vehicles, the FP had, together with complementary national programmes, been instrumental in supporting the Swedish industry's technical specialisations, especially in safety and combustion. According to a UK evaluation of the FP, a majority of UK business participants stated that their involvement in the FP had yielded important commercial benefits. In terms of immediate project outputs, a significant proportion of business respondents reported having made or gained access to new or significantly improved tools or methodologies and in a large minority of cases, firms reported the creation of formal elements of intellectual property. Beyond these immediate project results, around 20% of businesses stated that their participation had made significant contributions to the development of new products and processes and in around 10% of cases, organisations reported increased income and market share. Lastly, company interviews suggested that FP participation had made a significant contribution to the competitiveness of leading players in several niche technology markets, from inkjets to photonics.
- FP7 projects have so far generated 32 461 publications since the launch of the programme in 2007. The cumulative number of patent applications, a good indicator of exploitable innovation potential, stood at 1 185 at the end of the year²².

²² The source of the figures shown here is SESAM (the European Commission online reporting tool for FP7 projects)/CORDA (Common Research Data Warehouse). The figures refer to the part of FP7 implemented by DG RTD. The 'People' Specific Programme has been excluded as, although it was initially managed by DG RTD, it is currently managed by DG EAC. The 'Ideas' Specific Programme has also been excluded, as it does not use SESAM.

Impact of FP7-RTD projects (excluding the 'People' and 'Ideas' Specific Programmes) in terms of publications and patent applications (Nov. 2014) ²²			
Activity	% of Processed Final Reports	No. of publications	No. of patent applications
Cooperation Specific Programme (incl. JTI)			
Health	42%	12 632	268
Food, Agriculture and Fisheries, and Biotechnology	39%	3 185	78
Nanosciences, Nanotechnologies, Materials & new Production Technologies	45%	4 307	314
Energy	45%	815	93
Environment (including Climate Change)	48%	3 367	17
Transport (including Aeronautics)	51%	579	56
Socio-economic sciences and Humanities	53%	869	0
General Activities	60%	270	3
Joint Technology Initiatives (Annex IV-SP1)	22%	58	11
Capacities Specific Programme			
Research Infrastructures	48%	3 225	30
Research for the benefit of SMEs	48%	381	158
Regions of Knowledge	57%	16	0
Research Potential	55%	1 769	139
Science in Society	52%	188	0
Support for the coherent development of research policies	59%	10	0
Activities of International Cooperation	43%	142	4
Euratom			
Fusion Energy	75%	136	0
Nuclear Fission and Radiation Protection	47%	512	14
Total			
	44%	32 461	1 185

The added value, results and impacts of EU support for research and innovation: Specific examples

Fighting Ebola with EU-supported knowledge and financial resources and partners

The outbreak of Ebola in West Africa constituted one of the most serious international health emergencies of the year 2014. In September of that year, the World Health Organisation (WHO) called on the international community to find ways to accelerate the evaluation and use of new treatments for Ebola.

Based on its unique added value – situated in its ability to quickly bring together dispersed knowledge and financial resources through inter-disciplinary, cross-border and cross-sectoral research and innovation consortia – the Commission's response was fast. Exploiting to the fullest Horizon 2020's far-reaching administrative simplification and streamlined implementation, two fast-track procedures were completed in an unprecedentedly short timeframe while following all Horizon 2020 rules. These fast-track procedures were planned during September and successfully evaluated projects started in October. EUR 24.4 million from Horizon 2020 were mobilised.

In parallel, the Commission leveraged its role in the Innovative Medicines Initiative (IMI) public-private partnership and started planning, together with its partner, the European Federation of Pharmaceutical Industries and Associations (EFPIA), the IMI Ebola+ call. This call was launched on 6 November, proposals were evaluated throughout December and results were announced mid-January 2015 – a procedure completed in record time taking into consideration the dual public-private nature of IMI.

The research response that the Commission has mounted through IMI is very significant in scale, with a total of EUR 140 million being mobilised from Horizon 2020, which, in turn, leveraged a further EUR 101 million from the pharmaceutical industry. These efforts are already delivering, with trials on the ground in West Africa already underway and with the first indication of results.

That is not all. Further funding will follow. The European Developing Countries Clinical Trials Partnership (EDCTP) public-public partnership involving the Commission, Member States and African countries recently included Ebola in the list of diseases that fall within its scope and has now launched a call for the development of diagnostic tests. IMI is also planning to hold further calls on Ebola research. These actions have placed the Commission second only to the US Government in terms of financial commitments made.

However, no single player can alone overcome the research challenges surrounding this outbreak. Because of this, the Commission, based on its long-standing experience with international research collaboration, has also strived to coordinate other Ebola research funders. Much work is being done to establish frameworks for cooperation that will enable a swift and effective global research response in future outbreaks. The Commission has taken a lead in establishing the Global Research Collaboration for Infectious Disease Preparedness, which links together research funders, the scientific community, industry, patient groups and public health actors. Its goal is to mount an effective research response within 48 hours of an outbreak.

Improving cancer treatments through EU-supported pan-European researcher mobility schemes

Cancer is one of Europe's main causes of death. It figures highly among Europe's public health priorities. Much progress has been made in the development of effective cancer treatments. Treating cancer effectively remains a challenge, however. One problem is that not all treatments work in every case. So it is important to be able to assess whether a particular cancer treatment is working and to shift to another treatment if necessary. Self-evidently, speed is of the essence in this assessment. Assessments of treatment effectiveness used to rely on

measuring tumour shrinkage through imaging. But based on that method, it could take months to know whether a cancer treatment was working.

The EU-supported project 'Imaging Lymphoma' has now set the stage for assessing the effectiveness of a particular cancer treatment much more quickly. The project's researchers decided to rely for their assessment not on the measurement of tumour size but on metabolic indicators. The technique developed in the project was based on the fact that tumours consume huge amounts of glucose compared to other tissues. Scans of that consumption show tumours as hot spots. If a treatment is working, 'before' and 'after' pictures of the same tumour show an almost immediate reduction in activity.

The 'Imaging Lymphoma' project vividly demonstrates the added value of the EU Framework Programmes' Marie Curie Actions, which constitute a key feature of the European research landscape. They support excellent EU-based researchers in their intra-European mobility, enabling them to work, gain experience and develop their expertise in the EU's best laboratories, which furthers their careers while at the same time seriously advancing the state of knowledge in the field.

The project was supported through a Seventh Framework Programme Marie Curie Actions grant to Portuguese researcher Tiago Brandao Rodrigues. It was hosted by 'Cancer Research UK' at Cambridge University, in the laboratory of Professor Kevin Brindle. The two-year grant supported the molecular imaging work of this senior research associate.

For his research in this project, the International Society of Magnetic Resonance in Medicine awarded Mr Rodrigues its British Chapter Prize. The research supported through this project was also published in the prestigious journal Nature Medicine.

Creating a single European area for clinical research through EU support

The quick, efficient and cost-effective development of the effective medicines that Europe urgently needs to improve the health of its citizens depends crucially on the ability to run easily multinational clinical trials in Europe so that full advantage can be taken of its aggregate population size to access patients. With 500 million people and high healthcare standards, Europe is potentially the best place in the world for clinical research.

Despite past efforts to simplify regulations and procedures, most of Europe's investigator-driven clinical trials are still conducted at national level, however. Europe is still divided in the biomedical area. Health and legislative systems and funding sources are fragmented, which hampers multinational collaboration. Large financial costs are associated with the burden of recruiting and investigating patients and volunteers, mapping the trials, and meeting the legal requirements to ensure they are conducted safely.

This is where action at EU-level can make a real difference. Action at EU-level has an important structuring effect on the European research landscape. At EU-level, it is easier to bring all key players around the table and to progress towards the development of common standards and tools and towards the better harmonisation of procedures.

The EU-supported 'European Clinical Research Infrastructure Network' (ECRIN) helps researchers overcome the hurdles associated with multinational clinical studies and trials. The project develops a single European area for clinical research as it integrates national clinical research facilities into an EU-wide network able to provide support in any medical field through specialised services and infrastructure. This benefits the development of medicines. This also strengthens the attractiveness of Europe for industry trials through the creation or maintenance

of national infrastructures having common tools, standards and procures. This will improve healthcare and contribute to Europe's scientific and industrial competitiveness.

In November 2013, ECRIN was awarded the sustainable ERIC (European Research Infrastructure Consortium) legal status. ECRIN is supported by the ECRIN-IA project, which involves networks from 23 countries. ECRIN-IA structures the capacity and provides services for multinational clinical trials on rare diseases, medical devices and nutrition. It also develops tools for risk-adapted monitoring and will upgrade data management tools. The four-year project is backed by a EUR 8 million EU grant.

ECRIN is part of the roadmap of the European Strategy Forum on Research Infrastructures (ESFRI). ESFRI constitutes another good example of the added value of EU action: as a result of EU leadership, for the first time, a pan-European strategy on research infrastructures is now being implemented.

Protecting Europe's seas through EU research-based coordination and integration actions

Healthy marine and coastal ecosystems provide a wide range of societal benefits. They sustain fisheries and tourism, local economies, jobs and livelihoods. They play a vital role in maintaining ecological diversity and regulating climate. However, pressures on Europe's marine and coastal areas are increasing and these areas need to become more resilient to human activities and natural change.

Considerable research is already underway to identify some of the environmental baselines but the challenge now lies in turning that knowledge into effective decision-making. That is where the EU can contribute its unique research-based intra- and extra-European coordination and integration capabilities.

The EU supports the PERSEUS-project, which seeks to provide policy-makers with a complete set of tools for designing an effective, evidence-based marine governance framework, tailor-made for the Mediterranean and Black Seas. With the aim of building a deeper understanding of both human and natural pressures on European waters, the PERSEUS team is enabling the rapid improvement of marine governance and decision-making processes and has already achieved a number of important milestones.

For example, the scientific cooperation and information exchange between the EU and non-EU countries around the Mediterranean and Black Seas has been enhanced significantly through collaborative research, including joint field work and publications, the latest of which was published in 2014.

Another significant achievement is the creation of five PERSEUS stakeholder platforms that have actively engaged almost one hundred policymakers in the regions, institutions and advocacy groups with an interest in marine and coastal ecosystem management. PERSEUS's oceanographic information management system has been developed to provide user-friendly, fast access to all data collected on the Mediterranean and Black Seas ecosystems, with a view to sharing these data among the scientific community.

Last but not least, the PERSEUS team places great importance on creating a wider public awareness. The team has developed two citizen science activities so far: the Jellyfish spotting campaign, in cooperation with a number of other research projects, and the Marine LitterWatch, in cooperation with the European Environment Agency.

Fighting floods together through EU-supported research collaboration

Mitigating, and adapting to, the effects of climate change is one of the most serious common societal challenges Europe is facing. A good example is flooding. Flooding causes large-scale human and economic costs. The number of people affected by flooding is predicted to double over the next 70 years. Annual damages are predicted to increase to up to EUR 15 billion.

Addressing common European societal challenges is best done at EU level. The EU can support collaborative research in the area of climate change that facilitates the establishment of a common scientific base. Such research also helps achieve the critical mass required for breakthroughs when research activities are of such a scale and complexity that no single Member State can provide the necessary resources.

In this context, the EU supported the 'WeSenseIt' project. This project started from an innovative premise. When it comes to floods, citizens have often been thought of as mere consumers of information. Potential threat warnings would trickle down from authorities to those living in areas at risk. The 'WeSenseIt' project, however, started from the observation that social media have broken down barriers between information providers and consumers and asked whether citizens and communities cannot be given a more active role and become part of the solution to better water management; whether they cannot monitor and report on their own environment, and thus become the first line of defence against flooding.

Against this background, the 'WeSenseIt' project developed the concept of a citizen-based water observatory, where communities form part of a two-way information chain. The advent of mobile phones and social media means that citizens can be fully active in capturing, evaluating and communicating valuable information on water levels, creating cost efficiencies and acting as early warning systems for over-stretched local authorities.

The 'WeSenseIt' approach constitutes a valuable alternative to working with sensors only. There are so many rivers that it would be impossible to monitor them all with sensors. Also, not all necessary information can be captured with sensors. Moreover, cost is a major issue: often the cost of the communication infrastructure to transmit data dwarves the cost of the sensors themselves.

As a result of the 'WeSenseIt' project, citizens – such as volunteer flood wardens in the UK or civil protection volunteers in Italy – will be able to help by taking measurements using new apps currently being developed by the project and sending information and images by phone. They can also help by reading existing sensors and sending authorities the data via mobile apps. The collected data will be made available through the Global Earth Observation system of systems (GEOSS). Such new technologies and approaches to water management are being tested and validated in three EU countries: the UK, the Netherlands and Italy.

Increasing food safety, sustainability and industrial competitiveness through EU-supported science-industry collaboration

Food safety and food sales and exports depend crucially on the food packaging industry. The European food packaging industry faces three simultaneous challenges, however. It is under pressure to improve its environmental performance by avoiding unnecessary waste. It is called upon to further increase food packaging safety. And it is under pressure to become more internationally industrially competitive.

These are the kinds of challenges, at the same time societal and industrial, that are best addressed at EU level. The EU Framework Programmes for research and innovation provide funding for inter-disciplinary, cross-border collaborative research and innovation consortia that bring together a critical mass of knowledge and financial resources of players from different

sectors including universities, research organisations and industry.

This is the rationale behind the EU support for the 'BIOCOPAC' project. This innovative project has addressed all three of the aforementioned challenges at once, with a straightforward yet potentially revolutionary solution using tomato skins. The project developed a novel biolacquer for metal food packaging designed to meet current demand for sustainable production and safety. The lacquer can be applied to the internal and external surfaces of cans used for foodstuffs.

As for the environmental challenge, the natural lacquer was developed from tomato skins, a by-product that food processors treat mainly as waste. It thus promotes the exploitation of waste by reusing it. The bio-lacquer also increases the sustainability of metal cans, promoting their recyclability and decreasing the environmental impact of packaging and waste.

As for the key food safety priority, natural bio-lacquers designed specifically for food contact packaging should help ensure that there is no chance that food will be contaminated by the migration of synthetic substances from the packaging to the product. The BIOPAC solution provides packagers with an alternative to Bisphenol A, a carbon-based compound used to coat many food and beverage cans. Bisphenol A has come under public scrutiny over claims it affects health.

As for industrial competitiveness, the innovation is expected to provide can manufacturers with an environmentally friendly solution they can offer to food processors worldwide. The new BIOPAC lacquer will be trademarked, making its use immediately recognisable to consumers.

In this way, the project team expects their innovation will increase the competitiveness of the EU's metal cans industry, cut unnecessary waste and better protect consumers.

Producing cleaner and safer batteries through EU-supported inter-disciplinary research and innovation collaboration

The increased use of electric vehicles can play a key role in the reduction of greenhouse gas emissions and the fight against climate change. Electric vehicles rely to an important extent on lithium-ion batteries, however, and a range of safety and environmental issues are associated with such batteries, including the potential risk of sudden explosions and the disposal of toxic materials.

Action at EU level is uniquely suited to address this kind of challenge. For developing an innovative alternative to lithium-ion batteries, you need experts in different areas – materials, batteries integration and simulation, battery management systems and recycling. These experts are very difficult to find in one country. Industrial involvement in the project is also crucial as it is industry that is best placed to investigate ways to make the new batteries commercially available. The EU supports precisely these kinds of comprehensive collaborative research and innovation consortia that have the required critical mass of complementary capabilities.

This is the reasoning underpinning the EU support for the SOMABAT project, which developed innovative strategies for producing lithium-polymer batteries that are cleaner, safer and better performing than conventional lithium-ion batteries. The research team demonstrated the feasibility of using recyclable and synthetic materials for the battery components (anodes, cathodes and electrolytes) in the lithium-polymer batteries – an advanced type of batteries in which the electrolyte is a solid polymer composite rather than a liquid. These novel synthetic and recyclable materials were produced using new synthesis and processing methods that enabled the research team to engineer their various properties. The project team also

investigated new ways of recycling the different components of the battery and performed life cycle analyses from the raw materials to the final battery to try to identify the processes that are not environmentally friendly, nor sustainable.

Using the new synthetic and recyclable materials significantly reduces the likelihood of the battery short circuiting, overcharging or over-discharging as well as the impact following critical failures such as crushing the battery. Moreover, potential risks from exposure to fire are lowered as well. Such improvements in safety are particularly relevant to manufacturers of electric vehicles. Cost is also a key issue to greater electric vehicle uptake, and safer batteries are expected to reduce the amount of resources spent on ensuring a vehicle's safety.

From sunlight to jet fuel: EU project makes first 'solar' kerosene

Energy security and climate change are some of the most urgent societal challenges that Europe is confronted with. The EU level is well placed to provide support for the type of complex, cutting-edge projects aiming to meet the urgent need for innovative solutions in these areas.

In 2014, an EU-funded research project called SOLAR-JET produced the world's first 'solar' jet fuel from just water and carbon dioxide, a promising technology that at the same time enhances energy security and fights climate change by turning a greenhouse gas into a useful resource.

Researchers for the first time successfully demonstrated the entire production chain for renewable kerosene, using concentrated light as a high-temperature energy source. The project is still at the experimental stage, with a glassful of jet fuel produced in laboratory conditions, using simulated sunlight. However, the results give hope that in future any liquid hydrocarbon fuels could be produced from sunlight, carbon dioxide and water. In a first step concentrated light – simulating sunlight – was used to convert carbon dioxide and water to synthesis gas (syngas) in a high-temperature solar reactor containing metal-oxide based materials. The syngas (a mixture of hydrogen and carbon monoxide) was then converted into kerosene. Although producing syngas through concentrated solar radiation is still at an early stage of development, the processing of syngas to kerosene is already being deployed by companies on a global scale. Combining the two approaches has the potential to provide secure, sustainable and scalable supplies of aviation fuel as well as diesel and gasoline, or even plastics. These fuels are already certified and can be used by existing vehicles and aircraft without modifications of their engines or of fuel infrastructure. The project now moves to its next phase where the partners plan to optimise the solar reactor and assess whether the technology will work on a larger scale and at competitive cost.

Safer cruise ships thanks to EU-funded research

The Costa Concordia and South Korean Sewol ferry tragedies have highlighted the importance of safety in passenger shipping. That poses a number of technological challenges, however, which because of their complex nature are best addressed collaboratively at EU-level.

Thanks to EU-funded research, evacuating large passenger ships should be smoother and safer in the future. The EU-supported LYNCEUS project aims to revolutionise current emergency management and ship evacuation practice. The project is demonstrating how low-power wireless technologies can help localise and track people on board ships, providing essential information in cases of evacuation, and improve overboard search and rescue. Innovative wireless tags, which can be embedded into life jackets, allows for the location of people within the ship, providing safety officers with the exact location of every passenger and crew member during an evacuation. The technology can also be used to monitor the health of patients requesting to wear special bracelets, or help parents keep track of the location of their children

on large cruise ships, which can carry thousands of passengers and crew. The researchers in the project have also developed a radar device able to detect the exact location of passengers who have fallen overboard. The LYNCEUS project has won the prestigious Innovation Award at the Lloyd's List Global Awards 2014.

Another EU-supported project in this area is the GOALDS project, which created new designs for large cruise vessels to increase their safety in the case of a collision or grounding. Through these new designs, ships would have up to 20% more chance of surviving groundings or collisions. These results have been submitted to the International Maritime Organization to improve safety standards and calculations for cruise vessels.

Improving biometric security systems based on large-scale EU-supported research and innovation

Security is ever higher on European citizens' and policy-makers' agendas. A range of security systems have been developed in response. Examples are biometric security systems, which involve face, voice and fingerprint identification software, and which have proven to be one of the most efficient security solutions available today. However, some biometric sensor vulnerabilities still exist, including some which have been well publicised in the international media.

The EU-supported TABULA RASA project has set out to identify just how well this new software works, in particular against the growing phenomenon of 'spoofing', i.e. using everyday materials such as make-up, photographs and voice recordings to subvert or directly attack biometric systems. The project has made an extensive list of possible spoofing attacks, evaluated the vulnerability of biometric systems to such attacks, and developed countermeasures that for instance detect signs of 'liveness' (e.g. blinking, perspiration) and improve security of biometric systems.

This was a challenge well addressed at EU level. As emphasized by the project coordinator, it would have been impossible to conduct such large-scale research and to collaborate with so many EU partners without the investment from the EU.

The improved software will offer more secure devices and information, quicker logins to IT equipment and faster and more accurate border control and passport verification. Many different organisations are set to be interested in the research including technology companies, post offices, banks, manufacturers of mobile devices or online service providers. The project has already transferred five of its countermeasures to companies. This in-depth knowledge about spoofing attacks allows European industries to maintain their leadership by improving the conception of future spoofing proof biometric sensors, thus opening up the huge potential of biometric technology.

Key conclusions on resource management and internal control effectiveness (executive summary on part 2 and 3)

In accordance with the governance statement of the European Commission, DG RTD conducts its operations in compliance with the applicable laws and regulations, working in an open and transparent manner and meeting the expected high level of professional and ethical standards.

The Commission has adopted a set of internal control standards, based on international good practice, aimed to ensure the achievement of policy and operational objectives. As required by the Financial Regulation, the Director-General has put in place the organisational structure and

the internal control systems suited to the achievement of the policy and control objectives, in accordance with the standards and having due regard to the risks associated with the environment in which it operates.

DG RTD has assessed the effectiveness of its key internal control systems during the reporting year and has concluded that the internal control standards are effectively implemented. Please refer to Part 3 for further details.

In addition, DG RTD has systematically examined the available control results and indicators, including those aimed to supervise entities to which it has entrusted budget implementation tasks, as well as the observations and recommendations issued by internal auditors and the European Court of Auditors. These elements have been assessed to determine their impact on the management's assurance as regards the achievement of control objectives. Please refer to Part 2 for further details.

In conclusion, management has reasonable assurance that, overall, suitable controls are in place and working as intended; risks are being appropriately monitored and mitigated; and necessary improvements and reinforcements are being implemented. The Director General, in his capacity as Authorising Officer by Delegation has signed the Declaration of Assurance, albeit qualified by a reservation concerning expenditure under FP7.

Information to the Commissioner

The main elements of this report and assurance declaration, including the reservation envisaged, have been brought to the attention of Commissioner Carlos Moedas, responsible for research, science and innovation.

1. POLICY ACHIEVEMENTS

1.1 Achievement of General and Specific Objectives

Title XIX of the TFEU deals with Research, Technological Development and Space. It sets out the objective that the EU strengthens its scientific and technological bases by achieving the ERA and encourages it to become more competitive, while promoting all the research activities deemed necessary by virtue of other Chapters of the Treaties.

Two general objectives were specified in DG RTD's 2014 Management Plan (MP) in line with the provisions of this Title and the Europe 2020 strategy (see figure in section 'Policy highlights of the year' in the Introduction), namely:

General Objective 1: To establish the right framework conditions for research and innovation

General Objective 2: To increase investment in research and innovation.

1.1.1 Policy area "Research and Technological Development and Space" (Title XIX TFEU): To establish the right framework conditions for research and innovation (General Objective 1)

The first General Objective aims at improving the framework conditions in order to enable the EU to become an innovation-based economy by contributing to recommendations addressed to the EU Member States for improving their R&I systems and policies, by implementing the Innovation Union agenda and by contributing to the completion of the ERA.

Policy area "Research and Technological Development and Space" (Title XIX TFEU)		
General objective 1: To establish the right framework conditions for research and innovation		☐ Spending Programme ☒ Non-Spending
Impact indicator: Innovation Output Indicator ²³		
Baseline (2010) 100 ²⁴	Latest Result (2012) 101.6 ²⁵	Target (2020) To be defined ⁷

²³ The Innovation Output Indicator was developed by the Commission at the request of the European Council to benchmark national innovation policies and to monitor the EU's performance against its main trading partners. It measures the extent to which ideas stemming from innovative sectors are capable of reaching the market, providing better jobs and making Europe more competitive. The proposed new indicator covers technological innovation, skills in knowledge-intensive activities, the competitiveness of knowledge-intensive goods and services, and the innovativeness of fast-growing enterprises. It complements the R&D intensity indicator (3% target of the Europe 2020 strategy – see section 2.1.2) by focusing on innovation output. It will support policy-makers in establishing new or reinforced actions to remove bottlenecks preventing innovators from translating ideas into successful goods and services.

²⁴ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Measuring innovation output in Europe: towards a new indicator (COM(2013) 624, 13.9.2013).

²⁵ Source: Research and innovation performance in the EU: Innovation Union progress at country level

According to the result from the Innovation Output Indicator, as a whole the EU performs relatively well, with a slight improvement in performance in the EU as a whole over the period 2010-2012. In the same period performance stagnated in Switzerland and the US, but moved further ahead in Japan. As a result, the EU's performance gap narrowed with these two countries (and it is now almost level with the US) but has widened with Japan's. However, the observation period is still relatively short and these trends need to be confirmed.

1.1.2 Policy area "Research and Technological Development and Space" (Title XIX TFEU): To increase investment in research and innovation (General Objective 2)

The second General Objective aims to support and facilitate progress by the Member States towards the objective of dedicating 3% of the EU's GDP to R&D. At EU level the objective aims to ensure an efficient and effective implementation of Horizon 2020, the EU Framework Programme for R&I.

Policy area "Research and Technological Development and Space" (Title XIX TFEU)		
General objective 2: To increase investment in research and innovation		☐ Spending Programme ☒ Non-Spending
Impact indicator: Gross expenditure on R&D as % of GDP (R&D Intensity)		
Baseline (2009) 1.94%	Latest Result (2013) 2.02% ²⁶	Target (2020) 3.00%

While there is regular year-on-year progress on this indicator, it will be a challenge to meet the multiannual target²⁷. The high-level and long-term nature of this objective, as well as its inclusion of all R&I expenditure, whether public or private, European, national or regional, places the responsibility for its achievement mainly with the Member States.

The Commission plays the role of a catalyst and facilitator, encouraging increased investment in R&I by Member States and the business sector through leverage funding and the development of appropriate policies.

1.1.3 Specific Objective 1: To contribute to the European Semester, in particular through country-specific recommendations (related to General Objective 1 – To establish the right framework conditions for research and innovation)

In collaboration with other Commission services, DG RTD takes part in the annual European Semester exercise whose objective is to support Member States in improving their national research and innovation systems, in particular through country-specific recommendations.

2014. Publications Office of the European Union, 2014.

²⁶ This should be compared to a revised result for 2012 of 2.01%. See f. 6 on the revision of results for previous years.

²⁷ See *Taking stock of the Europe 2020 strategy for smart, sustainable and inclusive growth* (COM(2014) 130, 5.3.2014) which had already been quoted in DG RTD's 2013 AAR.

General Objective 1: To establish the right framework conditions for research and innovation			
Specific Objective 1: To contribute to the European Semester, in particular through country-specific recommendations		☐ Spending Programme ☒ Non-Spending	
Output indicator:		Number of Member States for which the Commission adopted a R&I country-specific recommendation / Number of Member States for which DG RTD proposed a R&I country-specific recommendation (percentage)	
Baseline (2014) 69%	Latest Result (2014) 69% ²⁸	Milestone (2016) >80%	Target (2020) >80%

In the Communication on the '2014 European Semester: Country-specific recommendations – Building growth'²⁹, the Commission recommended that, depending on the available fiscal space, public investment in infrastructure, research, innovation and human capital should be prioritised, including through greater cost-efficiency. These investments should be accompanied by reforms to modernise public-private R&I systems and improve framework conditions for companies to become more knowledge-intensive.

1.1.4 Specific Objective 2: To implement the Innovation Union commitments (related to General Objective 1 – To establish the right framework conditions for research and innovation)

The Innovation Union Flagship Initiative is the EU's strategy to create an innovation-friendly environment in which researchers and entrepreneurs can enjoy the best conditions to innovate. DG RTD plays a leading role in its overall implementation and leads some of its most important initiatives.

General Objective 1: To establish the right framework conditions for research and innovation			
Specific Objective 2: To implement the Innovation Union commitments		☐ Spending Programme ☒ Non-Spending	
Result indicator:		Number of Innovation Union commitments on track or achieved (out of 34)	
Baseline (2010) 0	Latest Result (2014) 34	Milestone (2016) 34	Target (2020) 34
Main initiatives in 2014			
Communication on Research and Innovation as sources of renewed growth with accompanying Staff Working Document on the state of the Innovation Union (Commission Work Programme 2014)			Delivered ¹⁵
Second Innovation Convention			Delivered

This target has been achieved³⁰. Eight commitments, while not yet delivered, are on track to be completed.

²⁸ DG RTD proposed 16 R&I country-specific recommendations in 2014 of which 11 were eventually adopted (other DGs were in the lead for the proposal of three additional country-specific recommendations related to R&I which were adopted).

²⁹ *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: 2014 European Semester: Country-specific recommendations – Building Growth* (COM(2014) 400, 2.6.2014).

³⁰ *State of the Innovation Union – Taking stock 2010-2014* (SWD(2014)181).

Apart from supporting other DGs in the delivery of these commitments, DG RTD has been actively delivering on the Innovation Union particularly through issuing the *Communication on Research and Innovation as sources of renewed growth* and an accompanying Staff Working Document (which takes stock of the situation for the years 2010-2014)¹⁵ and the report on progress for 2014 at country-level³¹.

The documents note significant progress in keeping the EU at the R&I forefront with other research-intensive countries³². A number of issues still need to be addressed. These include inconsistencies of rules and practices, a closer involvement of society, public sector innovation, inclusiveness and skills shortage and mismatch. Finally, further action is essential to optimise the impact of the Innovation Union commitments, based on the lessons learnt.

The second Innovation Convention was held in March 2014. Taking place under the patronage of the President of the Commission, it provided a platform to debate R&I policies. It also hosted 'Innovation Showcases', interactive demonstrations of new ideas, products and services. Two awards were given at the Convention: the EU's first innovation inducement prize³³ and the EU Women Innovators' Prize.

1.1.5 Specific Objective 3: To contribute to the completion of the European Research Area (related to General Objective 1 – To establish the right framework conditions for research and innovation)

As set out in Art. 179 TFEU, the EU has the objective of achieving a European Research Area in which researchers, scientific knowledge and technology circulate freely. DG RTD supports the efforts of Member States and research organisations to implement the policies and the reforms needed to achieve this objective.

The 2014 ERA Progress Report¹⁷ provided an in-depth assessment of the policy support and state of implementation of ERA at both national and European level, following the European Council Conclusions of February 2011³⁴ on the completion of ERA in 2014. It notes that stakeholder organisations have strengthened their collaboration with the European Research Area in Innovation Committee (ERAC) in preparation of an ERA Roadmap at European level, to be drafted by the Member States in cooperation with the Commission by mid-2015. Members of the ERA Stakeholder Platform³⁵ have initiated discussions on extending membership of the

³¹ *Research and innovation performance in the EU: Innovation Union progress at country level 2014*. Publication Office of the EU, 2014.

³² The 2014 Innovation Union Scoreboard shows that, since 2008, the EU has managed to close almost half of its innovation performance gap with the US and Japan. Nevertheless, the gap with South Korea is widening and China is quickly catching up.

³³ *German company wins EU's EUR 2 million inducement prize for innovative vaccine technology* (European Commission Press Release IP/14/229, 10.3.2014).

³⁴ EUCO 2/1/11 REV 1 CO EUR 2 CONCL 1.

³⁵ Current members are the Conference of European Schools for Advanced Engineering Education and Research (CESAER), the European Association of Research and Technological Organisations (EARTO), the European University Association (EUA), the League of European Research Universities (LERU),

Platform to stakeholders from the civil society and the private sector.

At the EU level, the report notes that ERA has been embedded in the European Semester, substantial funding is provided for ERA measures and open recruitment, open access to publications and data and gender equality are promoted throughout Horizon 2020. The ERA Monitoring Mechanism has been agreed to and is delivering increasingly robust data.

Main initiatives in 2014	
ERA Progress Report 2014	Delivered ¹⁷
Prioritisation by the European Strategy Forum on Research Infrastructures (ESFRI) of the ESFRI Roadmap of Research Infrastructures ³⁶	Delivered
Report on the Interim Evaluation of Article 185 Initiative BONUS ³⁷	Delivered in early 2015 ³⁸

Effectiveness of national research systems

The 2014 ERA Progress Report underlines that the ERA partnership has proved to be successful and that the conditions for the completion of ERA are now in place. Member States increasingly adopt measures in support of ERA and include them in their National Reform Programmes in the context of the European Semester.

Transnational cooperation

Europe needs critical mass to efficiently address grand challenges and to make the best use of available resources in Europe. Joint activities allow for cross-border complementarities in order to avoid unnecessary duplication of efforts, to exploit synergies and to carry out large-scale research that cannot be addressed by a single country.

In P2Ps Member States and Associated Countries are in the lead and contribute most of the funding from national sources. Horizon 2020 incentivises transnational cooperation of research teams among the Member States and Associated Countries and leverages national funding for transnational cooperation. The different categories of P2Ps include the ERA-NET Cofund actions, 'Article 185 Initiatives' (based on Art. 185 of the TFEU) and JPIs³⁹.

NordForsk and Science Europe.

³⁶ ESFRI supports a coherent and strategy-led approach to policy-making on Research Infrastructures in Europe and facilitates multilateral initiatives leading to the better use and development of these infrastructures at EU and international level.

³⁷ BONUS is the Joint Baltic Sea Research and Development Programme.

³⁸ *Reply to the interim evaluation of the Joint Baltic Sea Research and Development Programme BONUS* (COM(2015) 34, 30.01.2015).

³⁹ JPIs are P2Ps based on Art. 181 TFEU initiated by Member States. They play a key role in jointly addressing major societal challenges and play a key role in jointly addressing major societal challenges. DG RTD is responsible for the following JPIs: Neurodegenerative Disease Research (JPND), Antimicrobial Resistance (JPI AMR), Agriculture, Food Security and Climate Change (FACCE-JPI), Healthy Diet for a Health Life (JPI HDHL), Healthy and Productive Seas and Oceans (JPI Oceans), JPI Climate, Water Challenges for a Changing World (Water JPI), Cultural Heritage and Global Change (JPI on Cultural Heritage) and Urban Europe.

The result indicator for 'Transnational cooperation' is linked to leverage of funds through 'Article 185 Initiatives'. DG RTD oversees four of these initiatives, three of which were renewed in May for a total EU contribution of up to EUR 1 270 million:

- EDCTP 2 under Health (EU contribution up to EUR 683 million);
- Eurostars 2, dedicated to R&D performing SMEs (EU contribution up to EUR 287 million);
- the European Metrology Programme for Research and Innovation (EMPIR) (EU contribution up to EUR 300 million)
- the BONUS initiative which integrates the Baltic Sea research system into a durable, cooperative, interdisciplinary and focused multinational programme in support of the regions sustainable development. The current initiative will run until 2017 and its renewal will be considered after the results of the interim evaluation in 2015.

General Objective 1: To establish the right framework conditions for research and innovation				
Horizon 2020 cross-cutting issue: Funding for Public-Public Partnerships			☒ Spending Programme ☐ Non-Spending	
Result indicator: Total amount of funds leveraged through Art. 185 initiatives ⁴⁰				
Initiative	Baseline (2014)	Latest Result (2014)	Milestone (2017)	Target (2020)
EDCTP2	New approach ⁴¹	100%	100%	100%
EMPIR	100%	100%	100%	100%
Eurostars 2	370% ⁴²	300%	300%	300%

Main output in 2014			
Description:	Indicator	Target	Latest Result
Adoption by Council and	Date of adoption	Adoption by end 2014	Achieved ⁴³

⁴⁰ In view of the difficulty in obtaining accurate results for the indicator proposed in DG RTD's MP 2014 a new indicator was proposed in DG RTD MP 2015, which conforms with the final list of cross-cutting Horizon 2020 monitoring indicators agreed upon by the Research family DGs. The new indicator is reproduced here. Values are calculated on the basis of the contributions from the Union and the necessary minimum from Participating States to the programme (excluding contributions from third parties to the programme or individual actions). The final value might be higher in case the Participating States make additional contributions to the initiatives.

⁴¹ A baseline for the FP6 initiative EDCTP is not provided as the mechanism for identifying contributions from Participating States for EDCTP2 is different. Under Horizon 2020, it will only take into account the activities clearly identified in the annual work plans approved by the Commission.

⁴² The Participating States of Eurostars have increased their contribution to the initiative over its duration beyond the legally required commitment to ensure funding for a higher number of proposals, thus increasing the leverage effect.

⁴³ Decision No 556/2014/EU of the European Parliament and of the Council of 15 May 2014 on the participation of the Union in a second European and Developing Countries Clinical Trials Partnership Programme (EDCTP2) jointly undertaken by several Member States (OJ L 169, 7.6.2014, p. 38), Decision No 555/2014/EU of the European Parliament and of the Council of 15 May 2014 on the participation of the Union in a European Metrology Programme for Innovation and Research (EMPIR) jointly undertaken by several Member States (OJ L 169, 7.6.2014, p. 27) and Decision No 553/2014/EU of the European Parliament and of the Council of 15 May 2014 on the participation of the Union in a Research and Development Programme jointly undertaken by several Member States aimed at

Parliament of the proposals to renew the Art. 185 initiatives EDCTP, EMPIR and Eurostars			
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These 'Article 185 initiatives' (an additional initiative, 'Ambient Assisted Learning' is the responsibility of DG CNECT), together with five Joint Undertakings, made up the 'Innovation Investment Package' proposed by the Commission through which EUR 1.5 billion from Horizon 2020 will be invested in the research areas concerned.

Research Infrastructures

Research infrastructures are supported to promote access to them by researchers from Europe and abroad, and to increase the attractiveness of European research at international level. The existence of recognised world-level research infrastructures allows Europe to remain at the forefront of top-class scientific and technological development and innovation.

General Objective 1: To establish the right framework conditions for research and innovation			
Horizon 2020 cross-cutting issue: Contribution to the realisation of the European Research Area			
Result indicator:		Share of the ESFRI roadmap priority research infrastructures which have been implemented	
Baseline (2010) 20%	Latest Result (2014) 42%	Milestone (2015) 60%	Target (2020) To be defined
Result indicator:		Number of European Research Infrastructure Consortia (ERICs) established	
Baseline (2010) 0	Latest Result (2014) 10	Milestone (2015) 15	Target (2020) 30

Both these indicators have been replaced in MP 2015. As from 2015, the share of ESFRI roadmap priority research infrastructures which have been implemented will be reported in the context of the delivery of Innovation Union commitments. New ERICs will still be reported in future AARs though not in the context of an indicator.

Four new ERICs were established in 2014. These are the Global Ocean Observing Infrastructure (Euro-Argo ERIC)⁴⁴, the Central European Research Infrastructure Consortium (CERIC-ERIC)⁴⁵, the Digital Research Infrastructure for the Arts and Humanities (DARIAH ERIC)⁴⁶ and the Joint

supporting research and development performing small and medium-sized enterprises (OJ L 169, 7.6.2014, p. 1).

⁴⁴ 2014/261/EU: Commission Implementing Decision of 5 May 2014 on setting up Euro-Argo Research Infrastructure as a European Research Infrastructure Consortium (Euro-Argo ERIC) (OJ L 136, 9.5.2014, p. 35). This ERIC, which is hosted by France, is dedicated to a system of long-term global ocean monitoring.

⁴⁵ 2014/392/EU: Commission Implementing Decision of 24 June 2014 on setting-up the Central European Research Infrastructure Consortium (CERIC-ERIC) (OJ L 184, 25.6.2014, p. 49). This ERIC, which is hosted by Italy, furthers the integration of national multidisciplinary analytical, synthesis and sample preparation capabilities.

⁴⁶ 2014/526/EU: Commission Implementing Decision of 6 August 2014 setting up the Digital Research Infrastructure for the Arts and Humanities as a European Research Infrastructure Consortium (DARIAH ERIC) (OJ L 239, 12.8.2014, p. 64). This ERIC, which is hosted by France, seeks to enhance and support digitally-enabled research across the humanities and arts.

Institute for Very Long Baseline Interferometry (JIV-ERIC)⁴⁷.

This brings to ten the total number of ERICs established since the adoption of the ERIC Regulation in 2009⁴⁸. Commitment 5 of the Innovation Union Flagship Initiative, i.e. the construction of 60% of priority Research Infrastructures identified by ESFRI in its roadmap by 2015, is on track and within reach⁴⁹. This prioritisation exercise was reinforced through the Council conclusions of 26 May on the implementation of the roadmap for the European Strategy Forum on Research Infrastructures⁵⁰. The first report from the Commission to the Council and European Parliament on the application of the ERIC Council Regulation was adopted in July 2014⁵¹.

Open labour market for researchers

A genuinely open and attractive European labour market for researchers is an essential factor for the completion of the ERA. Open, transparent and merit-based recruitment ensures that research systems are able to select from the widest possible pool of talent, thereby generating excellence and fostering mobility. One such tool is EURAXESS which provides researchers wishing to pursue their research careers in Europe access to information and support services.

General Objective 1: To establish the right framework conditions for research and innovation			
Horizon 2020 cross-cutting issue: Contribution to the realisation of the European Research Area			
Output indicator:		Annual number of research positions advertised in EURAXESS Jobs	
Baseline (2012)	Latest Result (2014)	Milestone (2016)	Target (2020)
36 500	46 126	45 000	60 000
Output indicator:		Number of organisations that have been awarded the 'HR Excellence in Research' logo	
Baseline (2013)	Latest Result (2014)	Milestone (2016)	Target (2020)
150	175	200	300

Although the milestone for the 'Annual number of research positions advertised in EURAXESS Jobs' is set for 2016, this has been exceeded, giving reason to believe that the 2020 target will be achieved.

Meanwhile, EURAXESS has continued to provide support to mobile researchers and their families. Through about 250 Service Centres some 134 000 queries were tackled in the first

⁴⁷ 2014/923/EU: Commission Implementing Decision of 12 December 2014 on setting up the Joint Institute for Very Long Baseline Interferometry as a European Research Infrastructure Consortium (JIV-ERIC) (OJ L 363, 18.12.2014, p. 156). This ERIC, which is hosted by the Netherlands, promotes and implements the use of Very long baseline interferometry (VLBI) and other radio astronomy techniques.

⁴⁸ Council Regulation (EC) No 723/2009 of 25 June 2009 on the Community legal framework for a European Research Infrastructure Consortium (ERIC) (OJ L 206, 8.8.2009, p. 1).

⁴⁹ See also section 1.1.4.

⁵⁰ 10257/14 RECH 203 COMPET 304.

⁵¹ Report from the Commission to the European Parliament and the Council on the Application of Council Regulation (EC) No 723/2009 of 25 June 2009 on the Community legal framework for a European Research Infrastructure Consortium (ERIC) (COM(2014) 460, 14.7.2014).

semester 2014. An outreach campaign, the EURAXESS Roadshow, was organised in 29 university locations in 22 countries with particular focus on Eastern European countries, reaching more than 160 000 people personally or through virtual tools.

The RESAVER Consortium was set up on 1 October 2014 to create a single European pension arrangement for research institutions as of 2015. A tailor-made, cross-border scheme will assist employers in attracting researchers in an increasingly competitive environment. In this way, pension issues will cease being a barrier to researchers' mobility. By participating in RESAVER, employers will be able to sponsor one single pension arrangement. It will be a highly flexible retirement savings product that corresponds to the specific needs of the research community.

The Commission organised two Mutual Learning Seminars on *Sharing Experience to better implement the Human Resources Strategy for Research (HRS4R)* which were attended by eighty Human Resource managers and launched a series of expert workshops on *Shaping the future of the Human Resources Strategy for Researchers (HRS4R)*.

Gender equality and mainstreaming in research

European research still suffers from a substantial loss and inefficient use of highly-skilled women, and from a lack of gender dimension in research content. If the number of female PhD graduates has grown significantly in recent years in practically all sectors, women in research remain a minority and the number of women heads of institutions in the higher education sector is very low.

General Objective 1: To establish the right framework conditions for research and innovation			
Horizon 2020 cross-cutting issue: Contribution to the realisation of the European Research Area		☒ Spending Programme ☐ Non-Spending	
Output indicator:		Share of Horizon 2020-DG RTD projects taking into account the gender dimension in research and innovation content	
Baseline (FP7-2013) 15%	Latest Result (2014) No result yet	Milestone (2017) 20%	Target (2020) 30%

As results are not yet available, it is still too early to tell whether the DG is on course to reach the milestone and, eventually, the multiannual target for this output indicator.

GENDER-NET, launched in 2014, is the first ERA-NET dedicated to the promotion of gender equality through structural change in research institutions. It also aims to integrate sex and gender analysis in research.

Optimal circulation and transfer of scientific knowledge

Publicly funded knowledge must be available for researchers and the private sector, to enhance the knowledge base, diminish regional discrepancies and promote innovative solutions to societal challenges. DG RTD works with Member States for the joint development of the best strategies to improve access to scientific knowledge in order to boost the impact of scientific research and Europe's innovation capacity.

General Objective 1: To establish the right framework conditions for research and innovation			
Horizon 2020 cross-cutting issue: Contribution to the realisation of the European Research Area		☒ Spending Programme ☐ Non-Spending	
Result indicator:		Share of Open access articles published in peer reviewed journals ⁵²	
Baseline New approach	Latest Result No result yet	Milestone (2016) 100%	Target (2020) 100%

As results are not yet available, it is still too early to tell whether the DG is on course to reach the milestone and, eventually, the multiannual target for this indicator.

1.1.6 Specific Objective 4: To support and facilitate progress at national level towards the 3% objective of R&D intensity in the EU (related to General Objective 2 – To increase investment in research and innovation)

One of the three Europe 2020 priorities is to develop an economy based on knowledge and innovation (smart growth). The related EU headline target is to dedicate 3% of the EU GDP to research and development (see section 1.1.2). There is a clear need to improve the conditions for private R&D in the EU and many of the measures proposed in the Europe 2020 strategy aim to do this.

To ensure that each Member State tailors the Europe 2020 strategy to its particular situation, the 3% target is translated into national targets and trajectories to reflect each Member State's situation and the level of ambition. Every year, in the framework of the European Semester, the Commission assesses the progress that has been made at EU and national levels towards meeting the 3% target and then presents country-specific recommendations. DG RTD plays a leading role in this process, providing input for recommendations in the areas of research and innovation.

It should be noted that impact indicators like the one below measure long-term changes in EU society. The achievement of the related targets is mainly the responsibility of the Member States, with the Commission playing the role of catalyst and facilitator.

New rules were adopted in 2014 to facilitate the granting of aid measures by Member States in support of research, development and innovation activities⁵³. These new rules allow for greater flexibility for implementing research, development and innovation measures, permit higher aid levels and enhance simplification and legal certainty. They aim to ensure that public money is used where it is needed and that state aid mobilises private investment in projects that would otherwise not be implemented, while preserving competition in the Single Market. They will also facilitate the transition of knowledge and ideas to the market.

⁵² The indicator was rephrased in DG RTD MP 2015 to conform to the final list of cross-cutting Horizon 2020 monitoring indicators agreed upon by the Research family DGs. The rephrased indicator is reproduced here.

⁵³ Commission Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty (OJ L 187, 26.6.2014, p. 1) and Communication from the Commission — Framework for State aid for research and development and innovation (OJ C 198, 27.6.2014, p. 1).

General Objective 2: To increase investment in research and innovation				
Impact indicator: Member States' progress towards their national targets contributing to the 3% objective of R&D intensity in the EU ⁵⁴				
☐ Spending Programme ☒ Non-Spending				
EU/Member State	Baseline (2009)	Latest Result (2013)	Trend	Target (2020) ⁵⁵
EU-28	1.94%	2.02% ^e	▲	3.00%
Austria	2.61%	2.81% ^{e,p}	▲	3.76%
Belgium	1.97%	2.28% ^p	▲	3.00%
Bulgaria	0.51%	0.65% ^p	▲	1.50%
Croatia	0.84%	0.81%	▼	1.40%
Cyprus	0.45%	0.48% ^p	—	0.50%
Czech Republic	1.30%	1.91% ^p	▲	1.00% ⁵⁶
Denmark	3.07%	3.05% ^{e,p}	▼	3.00%
Estonia	1.40%	1.74% ^p	▲	3.00%
Finland	3.75%	3.32%	▼	4.00%
France	2.21%	2.23% ^p	—	3.00%
Germany	2.73%	2.94% ^{e,p}	▲	3.00%
Greece	0.63% ^e	0.78% ^p	▲	1.21%
Hungary	1.14%	1.41%	▲	1.80%
Ireland	1.63% ^e	Not available	—	2.00% ⁵⁷
Italy	1.22%	1.25% ^p	—	1.53%
Latvia	0.45%	0.60% ^p	▲	1.50%
Lithuania	0.83%	0.95% ^p	▲	1.90%
Luxembourg	1.72%	1.16% ^p	▼	2.30%
Malta	0.52%	0.85% ^p	▲	2.00%
Netherlands	1.69%	1.98% ^p	▲	2.50%
Poland	0.67%	0.87%	▲	1.70%
Portugal	1.58%	1.36% ^p	▼	3.00%
Romania	0.46%	0.39%	▼	2.00%
Slovakia	0.47%	0.83%	▲	1.00%
Slovenia	1.82%	2.59% ^p	▲	3.00%
Spain	1.35%	1.24% ^p	▼	2.00%
Sweden	3.42%	3.21% ^{d,p}	▼	4.00%
United Kingdom	1.75% ^e	1.63% ^{e,p}	▼	No target
e = estimated p = provisional d = definition differs				

⁵⁴ Source: Eurostat. The results for 2009 and 2013 are adjusted following Eurostat's application of the

1.1.7 Specific Objective 5: To ensure an effective and efficient implementation of Horizon 2020 (related to General Objective 2 – To increase investment in research and innovation)

With a budget of nearly EUR 80 billion (in current prices) for the period 2014-2020, Horizon 2020 represents a major opportunity for boosting innovation and growth in the EU. It focusses on three major areas: excellent science, industrial leadership and societal challenges. Two additional objectives pursued are to spread excellence and widen participation and to promote efficient cooperation between science and society. There are also a number of cross-cutting issues. Three additional objectives are related to effective and efficient implementation of the Euratom Framework Programme, ITER and the Research Fund for Coal and Steel.

Given the time lag between the implementation of Horizon 2020 and the results for a number of indicators it is expected to deliver, the latter cannot be measured in the first years following the launch of the programme. In those cases that no significant amount of meaningful data is available for the result indicators of Horizon 2020, main outputs for 2014 are presented. Moreover, as more performance-information from FP7 became available in 2014 and in cases where there is a continuity between the objectives and indicators of FP7 and Horizon 2020, the corresponding statistics of FP7 are provided.

To support excellence all across Horizon 2020

Art. 15 of the Rules for participation and dissemination in Horizon 2020⁵⁸ establishes excellence as one of the three award criteria applied to evaluate the proposals submitted for Horizon 2020 funding. The only exception are ERC frontier research actions, where it is the sole criterion. This mechanism will ensure that Horizon 2020 focuses its funding on excellent research across the board.

ESA 2010 corrections to the European System of Accounts.

⁵⁵ In the case of Member States, as set in their National Reform Programmes.

⁵⁶ Public sector only.

⁵⁷ Approximate (target: 2.5% as a share of GNP).

⁵⁸ Regulation (EU) No 1290/2013 of the European Parliament and of the Council of 11 December 2013 laying down the rules for participation and dissemination in "Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020)" and repealing Regulation (EC) No 1906/2006 (OJ L 347, 20.12.2013, p. 81).

General Objective 2: To increase investment in research and innovation				
Specific Objective 5: To ensure an effective and efficient implementation of Horizon 2020			☒ Spending Programme ☐ Non-Spending	
Result indicator:		Publications in peer-reviewed high impact journals in the Societal Challenges and in the enabling and industrial technologies (Horizon 2020-DG RTD) ⁵⁹		
	Baseline (2013)	Latest result	Milestone (2018)	Target (2020)
Societal Challenges	5 353	No result yet	~2 000	~6 500
Enabling and Industrial Technologies	1 215	No result yet	~360	~1 600
Total	6 568	No result yet	~2 400	~8 100

As results are not yet available, it is still too early to tell whether the DG is on course to reach the milestones and, eventually, the multiannual targets for this indicator.

To focus funding on excellence through the European Research Council (ERC)

Horizon 2020 provides attractive long-term funding to support excellent researchers and their research teams to pursue ground-breaking, high-gain/high-risk research. This activity is implemented under the aegis of the ERC, an autonomous science-led funding body governed by an independent Scientific Council.

The ERC assists the best researchers with excellent ideas in different phases of their careers through 'starting grants', 'consolidator grants' and 'advanced grants'. DG RTD supports the ERC in the implementation of these activities through a dedicated implementation structure, the ERC Executive Agency.

General Objective 2: To increase investment in research and innovation			
Horizon 2020 Specific Objective: Excellent science – European Research Council		☒ Spending Programme ☐ Non-Spending	
Result indicator:		Share of publications from ERC-funded projects which are among the top 1% highly cited per field of science (defined as an index) ⁶⁰	
Baseline (2010)	Latest Result	Milestone (2018)	Target (2020)
New approach	No result yet	1.5	1.8

The ERC participated in the 3rd Annual Meeting of the Global Research Council (GRC), which took place in Beijing in May. The main topics for discussion were the implementation of the Action Plan on Open Access to Publications (which had been agreed in 2013) and a *Statement of Principles and Actions on Shaping the Future: Supporting the Next Generation of Researchers*.

⁵⁹ Baseline, milestone and target figures were corrected in MP 2015 which are the figures reported here.

⁶⁰ In order to facilitate comparison of reference values between the EU and other parts of the world (published regularly in the US Science and Engineering indicators), the share of publications from the ERC will also be indicated by means of the "index of ERC highly-cited publications". A value higher than 1 indicates that publications from ERC-funded projects are cited at a level above what one would expect, a value lower than 1 indicates citation at a level below the expected value and a result of 1 corresponds to the expected value.

The GRC agreed to repeat the review of open access implementation periodically and request regular updates on progress at the Annual Meetings by selected countries or groups of countries. The GRC participants also agreed on a statement on promoting the attractiveness of research careers for new talent, providing opportunities for professional career development for researchers, and considering the types of skills and training that will be needed by researchers over the coming decades.

To endow Europe with world-class research infrastructures

Horizon 2020 supports a range of activities in the different phases of the development of research infrastructures, an important feature in the continued development of ERA. Support is provided for the integration and opening of existing research infrastructures of trans-European interest.

General Objective 2: To increase investment in research and innovation			
Horizon 2020 Specific Objective: Excellent science - Research infrastructures		☒ Spending Programme ☐ Non-Spending	
Result indicator:		Number of researchers who have access to research infrastructures through Union support	
Baseline (FP7-2013) 22 000	Latest Result No result yet	Milestone (2018) 12 000	Target (2020) 20 000 ⁶¹

As results are not yet available, it is still too early to tell whether the DG is on course to reach the milestones and, eventually, the multiannual targets for this indicator.

Enabling and Industrial Technologies

Horizon 2020 contributes to boosting Europe's industrial leadership through research, technological development, demonstration and innovation in the key enabling and industrial technologies (KETs). These include nanotechnologies, advanced materials, biotechnology, advanced manufacturing and processing, micro- and nano-electronics and photonics as well as information and communication technologies (ICTs) and space.

⁶¹ Although the overall budget for research infrastructures has increased in Horizon 2020 compared to FP7, the result for this indicator is expected to slightly decrease, since priority in Horizon 2020 will be given to the new emerging infrastructures as well as to targeting new communities (starting communities) whose infrastructures are usually not able to provide as large an access as the advanced communities.

General Objective 2: To increase investment in research and innovation				
Horizon 2020 Specific Objective: Industrial leadership – Leadership in Enabling and industrial technologies (LEIT)			☒ Spending Programme ☐ Non-Spending	
Result indicator: Patent applications in the different enabling and industrial technologies (Horizon 2020-DG RTD ⁶²)				
Total (biotechnology, nanotechnologies, advanced materials and advanced manufacturing and processing (NMBP) ⁶³	Baseline (FP7-2013) 141	Latest Result No result yet	Milestone (2018) ~50	Target (2020) ~220
Main output in 2014				
Description Launch of calls for proposals and selection of proposals	Indicator Number of grant agreements (2014 Budget)		Target 94	Latest Result 94 ⁶⁴

The target for the main output for 2014 has been achieved. In the case of the result indicator, results are not yet available and it is still too early to tell whether the DG is on course to reach the milestone and, eventually, the multiannual target.

In the case of the 'Nanosciences, Nanotechnologies, Materials and new Production Technologies' activity of the 'Cooperation' Specific Programme of FP7, by November 2014 projects had generated 314 patent applications.

In FP7 biotechnology (together with bioeconomy) was part of the 'Food, Agriculture and Fisheries, and Biotechnology' activity of the 'Cooperation' Specific Programme. For this FP7 activity as a whole, by November 2014 projects had generated 78 patent applications.

Access to risk finance

In order to enhance access to risk finance for R&I, Horizon 2020 makes use of a Debt Facility (which provides loans to single beneficiaries for investment in R&I) and an Equity Facility (which focuses on early-stage venture capital funds and other potential sources of equity finance). It also contributes to the implementation of the SME Initiative together with Programme for the Competitiveness of Enterprises and SMEs (COSME), the European Structural and Investment Funds (ESIF) allocated to Member States and the European Investment Bank (EIB) and the

⁶² Includes areas implemented by DG RTD i.e. biotechnology, nanotechnologies, advanced materials and advanced manufacturing and processing and excluding ICT and space and security research which are implemented by other DGs.

⁶³ Biotechnology is currently more closely linked to the NMP part than before, when they were managed by two different Directorates in DG RTD. They also share a single budget line, and in the future there will also be some cross-cutting topics involving biotechnology and nanotechnologies. For these reasons, it is more appropriate to present the baseline, milestone and target as an aggregated figure instead of separate figures.

⁶⁴ Of these, 49 are to be implemented directly by DG RTD and 45 through the contractual PPPs Factories of the Future (FoF), Energy-efficient Buildings (EeB) and Sustainable Process Industries (SPIRE).

European Investment Fund (EIF).

InnovFin Large Projects aims to improve access to risk finance for R&I projects emanating from large firms and medium and large midcaps⁶⁵, universities and research institutes, R&I infrastructures (including innovation-enabling infrastructures), PPPs and special-purpose vehicles or projects (including those promoting first-of-a-kind, commercial-scale industrial demonstration projects). Loans from EUR 7.5 million to EUR 300 million are delivered directly by EIB.

InnovFin MidCap Growth Finance offers senior and subordinated loans or guarantees (including mezzanine and quasi equity financing), in order to improve access to finance mainly for innovative larger midcaps. Loans from EUR 7.5 million to EUR 25 million are delivered directly by EIB.

InnovFin MidCap Guarantee offers guarantees on loans of between EUR 7.5 million and EUR 25 million to improve access to finance for innovative larger midcaps. This facility, implemented by EIB, is delivered through financial intermediaries, who are guaranteed against a portion of their potential losses by EIB, which also offers counter-guarantees to guarantee institutions.

InnovFin SME Guarantee provides guarantees and counter-guarantees on debt financing of between EUR 25 000 and EUR 7.5 million to improve access to loan finance for innovative SMEs and small midcaps. This facility, implemented by EIF, is delivered via financial intermediaries, who are guaranteed by EIF against a proportion of their potential losses.

InnovFin Advisory services, aim to improve the 'bankability' and investment-readiness of large projects that need substantial, long-term investments. It also provides advice to improve the conditions for access to risk finance for R&I. The main clients are promoters of large R&I projects addressing Horizon 2020's Societal Challenges.

General Objective 2: To increase investment in research and innovation			
Horizon 2020 Specific Objective: Industrial leadership – Access to risk finance		☒ Spending Programme ☐ Non-Spending	
Result indicator:		Total investments mobilised via debt financing and Venture Capital investments	
Baseline (FP7-2013) New approach	Latest Result No result yet ⁶⁶	Milestone (2017) EUR 8 billion	Target (2020) EUR 15 billion
Output indicator:		Number of organisations funded	
Baseline (FP7-2013) New approach	Latest Result (2014) 50	Milestone (2017) 2 000	Target (2020) 5 000

⁶⁵ In the 2014-2015 'Access to Risk Finance' Work Programme of Horizon 2020 'midcaps' are deemed to be enterprises comprising 250 to 3 000 employees (in full-time equivalents). They are divided into 'small midcaps' of between 250 and 499 employees and 'medium and large midcaps' of 500 to 3 000 employees.

⁶⁶ The new financial instruments for debt only began to be rolled out in mid-2014 and the Venture Capital facility will not start until later in 2015.

Result indicator: Amount of funds leveraged			
Baseline (FP7-2013) New approach	Latest Result No result yet ⁶⁶	Milestone (2016) EUR 15 billion	Target (2020) EUR 35 billion
Main output in 2014			
Description Signature of Delegation Agreement between the Commission and the Entrusted Entities (the EIB and the EIF)	Indicator: Date of signature	Target: Signature of agreement in the first semester of 2014	Latest Result: Achieved (agreement signed on 12 June)

The target for the main output for 2014 has been achieved. In the case of the other indicators, as the instruments are still in their first year of application, it is too early to tell whether the DG is on course to reach the milestones and, eventually, the multiannual targets.

Subject to confirmation of total 2014 figures for InnovFin Large Projects and InnovFin MidCap Growth Finance, a signature volume of over EUR 2 billion was achieved, with around EUR 1 billion disbursed. Nearly 50 operations are now in the pipeline. InnovFin MidCap Guarantee concluded signatures with two financial intermediaries, as did InnovFin SME Guarantee.

Innovation in SMEs

'Innovation in SMEs' has two parts. The first refers to the SME instrument which has no budget relevant activities, with topics being financed from the societal challenges and LEIT areas.

The second part is implemented through Eurostars, an 'Article 185 initiative' which aims at the joint implementation of national research programmes undertaken by several Member States and targets research-intensive SMEs in any sector that can demonstrate their capability to commercially exploit project results.

General Objective 2: To increase investment in research and innovation			
Horizon 2020 Specific Objective: Industrial leadership – Increasing innovation in SMEs		☒ Spending Programme ☐ Non-Spending	
Result indicator:		Number of SMEs participating in Eurostars projects selected for funding (by the Commission)	
Baseline (FP7-2013) 1 810	Latest Result (2014) 1 759	Milestone (2017) 2 000	Target (2020) 4 100
Main output in 2014			
Description: Adoption by Council and Parliament of the proposal to renew the Art. 185 initiative Eurostars	Indicator: Date of adoption	Target: Adoption by mid-2014	Latest Result: Achieved ⁶⁷

⁶⁷ Major changes made to the original Commission proposal (COM(2013) 493) include a new definition of "research performing SMEs", a new status of 'Eurostars-2 partner country' for those Eureka countries that are neither EU Member States nor Associated to Horizon 2020, increase in the share of the EU contribution within the overall Eurostars-2 public funding for operational costs including the evaluation costs and share of EU contribution for administrative costs for the dedicated implementation structure of Eurostars-2 (EUREKA Secretariat AISBL-"ESE") up to 4%.

The target for the main output for 2014 has been achieved. While this is still the first year of implementation of the programme, this activity looks to be on course to reach the 2017 milestone for the result indicator.

The SME Instrument, implemented in a bottom-up manner under all Societal Challenges and LEITs, was launched on 3 March 2014 as a continuously open call. Thirteen topics were defined in the Work Programme 2014-2015, with the same general conditions applying and synchronised cut-off dates (3 per year in 2014 for Phase 1 and 2 for Phase 2). EASME is responsible for the uniform promotion, application and monitoring of the SME instrument.

See also section '*Cross-cutting issue – SMEs' participation*'.

Health

DG RTD contributes to improving the lifelong health and wellbeing of all by funding R&I activities in the following areas: understanding health, wellbeing and disease, preventing, treating and managing disease, active ageing and self-management of health, methods and data, healthcare provision and integrated care.

General Objective 2: To increase investment in research and innovation			
Horizon 2020 Specific Objective: Societal challenges – Health		☒ Spending Programme ☐ Non-Spending	
Result indicator:		Publications in peer-reviewed high impact journals in the area of health (DG RTD)	
Baseline (FP7-2013) 3 966	Latest Result No result yet	Milestone (2018) ~1 400	Target (2020) ~4 400
Result indicator:		Patent applications in the area of health (DG RTD)	
Baseline (FP7-2013) 186	Latest Result No result yet	Milestone (2018) ~70	Target (2020) ~200
Main output in 2014			
Description Launch of calls for proposals and selection of proposals	Indicator Number of grant agreements (2014 Budget)	Target 110	Latest Result 90 signed or in preparation

The result for the 2014 output indicator was close to the target. Results are not yet available for the result indicators and it is therefore too early to tell whether the DG is on course to reach the milestones and, eventually, the multiannual targets for these indicators.

In the case of the 'Health' activity of the 'Cooperation' Specific Programme of FP7, by November 2014 projects had generated 12 632 publications and 268 patent applications. These figures do not include projects financed through the Innovative Medicines Initiative (IMI) Joint Undertaking.

IMI was renewed as IMI2 and launched in July 2014. This partnership between the EU and industry (mainly EFPIA) has a budget of EUR 3.3 billion shared equally between the public and the private partners. It published its first two calls for proposals in 2014.

EDCTP was also renewed, as EDCTP 2. It will be supported with up to EUR 683 million from Horizon 2020 and at least the same amount from the participating European States to fight HIV/AIDS, malaria and tuberculosis. It builds on the strength of funding programmes and researchers in the Europe and Africa and gives researchers the opportunity to adopt new diagnostic or management strategies towards the patients most in need. EDCTP 2 was formally

launched in December 2014 with a high-level conference in Cape Town involving the participation of several African and European ministers.

The last preparatory steps for the adhesion of Singapore to the Human Frontier Science Programme, of which the Commission is a member, were completed in December 2014 in view of a Commission decision in early 2015.

Bioeconomy

DG RTD contributes to accelerating the transition to a sustainable European bioeconomy by bridging the gap between new technologies and their implementation. It supports research and innovation activities in the following areas: sustainable agriculture and forestry, sustainable and competitive agri-food sector for a safe and healthy diet, aquatic living resources, sustainable and competitive bio-based industries and marine and maritime research.

General Objective 2: To increase investment in research and innovation			
Horizon 2020 Specific Objective: Societal challenges – Bioeconomy			☒ Spending Programme ☐ Non-Spending
Result indicator: Publications in peer-reviewed high impact journals in the area of bioeconomy (DG RTD) ⁶⁸			
Baseline (FP7-2013) 339	Latest Result No result yet	Milestone (2018) ~120	Target (2020) ~540
Result indicator: Patent applications in the area of bioeconomy (DG RTD)			
Baseline (FP7-2013) 19	Latest Result No result yet	Milestone (2018) ~7	Target (2020) ~30
Main output in 2014			
Description Launch of calls for proposals and selection of proposals	Indicator Number of grant agreements (2014 Budget)	Target 30	Latest Result 46 signed or in preparation

The target for the main output for 2014 has been achieved and exceeded with a wide margin. Results are not yet available for the result indicators and it is therefore too early to tell whether the DG is on course to reach the milestones and, eventually, the multiannual targets for these indicators.

In FP7 bioeconomy (together with biotechnology) was part of the 'Food, Agriculture and Fisheries, and Biotechnology' activity of the 'Cooperation' Specific Programme. For this FP7 activity as a whole, by November 2014 projects had generated 3 185 publications and 78 patent applications.

Three major conferences were organised together with the Presidencies of the Council of the EU. These were '*Research and Innovation to foster the competitiveness of the European Agri-Food and Seafood Sectors*'⁶⁹, '*The Bioeconomy Stakeholder's Conference - From sectors to system, from concept to reality*'⁷⁰ and the '*EurOCEAN 2014*'⁷¹ conference focused on marine

⁶⁸ Baseline, milestone and target figures were corrected in MP 2015 which are the figures reported here.

⁶⁹ http://ec.europa.eu/research/bioeconomy/news-events/news/20141118_en.htm

⁷⁰ <http://bioeconomy.miur.it/>

research progresses, its future challenges and its potential contribution to foster European economy.

A key output of the EuroOCEAN conference was the *Rome Declaration: setting a vision for seas and ocean science – delivering impact, global leadership and sustainable blue growth for Europe*. The Commission followed up with the Communication '*Innovation in the Blue Economy*'⁷² setting out an Action Plan for Innovation in the 'Blue Economy' to help use ocean resources sustainably and drive growth and jobs in Europe. Cooperation with eight Mediterranean Member States also led to setting a vision and strategic research and innovation agenda for a Blue Growth initiative in the Mediterranean (the BLUEMED Initiative).

There were significant developments this year regarding the bioeconomy. The Commission's proposal for a new BBI Joint Undertaking was adopted in May⁷³ and subsequently the Joint Undertaking was set up. A pilot web site was launched for the Bioeconomy Observatory which will provide public evidence on the progress on the European Bioeconomy Strategy. Two major surveys on bio-based industries and on bioeconomy policies of EU Member States were launched with the cooperation of the Standing Committee on Agricultural Research (SCAR). The European Bioeconomy Panel and SCAR jointly released the latest thinking on biomass supply, on market-making and on sustainable Bio-resources for a Growing Bioeconomy with the document '*Where next for the Bioeconomy?*'⁷⁴.

Energy

DG RTD contributes to the transition to a reliable, sustainable and competitive energy system, in the face of increasingly scarce resources, increasing energy needs and climate change. It supports R&I activities in the following areas: reducing energy consumption and carbon footprint through smart and sustainable use, a low-cost, low-carbon electricity supply, alternative fuels and mobile energy sources on a single, smart European electricity grid. It also supports research on new knowledge and technologies, robust decision-making and public engagement and market uptake of energy innovation.

General Objective 2: To increase investment in research and innovation	
Horizon 2020 Specific Objective: Societal challenges – Energy	
	☒ Spending Programme ☐ Non-Spending
Output indicator:	Share of the overall Energy challenge funds allocated to the following research activities: renewable energy, end-user energy-efficiency, smart grids and energy storage activities (DG RTD)

⁷¹ <http://www.euroceanconferences.eu/>

⁷² *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Innovation in the Blue Economy: realising the potential of our seas and oceans for jobs and growth* (COM(2014) 254, 8.5.2014).

⁷³ Council Regulation (EU) No 560/2014 of 6 May 2014 establishing the Bio-based Industries Joint Undertaking (OJ L 169, 7.6.2014, p. 130). See also section 'Cross-cutting issue – Public-Private Partnerships (PPPs)'.

⁷⁴ http://ec.europa.eu/research/bioeconomy/pdf/where-next-for-european-bioeconomy-report-0809102014_en.pdf

Baseline New approach	Latest Result 84% ⁷⁵	Milestone (2016) 85%	Target (2020) 85%
Result indicator: Publications in peer-reviewed high impact journals in the area of energy (DG RTD)			
Baseline (FP7-2013) 119	Latest Result No result yet	Milestone (2018) ~130	Target (2020) ~300
Result indicator: Patent applications in the area of energy (DG RTD)			
Baseline (FP7-2013) 36	Latest Result No result yet	Milestone (2018) ~40	Target (2020) ~90
Main output in 2014			
Description: Launch of calls for proposals and selection of proposals	Indicator: Number of grant agreements (2014 Budget)	Target: 55	Latest Result: 33 signed or in preparation ⁷⁶

The result for the output indicator was very close to the target. As results are not yet available, it is still too early to tell whether the DG is on course to reach the milestones and, eventually, the multiannual targets for the result indicators. In the case of the Main Output, the number of grant agreements was lower than expected as the requested budget for the proposals received and retained for funding was very often towards the higher end of the range specified in the calls.

In the case of the 'Energy' activity of the 'Cooperation' Specific Programme of FP7, by November 2014 projects had generated 815 publications and 93 patent applications. These figures do not include projects financed through the Fuel Cells and Hydrogen (FCH) Joint Undertaking.

The main policy achievement relates to the Strategic Energy Technology Plan (SET Plan), the research and innovation pillar of the Commission's energy and climate policy, and the delivery of the document *'Towards an Integrated Roadmap'*⁷⁷ at the SET Plan annual Conference in December 2014. The document is structured along four main energy policy challenges: the consumer, demand, system optimisation and supply. It also addresses cross-cutting issues related to education, socio-economics, and innovative financing.

Another major development this year was the adoption of the Council Regulation establishing the Fuel Cells and Hydrogen 2 Joint Undertaking (FCH2)⁷⁸ and the signature of its Delegation Agreement for the period 2014-2020. The first FCH2 call for proposals was published in July 2014.

At the Carnegie Group meeting of London in May, the topic *'R&I in support of energy security'* was selected for discussion on the basis of a strategic document prepared by DG RTD. The

⁷⁵ For this calculation, signed grant agreements as well as main-listed proposals have been considered as projects. Analysis for bottom-up topics has been done at project level. As the counting of FCH has not been clarified in the Declaration, it is counted half for the 85% target. 'Other Actions' (e.g. procurements, grants to named beneficiaries) are not included in this analysis.

⁷⁶ Of these, 2 are to be implemented directly by DG RTD, 28 by INEA, 2 by DG ENER and 1 by DG CNECT.

⁷⁷ http://setis.ec.europa.eu/system/files/Towards%20an%20Integrated%20Roadmap_0.pdf

⁷⁸ Council Regulation (EU) No 559/2014 of 6 May 2014 establishing the Fuel Cells and Hydrogen 2 Joint Undertaking (OJ L 169, 7.6.2014, p. 108).

Carnegie Group is an informal group of science ministers and advisors of the G8 + 5 countries⁷⁹, who meet once a year to share opinions, experience and ideas about major scientific issues.

Other related developments have ensured that energy R&I is properly incorporated into energy policy. The Commission has adopted the Communication '*A policy framework for climate and energy in the period from 2020 to 2030*'⁸⁰, recognising innovative finance as a key supporting policy tool and including an indicator on technological innovation among the six indicators proposed to be regularly monitored by the Member States. In the Communication '*European Energy Security Strategy*'⁸¹, further development of energy technologies is included as one of eight key action drivers.

The Commission, the European Energy Research Alliance (EERA) and the Member States have begun reflecting on possible options for a better alignment of the EERA Joint Programmes with national activities in the future. Five Integrated Research Programmes managed by EERA were launched in early 2014 on concentrated solar power, photovoltaics, smart grids, wind power and materials for nuclear power, in addition to fifteen ongoing EERA Joint Programmes.

A new European Technology Platform (ETP) on geothermal energy has been established to take account of the industrial needs of this promising emerging technology. This increases the number of ETPs under the umbrella of the SET Plan to eight.

Transport

DG RTD contributes to achieving the transition to a smart, green and integrated transport system, as well as more efficient and competitive transport-related industries. It funds R&I activities the following areas: resource-efficient transport that respects the environment, better mobility, less congestion, more safety and security, global leadership for the European transport industry, socio-economic and behavioural research and forward-looking activities for policy-making.

General Objective 2: To increase investment in research and innovation			
Horizon 2020 Specific Objective:		☒ Spending Programme ☐ Non-Spending	
Societal challenges – Transport			
Result indicator:		Publications in peer-reviewed high impact journals in the area of transport (DG RTD)	
Baseline (FP7-2013)	Latest Result	Milestone (2018)	Target (2020)
58	No result yet	~30	~90
Result indicator:		Patent applications in the area of transport (DG RTD)	
Baseline (FP7-2013)	Latest Result	Milestone (2018)	Target (2020)
31	No result yet	~15	~50

⁷⁹ France, Italy, Germany, the UK, Canada, Mexico, South Africa, Japan, India, China, Brazil, the US, Russia and the EU.

⁸⁰ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – *A policy framework for climate and energy in the period from 2020 to 2030* (COM(2014) 15, 22.01.2014).

⁸¹ Communication from the Commission to the European Parliament and the Council – *European Energy Security Strategy* (COM(2014) 330, 28.05.2014).

Main output in 2014			
Description: Launch of calls for proposals and selection of proposals	Indicator: Number of grant agreements (2014 Budget)	Target: 65	Latest Result: 58 signed or in preparation ⁸²

The target for the main output for 2014 was almost achieved. As results are not yet available, it is still too early to tell whether the DG is on course to reach the milestones and, eventually, the multiannual targets for the result indicators.

In the case of the 'Transport' activity of the 'Cooperation' Specific Programme of FP7, by November 2014 projects had generated 579 publications and 56 patent applications. These figures do not include projects financed through the Clean Sky Joint Undertaking.

The Council Regulation establishing the Clean Sky 2 Joint Undertaking⁸³ was adopted in May. The EU funding of up to EUR 1 755 billion is expected to be matched by EUR 2 193 billion of in-kind and additional activities carried out by stakeholders for a total investment exceeding EUR 4 billion. The main goal is to develop new and cleaner solutions tested on full scale demonstrators in all of commercial aviation including small air transport. This will contribute to reducing, by 2020, fuel consumption and carbon dioxide emissions by 50% per passenger kilometre, NO_x emissions by 80% and perceived noise by 50% (compared to 2000).

At strategic level, activities fostering international cooperation have been implemented with the US, China (on aspects such as surface transport and urbanisation), Japan and Russia (with whom the first aviation coordinated calls have been launched in December 2014).

New policy initiatives supporting stakeholders' engagement in the maritime sector were initiated in 2014. Active contribution was given to the establishment of the Shift2Rail Joint Undertaking which was adopted in June 2014⁸⁴. A Master Plan for the Joint Undertaking's activities has been prepared and in the second half of 2014 intensive effort was devoted to ensure that the Joint Undertaking becomes independent and fully operational in 2015.

Resource-efficient and climate change-resilient economy

DG RTD contributes to achieving a resource-efficient and climate change-resilient economy by funding R&I activities in the following areas: fighting and adapting to climate change, protecting the environment, sustainably managing natural resources, water, biodiversity and ecosystems, sustainable supply of non-energy and non-agricultural raw materials, green economy and society through eco-innovation, comprehensive and sustained global environmental observation and information systems and cultural heritage.

It also supports the EU's external policies on climate change and contributes to international research initiatives such as the intergovernmental Group on Earth Observations (GEO) and the

⁸² Of these, 8 are to be implemented directly by DG RTD, 50 by EASME.

⁸³ Council Regulation (EU) No 558/2014 of 6 May 2014 establishing the Clean Sky 2 Joint Undertaking (OJ L 169, 7.6.2014, p. 77).

⁸⁴ Council Regulation (EU) No 642/2014 of 16 June 2014 establishing the Shift2Rail Joint Undertaking (OJ L 177, 17.6.2014, p. 9).

International Panel on Climate Change (IPCC).

General Objective 2: To increase investment in research and innovation			
Horizon 2020 Specific Objective: Societal challenges – Resource-efficient and climate change-resilient economy			☒ Spending Programme ☐ Non-Spending
Result indicator:		Publications in peer-reviewed high impact journals in the area of resource-efficient and climate change-resilient economy (DG RTD)	
Baseline (FP7-2013) 751	Latest Result No result yet	Milestone (2018) ~240	Target (2020) ~1 000
Result indicator:		Patent applications in the area of resource- efficient and climate change-resilient economy (DG RTD)	
Baseline (FP7-2013) 10	Latest Result No result yet	Milestone (2018) ~3	Target (2020) ~15
Main output in 2014			
Description: Launch of calls for proposals and selection of proposals	Indicator: Number of grant agreements (2014 Budget)	Target: 54	Latest Result: 62 signed or in preparation ⁸⁵

The target for the main output for 2014 has been achieved with a considerable margin. In the case of the result indicators it is still too early to tell whether the DG is on course to reach the milestones and, eventually, the multiannual targets.

In the case of the 'Environment' activity of the 'Cooperation' Specific Programme of FP7 (which includes climate change research), by November 2014 projects had generated 3 367 publications and 17 patent applications.

The Commission is carrying out the necessary preparatory work for the next implementation plan of GEO which coordinates international efforts to create the GEO 'System of Systems' (GEOSS). In 2014 the preparatory work included a Staff Working Document⁸⁶ and work is underway for a Communication to be published in 2015.

DG RTD contributed actively to the Commission Communication on the circular economy⁸⁷. Other policy initiatives concerning nature-based solutions and re-naturing cities, climate services and cultural heritage are under preparation. Four Expert Groups have been formed to provide input to bring forward these future policy agendas with significant efforts being made to mobilise stakeholder groups from different spheres.

DG RTD is also participating in the preparation of an initiative on 'Knowledge for Environmental Policy' with other Commission services, the European Environment Agency and Eurostat. The

⁸⁵ Of these, 12 are to be implemented directly by DG RTD, 49 by EASME and one by REA. In addition, there were three cross-cutting Grant Agreements.

⁸⁶ *Commission Staff Working Document – Global Earth Observation System of Systems (GEOSS): Achievements to date and challenges to 2025* (SWD(2014) 292, 25.9.2014).

⁸⁷ *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Towards a circular economy: A zero waste programme for Europe* (COM(2014) 398, 2.7.2014).

objective is to facilitate access to the best knowledge and evidence needed for environmental policy. A roadmap (that will include information gaps in the short, medium and long term) should be delivered by Spring 2015.

Inclusive, innovative and reflective European societies

DG RTD contributes to fostering inclusive, innovative and reflective European societies in a context of unprecedented transformations and growing global interdependencies. It funds R&I activities in inclusive, innovative and reflective societies, cultural heritage and European identity.

General Objective 2: To increase investment in research and innovation			
Horizon 2020 Specific Objective: Societal challenges – Inclusive, innovative and reflective European societies			☒ Spending Programme ☐ Non-Spending
Result indicator:		Publications in peer-reviewed high impact journals in the area of inclusive, innovative and reflective societies (DG RTD)	
Baseline (FP7-2013) 120	Latest Result No result yet	Milestone (2018) ~100	Target (2020) ~200
Main output in 2014			
Description Launch of calls for proposals and selection of proposals	Indicator Number of grant agreements (2014 Budget)	Target 48	Latest Result 42 signed or in preparation

The target for the main output for 2014 (Number of grant agreements) was close to being achieved. In the case of the result indicator, it is still too early to tell whether the DG is on course to reach the milestone and, eventually, the multiannual target.

Under HORIZON 2020 the ERANET HERA JRP UP (Humanities in the European Research Area – Joint Research Programme – Uses of the Past) was selected and it is planned to start in 2015 with a total budget of EUR 21 million, of which EUR 5 million correspond to the EU contribution.

Four Social Platforms have brought together researchers and stakeholders from civil society to draft, in a participatory manner, research agendas on urgent and complex socio-economic (policy) issues (e.g. cities and social cohesion, families, sustainable lifestyles, innovative social services, etc.). A review of these Platforms concluded that they have proven to be effective. Positive added-value was generated which created a lot of good will and visibility for EU-funded research projects.

To spread excellence and widen participation

DG RTD contributes to spreading excellence and widening participation and R&I performance of the Member States, addressing the differences in the Research, Development and Innovation (RDI) performances of the Member States.

Horizon 2020 funds the following lines of action: the 'Teaming' of research institutions (creating or upgrading centres of excellence), 'Twinning' (significantly strengthening a defined field of research in an emerging institution through links with internationally-leading institutions), the establishment of 'ERA Chairs' (which attract outstanding researchers to research institutions with a high potential for research excellence) and the European Cooperation in Science and Technology (COST) association.

DG RTD is also responsible for the Policy Support Facility (PSF) which is foreseen to improve the design, implementation and evaluation of R&I policies and, specifically, to offer expert advice to

public authorities. The PSF would provide leading expertise and guidance to help Member States implement reforms to their research and innovation strategies, programmes and institutional arrangements, following the priority axes for reforms outlined in the Communication on R&I as sources of renewed growth¹⁵.

General Objective 2: To increase investment in research and innovation			
Horizon 2020 Specific Objective: Spreading excellence and widening participation		☒ Spending Programme ☐ Non-Spending	
Result indicator:		Evolution of the publications in high impact journals in the given research field ⁸⁸	
Baseline New approach	Latest Result No result yet	Milestone (2018) To be defined on the basis of the Horizon 2020 interim evaluation in 2017	Target (2020) To be defined on the basis of the Horizon 2020 interim evaluation in 2017

Main output in 2014			
Description Launch of two-stage call for proposals and selection of projects for the activity 'Teaming of research institutions'	Indicator Number of "Teaming" proposals selected at Stage 1 (for which the submission of a business plan is required)	Target Around 30 proposals to be selected for funding for the production of a business plan of creating a Centre of Excellence ⁸⁹	Latest Result Evaluation finished. 31 proposals to be selected for funding with grants starting in summer 2015.

The target for the main output for 2014 has been achieved. Another important output was the number of proposals selected for funding following the 'ERA Chairs' Call: 13 proposals were selected for grants starting in summer 2015. In the case of the result indicator, as milestone and multiannual target are still to be defined, it is still too early to tell whether these will be achieved.

In the case of the 'Regions of Knowledge', the equivalent activity in the 'Capacities' Specific Programme of FP7, by November 2014 projects had generated 16 publications.

In addition to the main Widening calls of 'Teaming' and 'ERA Chairs' that have been successfully evaluated in 2014 and are to be transferred to REA from next year, substantial policy work related to Cohesion Policy has been performed.

DG RTD has examined the 28 Partnership Agreements and almost 500 ESIF Operational Programmes in inter-service consultation from March 2014 to the end of the year, including the 169 Operational Programmes with a direct EU contribution to Thematic Objective 1 (R&I). The focus was check to which extent R&I received adequate consideration, both in qualitative and quantitative terms.

The key challenge in developing synergies between Horizon 2020 and cohesion policy is to ensure that the drive for excellence (a hallmark of Horizon 2020) is combined with the capacity-

⁸⁸ For this specific objective no performance indicator has been defined in Annex II of the Horizon 2020 Specific Programme. This indicator, which has been developed by the Commission services, is relevant to institutions participating only in Twinning and ERA-Chairs schemes.

⁸⁹ The target indicated in MP 2014 referred to Teaming Stage 2 which is expected to start in 2016. The corrected target is being included here.

building elements of the ESIF. DG RTD has seen that references to Horizon 2020 are made in cohesion policy, emphasising complementarities and synergies with research P2Ps and PPPs, the Marie Skłodowska-Curie co-fund, 'Widening' activities and ESFRI Research Infrastructures.

DG RTD has successfully negotiated with COST association the new Framework Partnership Agreement (FPA) and the first COST Specific Grant Agreement under Horizon 2020. COST, is the oldest intergovernmental research cooperation framework in Europe, has now deployed particular actions benefiting 'Widening' countries' researchers.

DG RTD has continued to oversee the Urban Europe JPI, supporting its initial operations and the 'Seismic' project (funded under 'Science with and for Society') that provides support to the JPI Urban Europe Forum.

Science with and for society

DG RTD contributes to building efficient cooperation between science and society and to pairing scientific excellence with social awareness and responsibility. It encourages citizens to engage in science and promotes science-based activities, works towards increasing the relevance and social acceptability of science and innovation issues and advances responsible R&I.

It also works on making scientific and technological careers attractive to young students, improves interactions between scientists, the general media and the public and develops the ex-ante assessment of potential environmental, health and safety impacts of R&I activities.

General Objective 2: To increase investment in research and innovation			
Horizon 2020 Specific Objective: Science with and for society		☒ Spending Programme ☐ Non-Spending	
Output indicator:		Share of research organisations funded implementing actions to promote Responsible Research and Innovation	
Baseline	Latest Result	Milestone (2018)	Target (2020)
New approach	No result	50%	75%

For this specific objective no performance indicator has been defined in Annex II of the Horizon 2020 Specific Programme. The indicator, which had been developed by the Commission services, has been rephrased for MP 2015.

In the case of the 'Science in Society' activity of the 'Capacities' Specific Programme of FP7, by November 2014 projects had generated 188 publications.

'One of us' was a European Citizens' Initiative⁹⁰ which, in the words of the organisers, sought "juridical protection of the dignity, the right to life and of the integrity of every human being from conception in the areas of EU competence in which such protection is of particular importance".

As it was only the second initiative to reach the eligibility thresholds since the introduction of the mechanism (and the first for DG RTD), this was a new experience for Commission services which had to react quickly in producing a coordinated reply, meet the organisers behind the

⁹⁰ A European Citizens' Initiative is citizens' right based on Art. 11 TEU to invite to the Commission to submit a legislative proposal on a special subject. The principles and procedure surrounding the Initiative are set out in Regulation (EU) No 211/2011 of the European Parliament and of the Council of 16 February 2011 on the citizens' initiative (OJ L 65, 11.3.2011, p. 1) which requires at least one million statements of support in, at least, seven Member States for an Initiative to proceed.

petition, participate in a hearing at the European Parliament, adopt a Communication⁹¹ and provide information and replies to persons and organisations seeking information. DG RTD led the inter-service group working on the Commission's response in view of the initiative's aim to amend the ethical principles set out in the Regulation establishing the Horizon 2020 Framework Programme. The Communication concluded that the framework of Horizon 2020 is adequate.

The conference '*Science, Innovation and Society: achieving Responsible Research and Innovation*' was held during the Italian Presidency of the EU in November 2014. The 'Rome declaration' was adopted during this conference, promoting institutional changes in research-funding and -performing organisations⁹². Ministers held a debate on the role of science with and on behalf of society at the Competitiveness Council in December 2014.

Other events included the organisation of the 26th EU Contest for Young Scientists (EUCYS) which was held in Warsaw in September 2014. The European dimension of R&I was also promoted at big science events targeted to the general public while support was provided to the organisation of the Euroscience Open Forum, Europe's largest, general science bi-annual meeting, held in Copenhagen in June 2014.

The Science Education Expert Group (SEEG)⁹³ issued the report, '*Science education for responsible citizenship*', identifying the main issues involved in helping citizens acquire the necessary knowledge of and about science to participate actively and responsibly in society throughout their lives. It sets out the challenges faced and how science education can help Europe equip citizens, enterprise and industry with the skills and competences needed to meet these challenges. It also provides guidance on increasing the participation of enterprise and industry in science education policy and activities.

'Science 2.0' is the on-going evolution in way of doing research and organising science, changing the entire research cycle from the inception to publication. It is made possible thanks to digital technologies, the globalisation of the scientific community and the need to address contemporary societal challenges. A public consultation was held seeking to assess the degree of awareness amongst stakeholders and the perception of opportunities and challenges and to identify possible policy implications and actions.

Cross-cutting issue – SMEs' participation

Apart from the activities financed under the Horizon 2020 Specific Objective Innovation in SMEs, SME participation in Horizon 2020 is supported and promoted as a cross-cutting issue. Specific approaches include the Equity Facility and the SME window of the Debt Facility, PPPs with an adequate representation of SMEs and the Fast Track to Innovation pilot scheme which aims to reduce the time from idea-to-market and to increase the participation in Horizon 2020 of industry, SMEs and first-time industry applicants.

⁹¹ *Communication from the Commission – On the European Citizens' Initiative 'One of us'* (COM(2014) 355, 28.5.2014).

⁹² http://ec.europa.eu/research/swafs/pdf/rome_declaration_RRI_final_21_November.pdf

⁹³ SEEG supports reflection and preparation of new science education policy initiatives and options within the context of Horizon 2020, Responsible Research and Innovation (RRI) and ERA.

General Objective 2: To increase investment in research and innovation				
Horizon 2020 cross-cutting issue: 'SMEs' participation'			☒ Spending Programme ☐ Non-Spending	
Output indicator: Share of Horizon 2020-DG RTD funds ⁹⁴ allocated to SMEs; of which share of funds allocated through the SME instrument				
	Baseline	Latest Result (2014)	Milestone (2016)	Target (2020)
SME instrument	New approach	6.0%	5.0%	7.0%
SMEs total	17.2% (June 2013)	18.3%	20.0%	20.0%

The result for the 'SME instrument' sub-indicator is already beyond the milestone foreseen for 2016. This promises well and steady progress should see the 2020 target achieved. The result for the first year for the 'SMEs total' sub-indicator is close to the milestone and target and, with a small improvement over the years, should make this target achievable.

Cross-cutting issue – To support innovation and attract private participation

General Objective 2: To increase investment in research and innovation				
Horizon 2020 cross-cutting issues: "Bridging from discovery to market application" and "Private sector participation"			☒ Spending Programme ☐ Non-Spending	
Output indicator: Share of Horizon 2020-DG RTD funds going to private for profit entities ⁹⁵				
Baseline (FP7-2013) 29.2%	Latest Result (2014) 36.3% ⁹⁶	Milestone (2016) 33.0%	Target (2020) 33.0%	
Result indicator: Number of joint public-private publications in Enabling and Industrial Technologies and in the Societal Challenges (Horizon 2020 - DG RTD)				
Enabling and Industrial technologies	Baseline New approach	Latest Result No result yet	Milestone (2016) To be defined on the basis of first results	Target (2020) To be defined on the basis of first results
Societal Challenges	New approach	No result yet	To be defined on the basis of first results	To be defined on the basis of first results
Total	New approach	No result yet	To be defined on the basis of first results	To be defined on the basis of first results
Result indicator: Patent applications in the Societal Challenges and in the enabling and industrial technologies (Horizon 2020-DG RTD) ⁹⁵				
	Baseline (2013)	Latest Result	Milestone (2018)	Target (2020)
Enabling and Industrial technologies	141	No result yet	~50	~220
Societal Challenges	282	No result yet	~130	~390
Total	423	No result yet	~180	~610

⁹⁴ Total combined budgets for all Horizon 2020-DG RTD specific objectives on societal challenges and the components of the specific objective 'Leadership in enabling and industrial technologies'.

⁹⁵ Baseline, milestone and target figures were corrected in MP 2015 which are the figures reported here.

⁹⁶ Total combined budgets for all Horizon 2020-DG RTD specific objectives in Industrial Leadership (excluding 'Access to Risk Finance') and Societal Challenges.

Result indicator: Number of prototypes and testing activities in the Societal Challenges and in the enabling and industrial technologies (Horizon 2020-DG RTD)				
	Baseline	Latest Result	Milestone (2016)	Target (2020)
Enabling and Industrial technologies	New approach	No result yet	To be defined on the basis of first results	To be defined on the basis of first results
Societal Challenges	New approach	No result yet	To be defined on the basis of first results	To be defined on the basis of first results
Total	New approach	No result yet	To be defined on the basis of first results	To be defined on the basis of first results

For the output indicator, the latest result already exceeds the 2016 milestone and the target for 2020.

As results are not yet available, it is still too early to tell whether the DG is on course to reach the milestones and, eventually, the multiannual targets for the result indicators.

Cross-cutting issue – Public-Private Partnerships (PPPs)

DG RTD is responsible for four Joint Undertakings which leverage private investment for R&I to address major bottlenecks in their respective Horizon 2020 Societal Challenges for a total EU contribution of up to EUR 5 033 million. These are:

- the Bio-Based Industries Joint Undertaking (BBI) which contributed to the "Food" and Enabling and industrial technologies "Biotechnology" (total EU contribution up to EUR 975 million)
- IMI2 which contributed to the 'Health' societal challenge (total EU contribution up to EUR 1 638 million)
- FCH2 which contributed to the 'Energy' and 'Transport' societal challenges (total EU contribution up to EUR 665 million)
- the Clean Sky 2 Joint Undertaking which contributed to the 'Transport' societal challenge (total EU contribution up to EUR 1 755 million)

In addition, DG RTD is responsible for four contractual PPPs financed by Horizon 2020 (i.e. partnerships based on a contractual arrangement between the Commission and the private sector): Factories of the Future, Energy-efficient Buildings, European Green Vehicles and Sustainable Process Industry initiatives (SPIRE).

DG RTD also contributes to the Shift2Rail Joint Undertaking⁹⁷ which is the responsibility of DG for Mobility and Transport (DG MOVE).

⁹⁷ Total EU contribution up to EUR 450 million.

General Objective 2: To increase investment in research and innovation			
Horizon 2020 cross-cutting issue: "Funding for Public-Private Partnerships"		☒ Spending Programme ☐ Non-Spending	
Result indicator:		PPPs leverage: total amount of funds leveraged through Article 187 initiatives managed by DG RTD divided by the EU contribution	
Baseline 1.00 (EUR 2.27 billion for EUR 2.27 billion of EU contribution from FP7)	Latest Result No result yet	Milestone (2016) 0.84	Target (2020) 1.39 (EUR 7 013 billion for EUR 5 033 billion of EU contribution from Horizon 2020)

As results are not yet available, it is still too early to tell whether the DG is on course to reach the milestone and, eventually, the multiannual target for this indicator.

Cross-cutting issue – To engage with international partners on the basis of mutual interest

The EU engages with international partners in R&I cooperation on the basis of mutual interest. This supports the EU's excellence, attractiveness and competitiveness, tackles global societal challenges and supports the EU's external policies.

This engagement takes place through Horizon 2020 Association Agreements, bilateral Science and Technology Agreements, Association Agreements signed with non-EU countries and policy dialogues with other countries and regions.

General Objective 2: To increase investment in research and innovation			
Horizon 2020 cross-cutting issue: "International Cooperation"		☒ Spending Programme ☐ Non-Spending	
Output indicator:		Share of third-country participants in Horizon 2020-DG RTD	
Baseline (2013) 5.7%	Latest Result (2014) 4.1%	Milestone (2018) 7.0%	Target (2020) 10.0%

Although the result for 2014 was lower than the baseline (last year of FP7), it is still too early to tell whether the DG is on course to reach the milestone and, eventually, the multiannual target for this indicator.

The Commission adopted a report on international cooperation strategy in R&I with an annex presenting multi-annual roadmaps for cooperation with nine countries and two regions⁹⁸. The report concluded that good progress has been made, while more needs to be done in all dimensions of the strategy. It proposed better integration of international cooperation in the Horizon 2020 Strategic Programming, development of common principles and framework conditions and removing obstacles to cooperation. The strategy's impact should be monitored through quantitative indicators and the communication strategy on international cooperation will continue to be refined and implemented. The Commission will continue to focus on science diplomacy and strive to enhance synergies with external policies.

As planned, Horizon 2020 Association Agreements with Albania, Bosnia and Herzegovina, the Former Yugoslav Republic of Macedonia, Montenegro, Serbia, Turkey, Iceland, Norway, Israel,

⁹⁸ Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Report on the implementation of the strategy for international cooperation in research and innovation (COM(2014) 567, 11.9.2014).

Moldova, the Faroe Islands and Switzerland have been signed. Switzerland has been associated to some parts of Horizon 2020, EURATOM and ITER until 31 December 2016 with retroactive effect as of 15 September 2014, following the political agreement reached with the EU. Negotiation of the association of Ukraine to Horizon 2020 was completed in November 2014 while Georgia and Armenia have asked for association and a preliminary assessment was completed. Renewals of Science and Technology Agreements with India, USA and Ukraine were completed.

A number of indicators to measure progress towards the objectives of the international cooperation strategy have been defined and a process for data generation and reporting has been agreed. Meanwhile, 33 project proposals have been evaluated and contracts of 4 projects on cooperation with China, Africa and in the Black Sea and the Middle East have been finalised. Other evaluations conducted in 2014 concerned cooperation with Morocco, Mexico and Australia.

The '*Horizon 2020 - Open to the World*' campaign has focussed on the aims to make European R&I excellence and Horizon 2020 better known worldwide through a wide range of promotional material. Synergies with external policy instruments were developed, focussed mainly on R&I capacity-building in neighbourhood and developing countries. Synergies with Member States' activities have been pursued through the Strategic Forum for International S&T Cooperation (SFIC).

Cross-cutting issue – Sustainable development and climate change

Climate change and sustainable development are being promoted all across Horizon 2020 as cross-cutting issues and information on expenditure related to these issues will be monitored along the programme. Biodiversity-related expenditure is monitored in the programmable parts of Horizon 2020.

General Objective 2: To increase investment in research and innovation				
Specific Objective 5: To ensure an effective and efficient implementation of Horizon 2020 (Horizon 2020 cross-cutting issue: 'Sustainable development and climate change, including information on climate change related expenditure') ⁹⁹			☒ Spending Programme ☐ Non-Spending	
Output indicator:		Climate-related expenditure		
	Baseline	Latest Result (2014)	Milestone (2017)	Target (2020)
Horizon 2020	New approach	34%	>35%	>35%
Horizon 2020-DG RTD		23.6%		
Output indicator:		Sustainable development-related expenditure		
	Baseline	Latest Result (2014)	Milestone (2017)	Target (2020)
Horizon 2020	New approach	51%	60%	60%
Horizon 2020-DG RTD		44.8%		

⁹⁹ The latest results quoted take into account proposals which had been evaluated and selected by end-February 2015. They do not include bottom-up calls.

While considerable improvement needs to be made in the results for these output indicators, it is still too early to tell whether the DG is on course to reach the milestones and, eventually, the multiannual targets by 2020.

Cross-cutting issue – Social sciences and humanities

Research in social sciences and humanities is being promoted across Horizon 2020 and, in particular, the Specific Objective Leadership in Enabling and Industrial Technologies and in the Societal Challenges.

General Objective 2: To increase investment in research and innovation			
Horizon 2020 cross-cutting issue: "Social sciences and humanities"			☒ Spending Programme ☐ Non-Spending
Output indicator:		Share of Horizon 2020-DG RTD Work Programme topics with a social sciences and humanities component	
Baseline New approach	Latest Result 39%	Milestone (2017) 30%	Target (2020) 33%

This indicator has been replaced in MP 2015, therefore this is the last year that it reported.

Euratom Research and Training Programme – Fission

DG RTD uses a range of instruments, such as grants and programme co-fund actions, to pursue nuclear research and training activities with an emphasis on continuous improvement of nuclear safety, security and radiation protection, notably to potentially contribute to the long-term decarbonisation of the energy system in a safe, efficient and secure way.

This objective shall be implemented through R&I activities on the safe operation of nuclear systems, development of solutions for the management of ultimate nuclear waste, development and sustainability of nuclear competences at EU level and radiation protection.

General Objective 2: To increase investment in research and innovation			
Horizon 2020 Euratom four Specific Objectives: Fission			☒ Spending Programme ☐ Non-Spending
Result indicator:		Number of projects (joint research and/or coordinated actions) likely to lead to a demonstrable improvement in nuclear safety practices in Europe	
Baseline (2007-2013) 41	Latest Result No result yet	Milestone (2015) 7	Target (2018) 14 ¹⁰⁰
Result indicator:		Number of projects contributing to the development of safe long-term solutions for the management of ultimate nuclear waste	
Baseline (2007-2013) 15	Latest Result No result yet	Milestone (2015) 5	Target (2018) 8 ¹⁰⁰
Result indicator:		Training through research - number of PhD students and Post-Doc researchers supported through the Euratom fission projects	
Baseline (2007-2013) 200	Latest Result No result yet	Milestone (2015) 500	Target (2018) 1 000
Output indicator:		Number of projects likely to have a demonstrable impact on regulatory practice regarding radiation protection and on development of medical	

¹⁰⁰ The target figure is lower than the baseline due to the larger average size of the projects expected in the Euratom Framework Programme (2014-2018).

applications of radiation			
Baseline (2007-2013) 33	Latest Result No result yet	Milestone (2015) 15	Target (2018) 25
Result indicator: Patent applications on the basis of research activities supported by the Euratom Programme (average per year)			
Baseline (2007-2013) 2-3	Latest Result No result yet	Milestone (2015) 2-3	Target (2018) 4

As results are not yet available, it is still too early to tell whether the DG is on course to reach the milestones and, eventually, the multiannual targets for these indicators. In the case of the 'Nuclear Fission and Radiation Protection' activity of the 'Euratom' Specific Programme, by November 2014 projects had generated 14 patent applications.

Negotiations with Switzerland on association to the Euratom Research and Training Programme (2014-2018) lead to agreement in September 2014 while Ukraine made an application to be associated to both fusion and fission research under the Euratom Research and Training Programme 2014-2018.

The Euratom Work Programme 2014-15 was amended in order to finance a new topic on safety research for licencing of nuclear fuel. This topic focuses on safety aspects of loading Western nuclear fuel assemblies to Russian pressurized reactors (VVER) in EU Member States. This was an urgent action taken to address the top priority decided by the European Council in March 2014 to reduce EU energy dependency. The topic will address the diversification of fuel supply for VVER nuclear power plants in Bulgaria, the Czech Republic, Slovakia, Hungary and Finland and assess how R&I could contribute to solve this major issue of energy dependence.

With a support from the Commission, the Multidisciplinary European Low Dose Initiative (MELODI), a European Platform dedicated to low dose radiation risk research, has initiated close cooperation with other European associations in radiation protection research. These include the European Radioecology Alliance, the European Radiation Dosimetry Group (EURADOS), the European Platform on preparedness for nuclear and radiological emergency response and recovery (NERIS) and medical associations in radiology and nuclear medicine. A Joint Radiation Protection Research Roadmap Committee was established with the aim to coordinate respective strategic research agendas and priority roadmaps.

Euratom Research and Training Programme – Fusion

The Euratom Programme supports research in magnetic confinement fusion and related knowledge management and technology transfer from research to industry. Fusion research funded by the Euratom Programme is guided by the comprehensive goal-oriented roadmap¹⁰¹ agreed by the national fusion labs towards the end of 2012.

Although fusion research activities, currently being carried out, will be largely focused on ensuring the success of ITER, the Euratom contribution to ITER construction is no longer funded through the Euratom research programme itself. In the long term, the Euratom Programme seeks to support the development of a competitive nuclear fusion industrial sector. It involves the private sector (and, where appropriate, SMEs) in particular through the implementation of the above-mentioned roadmap to a fusion power plant with active industrial involvement in the

¹⁰¹ *Fusion electricity: A roadmap to the realisation of fusion energy*, <http://www.euro-fusion.org/wpcms/wp-content/uploads/2013/01/JG12.356-web.pdf>

design and development projects.

DG RTD uses a range of instruments, and in particular a programme co-fund action, to fund research and innovation activities undertaken by members of the consortium of European fusion laboratories, with the objectives to ensure the swift start of the high-performance operation of ITER, including the use of relevant facilities (e.g. JET, the Joint European Torus) and to lay the foundations for future fusion power plants by developing materials, technologies and conceptual design.

General Objective 2: To increase investment in research and innovation			
Horizon 2020 Euratom Specific Objective: Fusion		☒ Spending Programme ☐ Non-Spending	
Result indicator:		Number of publications in peer-reviewed high impact journals	
Baseline (2010) 800	Latest Result No result yet	Milestone (2016) 800	Target (2018) 800
Result indicator:		Percentage of the Fusion Roadmap's milestones (2014-2018) reached by the Euratom Programme	
Baseline New approach	Latest Result No result yet	Milestone (2016) 25%	Target (2018) 90%
Result indicator:		Number of spin-offs ¹⁰² from the Fusion research under Euratom Programme	
Baseline (2007-2013) 4	Latest Result No result yet	Milestone (2016) 5	Target (2018) 10
Result indicator:		Patent applications on the basis of research activities supported by the Euratom Programme (average per year)	
Baseline (2007-2013) 2-3	Latest Result No result yet	Milestone (2015) 2-3	Target (2018) 4
Result indicator:		Number of researchers who have access to research infrastructures through Euratom support	
Baseline (2008) ~800	Latest Result No result yet	Milestone (2015) 800	Target (2018) 1 200
Output indicator:		Number of fellows and trainees in the Euratom Fusion Programme (average per year)	
Baseline (2007-2013) 27	Latest Result No result yet	Milestone (2015) 50	Target (2018) 50

As results are not yet available, it is still too early to tell whether the DG is on course to reach the milestones and, eventually, the multiannual targets for these indicators.

In the case of the 'Fusion Energy' activity of the 'Euratom' Specific Programme, by November 2014 projects had generated 136 publications.

This was the first year of the implementation of the European Joint Programme in Fusion Research by the EUROfusion consortium, following formal approval by all Member States in the Council Regulation establishing the Euratom Programme¹⁰³.

¹⁰² Defined as technology transfers from the Programme.

¹⁰³ Council Regulation (Euratom) No 1314/2013 of 16 December 2013 on the Research and Training Programme of the European Atomic Energy Community (2014-2018) complementing the Horizon 2020 Framework Programme for Research and Innovation (OJ L 347, 20.12.2013, p. 948).

Negotiations on the association of Switzerland to the Euratom Research and Training Programme 2014-2018 led to an agreement in September 2014 while Ukraine made an application to be associated to both fusion and fission research under the Euratom Research and Training Programme 2014-2018.

As from 1 January 2014, the joint activities in fusion moved a step forward with all Euratom support in fusion co-funding a comprehensive Joint Programme in line with a single agreed roadmap ('*Fusion Electricity – A roadmap to the realisation of fusion energy*'), implemented by the EUROfusion consortium. The two main objectives of the roadmap and joint programme are support for the success of ITER (the only 'critical path' in the roadmap) and electricity from a 'DEMO' device by mid-century.

All national labs are now aligned to the Joint Programme and all activities are in line with the mission of the fusion roadmap as agreed by national labs at the end of 2012. The Joint Programme covers research activities such as the use of infrastructure, education and training, mobility, governance and international cooperation.

Fusion for Energy Joint Undertaking (F4E) remains an important partner in the implementation of the fusion roadmap and a high level agreement between EUROfusion, F4E and the Commission is being finalised to clarify responsibilities in the case of longer-term R&I.

ITER

Closely related to the Euratom fusion programme, ITER is an experimental fusion reactor, currently under construction in France. It represents a major step towards the demonstration of fusion as a sustainable energy source, conducted under the terms of an international agreement.

Procurement of high-tech components is an essential element of the project, with a large impact on industrial competitiveness and job creation. ITER presents a unique opportunity for European high-tech industry and construction companies to gain a competitive advantage in the design of the first generation of fusion power plants, in addition to the spin-off effects these state-of-the-art technologies will have on other industrial sectors.

ITER is conducted under the terms of the international ITER Agreement, signed by the European Commission (on behalf of Euratom) and six other parties: China, India, Japan, Korea, Russia and the USA. The European Commission represents Euratom in the various ITER fora and, through DG RTD, oversees the implementation of the Euratom contribution to ITER by the European Joint Undertaking for ITER and the Development of Fusion Energy (F4E).

General Objective 2: To increase investment in research and innovation	
ITER Specific Objective: Construction, operation and exploitation of the ITER facilities, as well as ITER-related activities	☒ Spending Programme ☐ Non-Spending
Result indicator: ¹⁰⁴	Percentage of Euratom's obligations discharged by the ITER Organization (IO)

¹⁰⁴ The indicator was rephrased in DG RTD MP 2015 as progress in the Euratom contribution to ITER construction is measured according to credits granted by ITER Organisation to F4E according to the ITER International Agreement. Data provided according to current Baseline. However, the schedule is under revision and a proposal will be submitted to the ITER Council in 2015. The rephrased indicator is reproduced here.

through the Joint Undertaking F4E			
Baseline (2012) 6%	Latest Result (2014) 13%	Milestone (2016) 26%	Target (2020) 100%

As this is the first year of application under the current Euratom programme, it is too early to tell whether the DG is on course to reach the milestone and, eventually, the multiannual target for this result indicator.

A proposal for amendment of the Council decision establishing the European Joint Undertaking for ITER (F4E)¹⁰⁵ was tabled to grant Croatia voting rights in the F4E Governing Board. It also seeks to improve the management and governance of F4E in line with the recommendations of the 2010 Commission Staff Working Document¹⁰⁶.

Switzerland and Euratom signed an Association Agreement allowing Switzerland to participate in the activities of Euratom concerning ITER for the period of 2014-2020. This agreement ensures also the participation of Switzerland in F4E as a full member.

The ITER Parties, in particular Euratom, have focussed their work on the implementation of the 2013 Management assessment of the ITER Organization. This assessment put forward several recommendations, notably on the succession of the Director-General of the organisation. The assessment also recommended the revision of the ITER schedule to take into account delays which occurred. Work is now on-going to develop a long-term realistic schedule for the ITER construction that should be presented to the ITER Council in June 2015.

Research Fund on Coal and Steel (RFCS)

The Research Fund on Coal and Steel (RFCS) supports research and innovation projects in the coal and steel sectors. These projects cover production processes, application, utilisation and conversion of resources, safety at work, environmental protection and reducing carbon dioxide emissions from coal use and steel production.

The RFCS runs open calls with a "bottom-up" approach, in line with the Council Decision which established the programme¹⁰⁷. There is a good balance between industry, research institutions and universities. The indicator developed for this programme (share of the RFCS funds going to private for profit entities) has reached its target.

General Objective 2: To increase investment in research and innovation			
Specific Objective 5: RFCS Specific Objective: To enhance the safety, efficiency and competitive edge of the EU coal and steel industries		☒ Spending Programme ☐ Non-Spending	
Result indicator: Share of the RFCS funds going to private for profit entities			
Baseline (2013) 38.9%	Latest Result (2014) 39.5%	Milestone (2016) 40%	Target (2020) 40%

¹⁰⁵ Proposal for a Council Decision amending Decision 2007/198/Euratom establishing the European Joint Undertaking for ITER and the Development of Fusion Energy and conferring advantages upon it (COM(2014) 459, 14.7.2014).

¹⁰⁶ Towards a robust management and governance of the ITER project (SEC(2010)1386).

¹⁰⁷ 2008/376/EC: 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 (OJ L 130, 20.5.2008, p. 7).

As this is the first year of application, it is too early to tell whether the DG is on course to reach the milestone and, eventually, the multiannual target for this result indicator.

The proposal for amendment of Council Decision on the Research Programme of the RFCS and on the multiannual technical guidelines for this programme, initially planned to be completed in May 2014, had to be postponed.

The main activity in 2014 was the successful evaluation of 185 proposals, applying revised rules to converge with Horizon 2020.

1.2 Specific efforts to improve 'economy' and 'efficiency' of spending and non-spending activities.

According to the Financial Regulation (Art. 30), the principle of economy requires that the resources used by the institution in the pursuit of its activities shall be made available in due time, in appropriate quantity and quality and the best price. The principle of efficiency concerns the best relationship between resources employed and results achieved. The respect of these principles is continuously pursued through the implementation of internal procedures and predefined practices.

DG RTD is continuously fine-tuning its internal arrangements in order to improve the efficiency and economy of its operations. The following two initiatives show how these principles are implemented in our DG.

1.2.1 Creation of Common Support Centre (CSC)

The implementation of FP7 through different DGs and other bodies had led, in some cases, to divergent practices across different parts of the programme. This was noted by the European Court of Auditors which, supported by the European Parliament and the Council, called for the consistent and uniform treatment of all beneficiaries and the coherent implementation of the FP. The risks of inconsistency would increase with the implementation of Horizon 2020 because there would be an even wider range of implementing bodies.

One of the Commission's responses to this challenge was to propose a single set of simplified rules for participation and dissemination to be applied by all implementing bodies. Another measure was the creation of the Common Support Centre (CSC) to help coordinate and deliver the programme in an efficient and harmonised manner across seven Commission DGs, four Executive Agencies and six Joint Undertakings.

See also below in the section "Coordination within the Research Family"

1.2.2 Centralisation of some Public procurement services and of FP7 audit implementation (including management of extrapolations)

The centralisation of some public procurement services will ensure that sufficient expertise is brought to the public procurement process, leading to reduced errors. It will also allow for some savings in staff as specialist staff will undertake some functions, rather than spreading them around the DG. Centralisation of FP7 audit implementation and extrapolation (on closed contracts) will lead to a harmonised and better organised approach which is especially useful when audits or extrapolations concern projects in different areas.

The centralisation should lead to staff savings but also to more efficient implementation for the Commission and beneficiaries.

2. MANAGEMENT OF RESOURCES

Assurance is an objective examination of evidence for the purpose of providing an assessment of the effectiveness of risk management, control and governance processes. This examination is carried out by management, who monitors the functioning of the internal control systems on a continuous basis, and by internal and external auditors. Its results are explicitly documented and reported to the Director-General. The reports produced are:

- The reports submitted by the Directors, which include the outcome of the internal control monitoring taking place in each Directorate;
- The reports from Authorising Officers in other Directorates-General managing budget appropriations in cross-delegation;
- The reports on control results from entrusted entities in direct management as well as the results of the Commission supervisory controls on the activities of these bodies;
- The contribution of the Internal Control Coordinator (ICC), including the results of internal control monitoring at Directorate-General level;
- The annual report on the ex-post audit function;
- The opinion of and observations from the Internal Audit Capability (IAC);
- The observations and recommendations reported by the Internal Audit Service (IAS);
- The observations and recommendations reported by the European Court of Auditors (ECA).

This section reports the control results and other relevant elements that support managements' assurance on the achievement of the internal control objectives¹⁰⁸. It is structured in three separate sections: (1) the DG's assessment of its own activities for the management of its resources; (2) the assessment of the activities carried out by other entities to which the DG has entrusted budget implementation tasks; and (3) the assessment of the results of internal and external audits, including the implementation of audit recommendations.

DG RTD's roles in the management of the Research framework programmes

In order to understand the control framework that is presented in this annual report, it is important to capture the roles and responsibilities that DG RTD had in the implementation of the Seventh and the Horizon 2020 Framework programmes in 2014.

New management modes for the programme implementation

The responsibility to implement the Research Framework Programmes is shared amongst different Directorate-Generals. In order to focus on policy issues, these Directorate-Generals have delegated parts of the contract management regarding research grants to Executive Agencies, Joint Undertakings and so called Article 185 bodies (partnerships with the Member States).

¹⁰⁸ Effectiveness, efficiency and economy of operations; reliability of reporting; safeguarding of assets and information; prevention, detection, correction and follow-up of fraud and irregularities; and adequate management of the risks relating to the legality and regularity of the underlying transactions, taking into account the multiannual character of programmes as well as the nature of the payments (FR Art 32).

This multitude of actors involved in the implementation of the research framework programmes is referred to as the "Research Family", and requires a sophisticated governance model that ensures:

- Coordination and Coherence in the setting up of the research agenda to be supported under the Framework Programmes (in particular strategic programming and work programmes);
- That Directorate-Generals can focus on policy-making by delegating grant management tasks to Executive Agencies and other "external bodies";
- The coherent implementation of the grant management process through all the bodies involved in grant management (Directorate-Generals, Executive Agencies, Joint Undertakings, etc.).

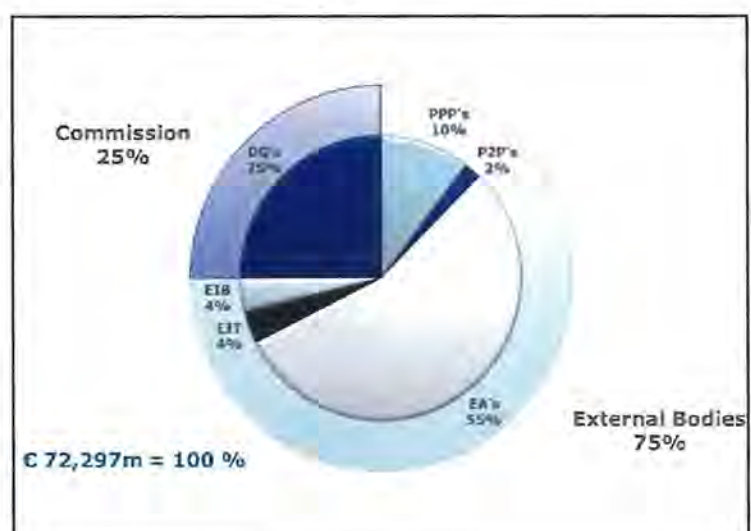
One important element of the Commission's proposal in the context of the MFF 2014-2020 was to simplify and rationalise further the administration of EU institutions, agencies and bodies to make it a modern, effective and dynamic organisation, while reducing staffing by 5% over 5 years. Within this context the Commission has decided to make the best use of reduced human resources by focusing on its core institutional tasks, such as policy making, implementation and monitoring of the application of EU-law, whilst guaranteeing the most effective and efficient implementation of spending programmes for which it remains ultimately responsible. In view of the positive experience of management of EU-programmes by the executive agencies, it has also decided to make more use of the existing executive agencies to implement spending programmes.

These principles have been fully implemented in Horizon 2020 and much greater recourse to management modes other than from direct, in-house management by the DG is made. Apart from some implementation activities that will remain within the DG (e.g. health, key enabling technologies), Horizon 2020 will be implemented in addition to the DG by:

- 4 existing executive agencies ;
- Public-private partnerships (PPPs) with industry;
- Public-public partnerships (P2Ps) with Member States;
- Innovative financial instruments implemented by the European Investment Bank (EIB) and the European Investment Fund (EIF);
- The European Institute for Innovation and Technology (EIT).

As to the extent of the recourse of new management modes, in its 2011 Communication on the 2014-2020 MFF, the Commission announced a target of 66% for the share of the Horizon 2020 budget to be managed externally. Currently, 75% of the Horizon 2020 budget is foreseen to be managed externally.

The figure shows the share of each management mode in the management of the Horizon 2020 operational budget of EUR 72.3 billion (current prices). Some 25%



will be managed internally, i.e. directly by different Commission DGs, while 75% will be managed by implementing bodies, breaking down into 55% to be managed by Executive Agencies, 10% by public-private partnerships, 4% by the EIB, 4% by the EIT, and 2% by public-public partnerships.

The DG will nevertheless continue to manage the legacy of previous Framework Programmes, in particular the 7th (2007-2013) Framework Programme, which is foreseen to be completed in 2020. Currently, more than half of the projects signed under this programme are still ongoing. 65,62% of the payments made in 2014 relate to the commitments taken in the previous years for FP7 projects. All the audits undertaken in 2014 concern FP7 projects.

Coordination within the Research Family

In the light of the diversity of implementing bodies, effective coordination within the Research Family is essential and DG RTD, as the lead DG of the Research Family, invests important resources in the coordination of the Research Family and the programmes' implementation.

The implementation of FP7 through different Directorate-Generals and other actors was characterised by the use of divergent practices across different parts of the programme. Observing this, the European Court of Auditors, supported by the European Parliament and the Council, called for the consistent and uniform treatment of all beneficiaries and the coherent implementation of the FP. This is even more important as, in the implementation of Horizon 2020, the number of actors increases.

In response to these challenges, the Commission first and foremost developed a single set of simplified rules for participation and dissemination to be applied throughout Horizon 2020 by all implementing bodies.

It also created a Common Support Centre (CSC), which will help to coordinate and deliver the programme in an efficient and harmonised manner across seven Commission Directorates-General, four Executive Agencies, and six Joint Undertakings.

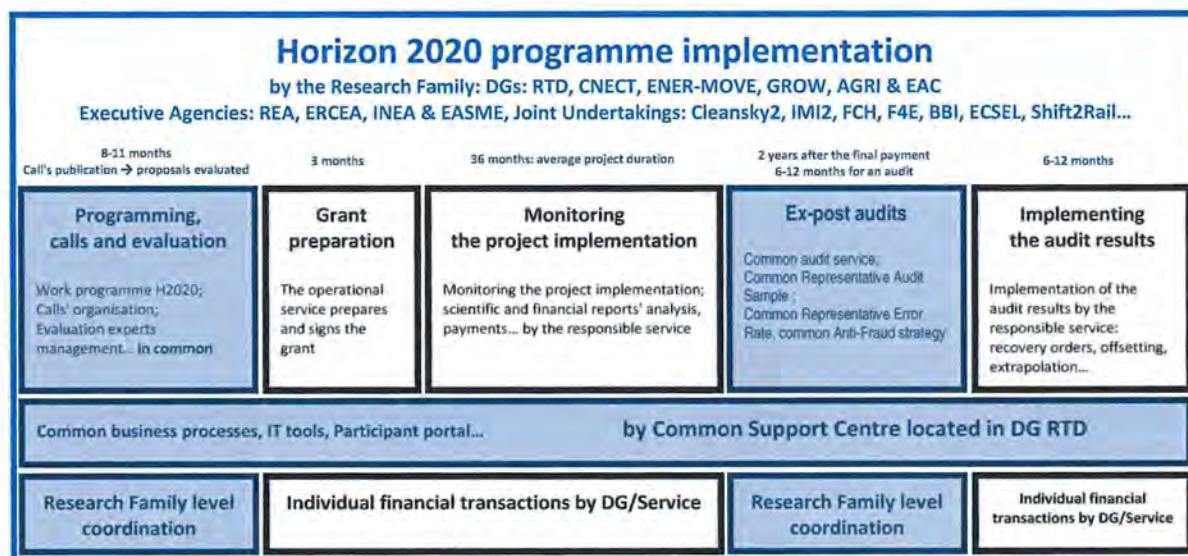
The CSC was set up in the Commission on 4 December 2013 and aims to ensure that all beneficiaries experience the FP in the same manner, that the single set of Horizon 2020 rules for participation and dissemination is applied uniformly across all components of the FP, and that these rules are interpreted consistently for all instruments and implementing bodies. The CSC will introduce streamlined, harmonised and rationalised business processes and improved documentation linked to the programme and project implementation. It will provide a single set of common IT tools to be used by all implementing services and all participants. A common interpretation of the single set of rules and a common control strategy to ensure the respect these rules will ensure the uniform treatment of the beneficiaries and a coherent approach for the implementation of Horizon 2020 by all entities. The results and data generated by projects managed by different actors need to be disseminated and exploited in a centralised manner to enable policy development, ensure political and administrative accountability, promote knowledge sharing and realise the exploitation potential of EU-funded research. In order to reach these objectives, the CSC provides as of 1 January 2014 common services in legal support, ex-post audit, IT systems and operations, business processes, programme information and data to all research DGs, executive agencies and Joint Undertakings implementing Horizon 2020.

The CSC is part of RTD, as one of its directorates. For administrative and day-to-day operational matters, the CSC is accountable to the Director-General of RTD. It is overseen by a Steering Board made up of all Directors-General with authorising officer responsibility for Horizon 2020.

The following figure synthetises the current organisation of the H2020 framework programme's implementation. It differentiate the stages of the grant management system that are organised and managed mostly *at family level* (programming, calls, audits – with blue shadow), and the others, involving the concrete financial transactions, that are implemented *under the responsibility of each Authorising officer* (DG's and other services, taken individually – with grey shadow).

DG RTD has some responsibility in the management of the whole H2020, even for those parts that are not in its proper budget appropriations and which are not included in the assurance given at the end of this report.

Figure 1 Horizon 2020 organisational set up



The nature of RTD's expenditure, and assurance over it

As shown in the Table 1, in 2014 DG RTD managed expenditure "directly" under different framework programmes. DG RTD provides assurance on this expenditure – around EUR 2 billion in terms of payments in 2014. It also managed expenditure "indirectly" through a variety of delegated bodies that implement this budget on its behalf – around EUR 1.6 billion in terms of payments in 2014. These bodies provide assurance to DG RTD which, through its supervisory systems, provides assurance in turn.

A table of the assurance for the main types of expenditure is set out in the next page.

Table 1 Types of expenditure for DG RTD in 2014¹⁰⁹

Type of expenditure	Amount paid in 2014 (in EUR million)	Direct or indirect expenditure	Assurance given by	Notes
Administrative expenditure of RTD	31	Direct	DG RTD	
Administrative expenditure by implementing bodies (mainly executive agencies)	97	Indirect	DG RTD and the implementing body	Executive Agencies report on the use of this money in their own AARs
Horizon 2020 prefinancing for projects run by RTD	163	Direct	DG RTD	
Horizon H2020 other operational payments	6	Direct	DG RTD	
FP7 payments for projects signed by RTD	1 506	Direct	DG RTD	
Previous Framework programmes operational payments	4	Direct	DG RTD	
Coal and Steel operational payments	49	Direct	DG RTD	
Experts related operational payments	5	Direct	DG RTD	
EURATOM expenditure	204	Direct	DG RTD	
INNOVFIN financial instrument, implemented by the European Investment Bank	652	Indirect	DG RTD and EIB	
Expenditure by other implementing bodies, mainly Joint Undertakings	823	Indirect	RTD and the Joint Undertakings	The Joint Undertakings produce their own AARs, they are audited by the European Court of Auditors and receive their own discharge from the discharge authority.
Total direct expenditure	1 967		DG RTD	
Total indirect expenditure	1 571			
Total	3 538			

For all this expenditure listed above, DG RTD provides assurances in this report.

In addition, the Executive Agencies implement operational expenditure for the Framework Programmes on behalf of DG RTD¹¹⁰, and provide their own assurance on this expenditure - around EUR 2.5 billion in 2014. This expenditure is important to achieve the policy objectives of DG RTD, and the method of supervision of these Agencies is set out below. However, DG RTD does not provide assurance on this expenditure, this is given by the Agencies themselves.

Consequences for this annual report

The reader of the following chapters has to keep in mind that the **scope of controls and**

¹⁰⁹ The difference in Table 2 in Annex 3 results from the salaries, the payments made for correction and the payments that could not be linked to a framework programme because they do not mention a local position; none of these are included in Table 1. The table does not include payment made through PMO.

¹¹⁰ The Executive Director of the EA is the AOD, who has to provide assurance on the operational expenditure in the EA's AAR, given that the EA receives its operational budget delegation directly from the Commission. Nevertheless, as far as the administrative/operating budget is concerned, the Parent DG remains responsible as it is a subsidy contribution from the Parent DG to the EA. This part only (the administrative budget) is within the scope of the assurance of the AOD of RTD.

performance reported here vary depending on the different stages of the grant management system.

- The first (programming, calls and evaluation of the proposals) and fourth stages (ex-post audits) are organised mainly at research family level, the second (contracting) and the third (project implementation) are performed at an individual DG/service level.
- The first and second stages are related to the H2020 control system and organisational set up (new projects), the third and the fourth represent the work done for the implementation of the open FP7 contracts.

The indicators comparing the costs and the benefits (total amounts committed, paid or audited) of the different stages of the process must therefore be interpreted with caution:

- the internal costs of DG RTD reported here are not necessarily comparable to the amount of financial transactions authorised by DG RTD, as for some stages DG RTD takes a role for the whole research family;
- the fact that some stages are related to H2020 and others to FP7 decrease the relevance of the general cost/efficiency calculations and are not comparable to last year's result, when only one management system (FP7) was in use;

RSSF (FP7)
Financial instruments
EUR 1.23 billion EC contribution
(total amount 2007-2013)
for EUR 12.36 billion lent
by EIB/EIF to innovative companies

Horizon 2020, together with the previous framework programmes, is still mainly implemented by granting subsidies (direct grant management by the different implementing EU bodies). However there is increasing use of other financing mechanisms, especially Financial instruments (RSSF for FP7, INNOVFIN for Horizon 2020). For these financial instruments the link between the payments (high transfers at the beginning of the programme to the

managing bodies), and the benefits (detected gradually) does not follow the same pattern as for grants.

However, as the preponderant part of DG RTD's implemented budget (commitments and payments) are still related to direct grant management in 2014, in this report grants is the main management system used for the demonstration of the internal control system effectiveness and efficiency.

INNOVFIN (H2020)
Financial instruments
EUR 651 million
transferred in 2014 to EIB/EIF

2.1 Management of human and financial resources by DG RTD.

This section reports and assesses the elements identified by management that support the assurance on the achievement of the internal control objectives. Annex 5 outlines the main risks together with the control processes aimed to mitigate them and the indicators used to measure the performance of the control systems.

Control effectiveness as regards legality and regularity

DG RTD has set up internal control processes aimed to ensure the adequate management of the risks relating to the legality and regularity of the underlying transactions, taking into account the multiannual character of programmes as well as the nature of the payments concerned, and balanced with the achievement of the research policy objectives. The general control objective

for the 7th Framework Programme (FP7) has always been to ensure that the residual error rate does not exceed a cumulative level of 2% by the end of the programme implementation. However, DG RTD has in recent years underlined the negative effects that an over-emphasis on this target and on excessive controls can have, in terms of the attractiveness of the policy and international competitiveness. The key aim is to achieve a good balance between legality and regularity and the achievement of policy objectives, and between trust and control, rather than a concentration on one legality and regularity indicator.

2.1.1 Human resources

The principle of efficiency concerns the best relationship between resources employed and results achieved. The principle of economy requires that the resources used by the institution in the pursuit of its activities shall be made available in due time, in appropriate quantity and quality and at the best price.

The effects of an increased recourse to new management modes, linked to the offsetting of the staff in DG RTD, as well as the Commission's commitment to reducing staff numbers, have a considerable impact on the human resources available in the DG. From a staff complement of around 2 000 in 2010, and around 1 800 in 2014, staff numbers will be progressively reduced, to around 1 650 in 2015 and 1 100 in 2020.

This reduction is the net result of a number of factors:

- the consequence of the offsetting due to the delegation to the Executive Agencies
- the creation of a Common Support Service in DG RTD for Horizon 2020 activities across the entire Research Family of DG's;
- the reduction due to the commitment of the Commission to reduce staff;
- the need to ensure coordination across the different implementing bodies and to ensure their supervision.
- an increase in work to support research policy

The transfer of Programme Management tasks for Horizon 2020 has gradually taken place during the course of the year and according to the timelines established. This transition of Programme Management tasks was particularly challenging on Staff in directorates whose activities were delegated as they had to concurrently ensure the implementation of the first calls of Horizon 2020, the handover to the Executive Agencies and related offsetting of staff, and the management of their FP7 portfolio of projects, which is now at its peak.

In continuing its efforts to improve its Human Resource management and in order to tackle the challenge of having to constantly reduce its staff and still achieve its mission and objectives in the years to come, the DG continued its Human Resources Planning Process (HRPP). The process aims to link human resources to the DG priorities more effectively and efficiently, by screening the DG's activities, and by using workload and performance indicators. The Director General will, based on the outcomes of the Human Resources Planning Process, decide on policy initiatives, staff re-allocation and staff reduction targets per entity (directorate / unit). The results of the Process will also feed the DG's downstream Annual Management Plan and the DG's HR Plan as requested by DG HR in recent years.

Figures on staff costs need to be treated with care as 2014 was an atypical year in terms of staff resource utilisation. Nevertheless, for the purpose of this report, the figures are calculated using the results of a survey¹¹¹ conducted in DG RTD in 2014 show that around 28% of the DGs human resources are used on policy and programme design to support the wider DG RTD policy. The outcomes of this policy-related work are non-financial, and are set out in Part 1 of this report. Another 41% of staff worked directly on programme implementation - managing grants to participants in the Framework Programmes. Over time the proportion of staff working on policy-related work can be expected to increase, especially as much of Horizon 2020 will be managed by delegated entities. The shift to a policy DG will therefore accelerate over the next years. The final 30% of staff work in support and coordination functions.

2.1.2 Financial resources

The Research Framework Programmes are mainly implemented through 'direct' and 'indirect' management, through co-financed contracts signed with external parties (research organisations, companies).

As for the budget 2014 to be implemented before the end of the year, DG RTD committed 100% of its C1 commitment appropriations and 100% of the payment appropriations.

To give an indication of the relative weight of different expenditure categories, **Table 2** shows the distribution of payments in 2014.

Table 2 DG RTD payments in 2014 (in EUR million)¹¹²

Programme	Administrative exp.		Operational expenditure					All expenditure		
	RTD (Euration incl.)	Paid to other implementing bodies	Prefinancing	Payments against cost claims/invoices	Experts	Euratom	BEI/FEI	Paid to other implementing bodies	Total	% of the programme
H2020	12,52	90,26	162,69	6,39	1,81	131,60	651,61	84,79	1.141,67	32,27%
VII	18,35	6,72	-	1.505,58	2,28	67,69	-	720,98	2.321,60	65,62%
Previous FP	-	-	-	4,39	-	4,31	-	16,94	25,64	0,72%
FCA	0,07	-	-	48,68	0,44	-	-	-	49,19	1,39%
Total	30,93	96,98	162,69	1.565,05	4,53	203,59	651,61	822,71	3.538,09	100,00%
Direct RTD	30,93		162,69	1.565,05	4,53	203,59			1.966,79	55,59%
Indirect RTD		96,98					651,61	822,71	1.571,30	44,41%

Part 2.1 of this report is focussed on the resources managed directly by DG RTD. Following Table 2, RTD implemented in 2014 directly EUR 1 966.79 million, under different framework programmes, which included EUR 30.93 million administrative expenditure, EUR 162.69 million H2020 grant prefinancing, EUR 1 505.58 million paid against cost claims for FP7 projects and EUR 48.68 million for Coal and Steel research projects.

¹¹¹ Survey of all staff, followed by interviews with managers.

¹¹² The difference in Table 2 in Annex 3 results from the salaries, the payments made for correction and the payments that could not be linked to a framework programme because they do not mention a local position; none of these are included in Table 3.1. The table does not include payment made through PMO.

Financial resources spent in grant management

The following subtitles of the report focus on the parts of this expenditure that relates to the H2020 and FP7 grants, Euratom included. As for **H2020**, for the areas where DG RTD were in charge, EUR 919 million was committed in relation to **133 new projects**¹¹³, and EUR 162.69 million paid in pre-financing. For **FP7**, **2 711 projects** out of the 4 964 concluded during the programme remain to be completed. In 2014, EUR 1 505.58 million was paid for FP7 commitments signed in 2013 or earlier.

FP7 projects still running in 2014, for DG RTD

→ **2 711** grant agreements
for an EC contribution previously
committed of **EUR 11 635** million
EUR 1 505.58 million paid in 2014

In order to achieve both operational (research-related) and financial objectives DG RTD has established a control framework to prevent, detect and deter irregularities at the different stages of the grant management process. This control framework must, however, be cost-effective and not cause excessive administrative burdens to researchers and participants. DG RTD therefore operates a system of targeted controls before payment. It bases its main assurance on in-depth checks carried out at a sample of the beneficiaries' premises after costs have been incurred and declared.

Family picture

In 2014, first year of H2020

1 029 grant agreements
signed with
7 005 participants
for an EC contribution committed of
EUR 2 631 million

For H2020, the Common Support Centre has put in place detailed and comprehensive guidance on the different business processes covering the life cycle of grants. Guidance is available on-line, both for staff in the different services and bodies implementing H2020, and for the external beneficiaries in the format of an "on-line manual" available on the Participants Portal. In addition and also provided by the CSC, the IT system ensures to the possible extent that actions are implemented according to the rules with embedded automatic controls whenever possible.

DG RTD

In 2014, first year of H2020

133 grant agreements signed with
1 053 participants for an EC
contribution committed of
EUR 919 million

of which are the ex-post audit strategy and the recovery process. These elements are intended to provide reasonable assurance on the legality and regularity of expenditure on a multi-annual basis by systematically detecting and correcting errors. Since 2012, as an extension of the ex-post audit strategy, a Common Representative audit Sample (CRaS) was used to identify the common error rate across the whole of FP7 operations. This Common Representative audit Sample has been instrumental in lowering the audit burden on large beneficiaries who, before

¹¹³ Source: e-Corda reporting.

the implementation of this new approach, would have been audited by several Commission services.

Materiality is assessed for the FP7, as well as for the Coal and Steel Research Fund, in accordance with **Annex 4**. In 2014, DG RTD also managed financial operations under the 6th Framework Programme but, given their limited amounts, and the fact that these are the residual payments for programmes that are now closed, these are not covered in this report. No significant payments against grant cost statements have been made for Horizon 2020, only some limited pre-financing so materiality is not relevant at this stage.

The control systems are divided into four distinct stages, each with specific control objectives. Key indicators have been defined for each stage.

Stage one: Programming and evaluation

The first stage concerns the preparation of calls, the calls for proposals, and the evaluation of proposals. The overall control objective of this stage is to evaluate the project proposals in order to ensure scientific excellence (selection of the best projects) and the achievement of the operational objectives set out in the specific work programmes, as adopted by the Council and the Parliament. Proposals are reviewed by panels of external reviewers, who are experts in the scientific field. **In 2014 this stage concerned almost exclusively Horizon 2020 and the presentation includes data for the whole research family, not only RTD.**

A corporate approach for the research family at the programming and evaluation stage

An important change in H2020 concerns the planning and the coordination of the calls in general. While the number of the different implementing services increases, important efforts were undertaken in order to better harmonise and rationalise the different process in the grant management. H2020 calls are user-oriented, organised and published by challenges or themes, and often funded and managed by several implementing bodies.

DG RTD coordinated the establishment of the H2020 work programme for 2014-15 and follows its implementation. For a better efficiency of the whole system

- some sub-processes of this stage are entrusted to REA (validation of the beneficiaries, SME qualification, experts' management etc);
- a corporate technical support is provided by the Participant portal for the publication of all the calls and the dissemination of the related reference documents, and by the common IT tools for the evaluation phase.

Controls and performance

Between December 2013 (launch of Horizon 2020) and 25 February 2015 (cut-off date of a large-scale ECORDA data release), 79 calls were concluded for the whole family.¹¹⁴ A total of 26 321 proposals were received in response to these calls. Of those, 25 903 proposals – requesting in total an EU financial contribution of EUR 41.5 billion – were eligible.

¹¹⁴ DG's, Executive Agencies, Joint Undertakings. All type of calls included.

Key controls include the screening of proposals for eligibility, the choice of independent evaluators, the evaluation by a minimum of three evaluators, and a panel review for the ranking of proposals. The list of approved proposals is checked for legal compliance by the AOSDs before it is submitted for a Commission inter-service consultation.

Picture for DG RTD

Time-to-Inform in 2014

100% on time

These are key checks to ensure the excellence of the science

Family picture for H2020

Time-to-Inform in 2014

93% on time

to be funded and the legality and regularity of operations, since a compliance deficiency in the selection process would affect the regularity of all the ensuing grants.

For the 79 aforementioned concluded calls one proposal was retained for funding for, on average, about seven eligible proposals. This demonstrates the attractiveness of the H2020 programme and the competitiveness of the call process. It also underlines the importance of a good evaluation process, as the most excellent projects need to be chosen from a large number of proposals.

A special effort has been made in Horizon 2020 to ensure a good level of turnover in evaluators, and to select evaluators who have not previously been used. This was to ensure a wide range of talents and experiences in evaluation panels but also to avoid any risk of conflicts of interest. There were also steps to improve gender equality and to ensure a wider use of experts in innovation and social science and humanities (SSH). The results in 2014 were very encouraging. 67% of evaluators had not taken part in evaluations over the last three years, 61% had never take part in evaluations before. 37% of evaluators were women, 27% were experts in innovation, 17% in SSH and 4% in gender issues.

The main efficiency indicator of this stage is the Time-to-Inform. For the grants that were signed in 2014, DG RTD succeeded to respect, in 100% of the cases, the objective of a maximum of 5 months spent between the call's deadline and the moment the applicants are informed of the results of the evaluation.

A redress procedure provides applicants with the possibility of making a complaint if they think that there were shortcomings in the handling of their proposal during the evaluation. A redress committee, working independently, analyses eligible complaints and, where suitable, may recommend the re-evaluation of the proposal. The final decision on follow-up actions is taken by management.

Family Picture

H2020 calls' competitiveness

Around 1 in 7 eligible proposals retained for funding

It has to be underlined that due to the length of the redress procedure¹¹⁵, very limited information is available at the time of the preparation of the AAR. Next years' AAR's will give a more comprehensive

picture of this indicator, as it will be followed on a cumulative basis.

¹¹⁵ Applicants have one month after the reception of the information letter (five months after the call deadline) to submit a request for review, and the redress committee is invited to close its work in maximum four months.

Table 3 Redress statistics for H2020

	Total 2013	Total 2014
Number of proposals received	16 605	4 469
Number of redress requests received	454	61
Number of redress requests received as % of number of proposals received	2.75%	1.36%
Number of redress cases leading to a re-evaluation	16	1
Number of redress cases leading to a re-evaluation as % of number of proposals received	0.10%	0.02%

Costs

For DG RTD, in 2014, the total costs of evaluation are estimated to a total of EUR 30.4 million, out of which EUR 16.99 million relates to internal costs and EUR 13.41 to experts payments. The benefits of this stage are not quantifiable, but are the assurance that the most excellent projects are selected out of the many projects proposed. The oversubscription described above

Family Picture for H2020

Time-to-Grant in 2014 H2020

93% of grants signed on time

205 days on average

35% less than the average in FP7 (313 days)

Picture for DG RTD

Time-to-Grant in 2014 H2020

95% of grants signed on time

220 days on average

38% less than the average in FP7 (354 days)

underlines the importance of this stage of the process, and why the costs are justified.

Stage two: Grant preparation (contracting)

The second stage concerns the preparation and award of contracts. The overall objective of this stage is the translation of each of the retained scientific research proposals into a legally binding contract allowing for the management of both the scientific and financial aspects of the project. In 2014 this stage concerned mainly Horizon 2020.

Controls and performance

FP7

The last 47 grant agreements for FP7 were signed in 2014, for a total contracted EC contribution of EUR 139.9 million.

H2020

In RTD, 133 grant agreements were signed in 2014 for H2020, for a total EC contribution of EUR 919 million. The total budgeted costs of these projects is EUR 1 487 million.

The new Regulations for Horizon 2020 (and the Financial Regulation) give a total of 8 months for the full process of signing a grant (the so-called Time to Grant – TTG), with a maximum of 5 months to inform the participant of the outcome of the evaluation (previous stage). This required a full re-design of the business process and new IT tools in order to make this possible.

It also required a review of the general philosophy supporting this stage of the process. Instructions to evaluators were amended so that they were not asked to judge a project based on how it might possible be improved during a "negotiation" process, but rather how the project was at the time of the evaluation. This allowed for a reduction of the time required for this stage.

Estimated costs of evaluation in 2014

EUR 30.40 million total costs

EUR 16.99 million for internal costs

EUR 13.41 million for the total costs of independent evaluators

→ 3.31% of the total committed amount

The main performance indicator is the Time-to-Grant (TTG). This is important as participants, especially Small-and-Medium-Sized Enterprises, want a quick answer to their proposals. Nevertheless, it needs to be noted that a shorter TTG does bring some risks as it reduces the time available for the Commission to carry out extensive checks before signing grants.

In 2014 the TTG was respected in 95% of cases against the H2020 target of 8 months, with an average TTG of 220 days, and all grants signed within 282 days. For the whole research family over 93% of grants were signed within the deadline, with an average of 205 days.

This is a dramatic improvement compared to FP7 which, overall, had an average TTG of 354 days (although this had dropped to 249 days for 2013 calls). It required a considerable investment in 2014 in the development of new business processes and new IT tools, plus a great commitment from staff.

Costs

For DG RTD the total costs of contracting in 2014 are estimated to EUR 12.82 million, 1.39% of the EUR 919 million committed EC contribution. The benefits of this stage are the assurance that the selected projects and beneficiaries receive their contract in the shortest time in order to start the project implementation. At the same time, all the necessary checks are done in order to prevent legal or operational problems with the beneficiaries.

Stage three: Monitoring the execution of projects

The third stage concerns the management of the project and the contract. **In 2014, payments involving costs claims concerned exclusively FP7 projects.** However, for the calculation of mandatory indicators such as the Time-to-Pay and the "costs/payments" indicator, the other types of payments are also included in the scope of this section.

Controls and performance

This stage covers the normal management of the contract over its lifetime: the monitoring of the project implementation and the payments against the cost claims with all the necessary ex-ante checks. These ex-ante checks include audit certificates on cost statements established by external auditors, and the processing of transactions through Commission financial circuits.

An important indicator is 'Time-To-Pay' (TTP), which is defined as the percentage of payments made within the binding deadlines, as shown in **Table 4a**.

Table 4a Share of payments made on time (%)

Expenditure type	2013	2014	Target FR
Research grants FP7 payments	93%	94%	90 days
Administrative expenditure	95%	95%	30 days
Experts with appointment letters	62% (PMO: 45% ¹¹⁶ , DG RTD 91%)	62% (PMO: 45%, DG RTD 89%)	30 days
Experts without appointment letters (Meetings)	82%	84%	30 days

As demonstrated in table 4a, the improvements to pay the beneficiaries of research grants in the shortest time possible, taken in 2013, are maintained. The share of the payments made on time (i.e. within the deadlines imposed by the new Financial Regulation) was 94% in 2014 against 93% in 2013 and 73% in 2012.

Table 4b Average net and gross Time-to-Pay by type of expenditure in DG RTD in 2014

	Expenditure type	Payments			
		Nr	Average time (calendar days)		
			Net	Suspension	Gross
R T D 2 0 1 4	RTD – H2020 payments =	35	16.0	2.3	18.3
	RTD – H2020 payments PreFin =	89	10.9	0.0	10.9
	RTD – FP7 payments =	2 333	53.3	65.8	119.1
	RTD – Other grants – not FP7 =	1 298	19.3	n.a.	n.a.
	RTD – administrative expenditure payments =	1 522	16.9	1.2	18.1
	RTD – experts AL payments =	1 720	21.2	2.6	23.8
	PMO payments expert meetings =	4 648	24.2	0.0	24.2
	RTD – all payments (excl. PMO) =	6 997	30.5	30.8	61.3
n/a = not applicable n.a. = not available		Gross = Beneficiary's point of view, ie Net + Suspensions			

As shown in **Table 4b** the average total time taken to pay is within the payment time limits imposed by the Financial Regulation and the respective contracts. However, DG RTD is aware that, in some cases, the total ('gross') time to pay is longer, because of the possibility, set out in the Financial Regulation, to suspend the payment deadline if information is missing or incomplete. DG RTD is committed to smoothing the process by further simplification of internal procedures and better IT tools and guidance to beneficiaries.

Every cost claim over EUR 375 000 must be accompanied by a 'certificate on the financial statement' (CFS), given by a qualified auditor or a Certified Public Official. DG RTD, as well as the European Court of Auditors, have identified that these certificates do not always identify all ineligible expenditure in the cost claim. To assess the effect of this weakness DG RTD carried out a study that showed that cost claims with a CFS had an average error rate 50% lower than those without one. This shows that, while not perfect, these CFS do have a significant positive effect, especially as the average cost of a CFS is just EUR 2 611. It has therefore been decided to continue with the system in Horizon 2020.

Around 98% of DG RTD expenditure in 2014 was subject to a CFS. As these CFS lead to a rate of error 50% lower than those without a CFS, this has a significant effect in reducing the error rate.

¹¹⁶ DG RTD decided that, with effect from 1 April 2014, these payments will be made by the REA.

The Communication campaign on FP7 financial errors and the new H2020 participation rules continued in 2014. About 750 participants have taken part in 11 events in Member States and associated countries, and two "coordinators' days" took place with 1 337 participants in Brussels. It has to be added to the 3 100 people participating in the communication events in 2013, out of whom around 300 were auditors. Additional guidance, and clearer templates have been, and are being, prepared for Horizon 2020. They are published on the Participant Portal. The simplifications proposed in Horizon 2020 will also make the job of the auditors easier.

In 2014, for DG RTD

Estimated costs of monitoring of projects

EUR 31.36 million total costs

EUR 11 568 per project

1,62% of the operational direct payments or

0,89% of the operational direct payments, expenditure from clearing included

Costs of monitoring the execution of projects

DG RTD estimates that this stage of the process costs around EUR 31.36 million for the normal management of the contract and ex-ante controls over payments. This is 1.62% (EUR 31.36 million/EUR 1 931 million) of the total amount paid in relation to FP7 Grant Agreements and H2020 pre-financing in the year. Including expenditure incurred through the clearing of prefinancing (EUR 3 518 million), this ratio decreases to 0,89%. The number of the FP7 running projects in 2014 was 2 711¹¹⁷.

For the normal management of the contract the benefits are unquantifiable, being mainly linked to the assurance that the project is running adequately and so will produce the research and innovation desired.

For the ex-ante controls it is difficult to provide an accurate estimate of quantifiable benefits at this point. Many cost claims and associated information are corrected by beneficiaries after comments from DG RTD staff without formal registration. This will be helped by the introduction of improved IT tools for Horizon 2020. This system will provide a more formal record of all the interactions between the Commission and the participant. In addition there is no proportional relationship between reductions in costs declared and reductions in the EU contribution, as many projects have additional eligible costs in excess of the budget.

A significant part of the cost relates to normal contract management and the analysis of scientific deliverables, and this management and analysis can be valuable to ensure excellent science, and its appropriate feedback into policy considerations, even if it does not lead to a financial saving. Finally, it should be noted that, even with no control, there would still be a considerable cost for the processing of payments. As stated above, the main aim at this stage is to ensure successful projects and good quality scientific deliverables. No financial benefits can be put on this main aim.

¹¹⁷ From Corda 02/2015.

Stage four: Ex-post controls and recoveries

General remarks

The fourth stage includes the ex-post audits as well as the recovery of any amounts found to have been paid in excess of the amount due. Detailed ex-ante controls represent a considerable administrative burden on beneficiaries and the Commission, as they require the transfer of large amounts of information and its detailed checking. This has a seriously negative impact on the time to grant and the time to pay beneficiaries. For this reason the Research family has decided to obtain most of its assurance from ex-post controls.

For 2014 this stage covers exclusively expenditure under FP7 (with a very small proportion for FP6 and the Coal and Steel Fund). As explained at the beginning of the chapter 2 of this report, the ex-post control stage for the research grant management is, for an important part, centralised in RTD, in a **Common Audit Service (CAS)**. Therefore, the activity and the related costs exposed here have to be read as mostly related to the **whole research family**.

The Common Audit Service for the research family

2014 saw the creation of the Common Support Service, of which a Common Audit Service (CAS) is a key part. In 2014 the CAS undertook all audits for the DGs that fund research grants (DG CNECT, DG ENTR (now DG GROW), DG MOVE and DG ENER)¹¹⁸. For Horizon 2020 the CAS will undertake all audits, including for Executive Agencies and Joint Undertakings. It is a major step forward in ensuring a harmonised approach and also in ensuring that audit burden on beneficiaries is minimised.

The CSC (and the CAS) is hosted by DG RTD, even though they work for a number of different services. This means that more costs of the audit process are borne by DG RTD than by other DGs. For Horizon 2020, it will be possible to compare and assess the costs and benefits for the whole of the research family. For the first year, this has not been attempted.

Costs

The direct costs of the audit process are estimated at EUR 7.53 million or EUR 21 826 per audit.^{119,120} The total number of audits closed in 2014 by the CAS ex-post audit function was 299 audits. This is a stable result compared to the 306 closed audits in 2013.

Table 5 provides an overview of the human and financial resources used in DG RTD for ex-post audits.

¹¹⁸ FP7 audits started in these DGs will be completed by the same DGs. Executive Agencies remain responsible for their FP7 audits. Full details can be found in the AARs of these other services.

¹¹⁹ This figure includes both salaries and allowances as well as all other expenses such as buildings, furniture, IT and office equipment for staff members carrying out the audits.

¹²⁰ Compared to EUR 23 294 in 2013 (page 62 of the DG Research and Innovation's 2013 Annual Activity Report).

Table 5 Resources used in DG RTD directly for ex-post audits

	2013	2014
Internal resources for ex-post audits	33.1 FTE	35.96 FTE
Cost of externalised auditing (in EUR)	3 105 881	3 202 100

Controls and methodology

The main legality and regularity indicator is the error rate detected by ex-post audits. Because of its multi-annual nature, the effectiveness of the control strategy of the Research Directorates-General can only be fully measured and assessed in the final stages of the Framework Programme, once the ex-post control strategy has been fully implemented and systematic errors have been detected and corrected.

FP7 audit coverage (cumulative figures)

1 276 audits closed by DG RTD

1 208 audited FP7 beneficiaries
(by DG RTD)

7.07 % of the RTD beneficiaries in FP7 audited

59.6% of the FP7 budget covered (DG RTD)

(7.4% direct coverage and 52.2% indirect
coverage by extrapolation)

Since 2007, the Research Directorates-General and the Executive Agencies have adopted a common audit strategy intended to ensure the legality and regularity of expenditure on a multi-annual basis, including detection and correction of systematic errors. The audits examine only interim and final claims by beneficiaries. Transactions relating to pre-financing are not included in the population subject to audit. The approach to the Coal and Steel Research Fund is slightly different because of the limited number of transactions involved.

Up to 2011, each of the seven Authorising Officers by Delegation of the Commission services involved in implementing the research budget - the Research family - established a representative error rate for his/her own portion of the budget. This led to considerable planning constraints and multiple audits of the same beneficiaries by different services.

Therefore a Common Representative audit Sample (CRaS) was introduced in 2012 across the Research family. This reduced the audit burden on beneficiaries by avoiding repeat audits whilst continuing to provide a representative view of the implementation of FP7. As a result, the total number of planned audits could be reduced by 1 291 for the Research family as a whole and by 313 for DG RTD specifically.

The Common Representative audit Sample (CRaS) is intended to estimate the overall level of error in FP7, across all services involved in its management. It covers cooperative grants (given to consortia with participants from different Member States) as well as those granted under different schemes – IDEAS (ERCEA), Marie Skłodowska-Curie (REA), infrastructure, etc. These are referred to as "representative" audits. All of these grants follow the same homogeneous control system set out in this report. However, they may have differences in the details of the schemes and eligibility criteria which may, after taking into account all the available evidence, lead to different conclusions on the overall error rate.

The CRaS is complemented by 'risk-based' audits; audits selected according to one or more risk criteria. These audits are intended to detect and correct as many errors as possible and to identify possibly fraudulent operators. These audits are referred to as 'corrective' audits.

Up to mid-2012, there was also a considerable emphasis on 'preventive' audits, i.e. early audits on beneficiaries participating in many projects and which had not been audited before. This initiative was taken with the intention of 'cleaning' the budget, and with a more general aim of bringing the residual rate of error in FP7, after taking recoveries and corrections into account, to below 2%.

Different indicators are calculated to provide a comprehensive view of legality and regularity:

Overall Detected Error Rate: This is the error rate derived from the results of all audits, whether audits on a representative sample of beneficiaries or audits implemented for other reasons (large beneficiaries, preventive audits, risk factors, etc).

Representative Error Rate: This is the error rate derived solely from the results of audits on a representative sample of beneficiaries, extrapolated by a statistical method to the overall population. This error rate provides an estimate of the level of error in FP7 at the time of the audits, but says nothing about the follow-up and corrections/recoveries undertaken by Commission services after the audit, nor of the net final financial impact of errors. This error rate is calculated for FP7 as a whole.

Residual Error Rate: The residual error rate, on a multi-annual basis, is the extrapolated level of error remaining after corrections/recoveries undertaken by Commission services following the audits that have been made. The calculation of the residual error rate, as shown in **Annex 4**, is based on the following assumptions:

- o (1) all errors detected will be corrected;
- o (2) the residual error rate for participations subject to extrapolation is estimated to be equal to the non-systematic error rate; and
- o (3) all participations subject to extrapolation are clean from systematic material errors.

The residual error rate develops over time and depends on the assumptions set out above. DG RTD would like to underline that this indicator is reliable and acceptable for the purposes for which it was intended, i.e. as a legality and regularity indicator on the progress made, through its ex-post strategy, in dealing with errors over a multi-annual basis. However, it remains an estimate given that not all extrapolation cases have been fully implemented yet.

Result of ex-post audits

FP7 Audits

Detailed data on DG RTD FP7 audit coverage are shown in the table below.

Table 6 Indicators for DG RTD on FP7 audit coverage

	Planned cumulative period	Achieved cumulative period	Planned in 2014	Achieved in 2014
Number of closed audits	1 297	1 276	350	299
Total amount audited (EC share in €)	n.a.	832 096 256	n.a.	249 951 918

The audit strategy is multi-annual. Overall the number of audits closed is very close to that planned at this stage of the process and shows that the audit strategy is being implemented as

planned. The difference in 2014 is mainly linked to the start-up of the Common Audit Service and will be made up.

The error rates resulting from DG RTD FP7 audit work are:

- **Overall Detected Error Rate:** Based on 1 276 audits (2 789 audited participations), this error rate amounts to **4.00%**¹²¹.
- **Common Representative Error Rate:** The results of the first representative sample were presented in the AAR for 2013. 159 out of the 162 audits are now complete with an error rate of 4.22%. If the draft audit results for the three outstanding audits are included the error rate is expected to end at **around 5%**.

A second representative sample was selected in 2014. For this second sample, 105 of the 162 audits have been completed. The detected error rate is 1.6%. This figure has to be considered as an intermediate result (by the 31/12/2014). The remaining cases that are undergoing contradictory procedures with the beneficiaries represent 35% of the second sample. Consequently, the Common Representative Error Rate will certainly evolve during 2015. The audits that are closed in the shortest time are those where limited or no financial correction is at stake. At this point in time, it is still expected that the representative error rate will increase therefore, to a similar range as the first sample.

- **Residual Error Rate:** This error rate for the first representative sample is 2.97%. With the results of the second representative sample included the error rate falls to 2.09%. As with the representative rate, this can be expected to rise. Last year the residual error rate was estimated **at around 3%** - this remains a reasonable estimate.

Based on the audits completed and in progress under the first and the second CRaS, it is considered that the current Common Representative Error Rate resulting from audits of FP7 will be around 5%. The residual error rate for DG Research and Innovation is estimated at a maximum of 3%. More precise figures will be available at the end of 2015, **for this year the figure of 3% is taken as an estimate of the residual error.**

DG Research and Innovation will continue its actions to prevent some causes of errors in FP7 expenditure, however it seems clear that the maximum 2% residual error target for FP7 will not be attained without a massive increase in the number of audits, or a considerable increase in the administrative burden imposed on participants through widespread ex-ante controls.

Therefore, although the Residual Error Rate remains above the target of 2%, account should be taken of the cost of achieving this target. As was stated in the Financial Statement accompanying the Horizon 2020 legislation, attempts in the past to achieve the 2% target caused a number of unexpected and/or undesirable side-effects. Among beneficiaries and the legislative authorities, the feeling became strong that the control burden has become excessive. This increases the risk of lowering the attractiveness of the Union's Research programme, thereby negatively affecting Union research and innovation.

¹²¹ This is lower than the representative rate as it includes a number of preventive audits carried out at the beginning of FP7.

The European Council of 4 February 2011 concluded that:

"it is crucial that EU instruments aimed at fostering R&D&I be simplified in order to facilitate their take-up by the best scientists and the most innovative companies, in particular by agreeing between the relevant institutions a new balance between trust and control and between risk taking and risk avoidance". (see EUCO 2/1/11 REV1, Brussels 8 March 2011)

The European Parliament - in its Resolution of 11 November 2010 on simplifying the implementation of the Research Framework Programmes - explicitly supported a higher risk of errors for research funding and:

"expresses its concern that the current system and the practice of FP7 management are excessively control-oriented, thus leading to waste of resources, lower participation and less attractive research landscapes; notes with concern that the current management system of 'zero risk tolerance' seems to avoid, rather than to manage, risks".

The European Parliament also stated, in its report on the Court of Auditors' special report in the context of the 2012 Commission discharge:

"Emphasises the necessity to strike the right balance between less administrative burden and effective financial control; notes that due to the specifics of the research field, a risk-tolerant and science-based approach should be encouraged so as to achieve research excellence and better impact of projects; believes that this approach will allow the Commission to uphold the balance between trust and control".

There seems to be, therefore, an acceptance among stakeholders and institutions that an approach solely focussed on the achievement of a 2% target for legality and regularity may not be appropriate. There are other objectives and interests, especially the success of the Union's research policy, international competitiveness, and scientific excellence, which should also be considered. At the same time, there is a clear need to manage the budget in an efficient and effective manner, and to prevent fraud and waste.

Taking these elements in balance, and in the light of the results of the FP7 audit campaign, DG RTD considers that its overall control strategy ensures that trust, control and other policy objectives are kept in balance. Aiming to achieve a residual error rate of 2% at all costs is not a viable approach.

For this reason, Article 23 of the Horizon 2020 Regulation explicitly states that:

"The control system shall ensure an appropriate balance between trust and control, taking into account administrative and other costs of controls at all levels, so that the objectives of Horizon 2020 can be achieved and the most excellent researchers and the most innovative enterprises can be attracted to it".

It also states that audits of expenditure on indirect actions shall be carried out in a coherent manner *"to minimize the audit burden for participants"*.

The reserve in the declaration of assurance for the FP7 expenditure is addressed in Section 4.2.

Development of error rates

The services responsible for Research will continue to provide guidance to beneficiaries and certifying auditors, and will continue their control and audit operations, including recovery and extrapolation of errors to non-audited contracts wherever appropriate. This should have some effect on the error rate, particularly in lowering the residual error rate, but will not provide fundamental changes. A second 'representative sample' was taken to provide another estimate of the representative error rate. It is hoped that the learning effect from the first audits will have some effect, but this is unlikely to be substantial.

Overall then, the representative error rate in FP7 audits can be expected to remain around 5%, and the residual error rate at 3% or a bit lower over the course of the programme. As was noted in the 2012 AAR:

"Taking into account the FP6 experience, and the need to balance legality and regularity with other objectives such as the attractiveness and the success of research policy, international competitiveness, scientific excellence, the wish to encourage participation of SMEs and the cost of controls, it is not expected that by the end of the programming period the Residual Error Rate will be below the materiality threshold".

In the Financial Statement accompanying the proposal for Horizon 2020, the Commission set out its analysis of the likely future trend of error rates. It stated that the simplifications introduced in Horizon 2020 could be expected to lower the representative error rate from 5% to 3.5%, with the Residual Error Rate being as close as possible to 2% (but without necessarily being below 2%). This analysis still holds true, as the simplifications proposed were generally accepted.

However, some elements have been introduced in the legislation that will increase the risks in the programme. Firstly, there is the target for an increased participation of Small and Medium-Sized Enterprises (SMEs). As was noted in the 2012 AAR, SMEs have an error rate more than twice the rate for non-SMEs (6.61% as opposed to 3.07%). This is not entirely surprising, but the involvement of SMEs is vital to increasing innovation and boosting jobs in the EU. However, it does mean that an increased participation of SMEs increases risk.

Secondly, Horizon 2020 includes a commitment to involving new participants in the Programme. However, as shown in 2012, new participants have an error rate nearly three times as high as recurrent participants (8.32% as opposed to 2.94%). New participants, though a positive element for the European research landscape, increase risk.

Furthermore, during the discussions on the legislative package for Horizon 2020, provision was made for support to participants with large research infrastructures. This provision should support some of the major European research organisations, who might otherwise have had difficulty funding their advanced research infrastructure, but does insert an additional complication into the rules, and with it an increased risk. The wider possibility to include additional remuneration as an eligible cost brings an increased level of risk of error.

The Commission will take actions to try to mitigate the risk arising from these four new elements (guidance, training, ex-ante assessments for large infrastructures, additional remuneration) but these will only mitigate, not avoid, the risks.

Overall, DG RTD still believes that residual error rates should still fall slightly over the course of FP7. They should also be reduced under Horizon 2020 as a result of the simplifications

introduced in the legislation. However, it underlines that the level of reduction in Horizon 2020 is subject to the effect of elements introduced during the legislation which, although perfectly understandable in terms of improving support for European research and innovation, may have the effect of increasing risks. Substantive spending on Horizon 2020 (not pre-financing) will begin very slowly in 2015, pick up in 2016 and reach a significant level of 2017, at which point the level of error can begin to be assessed.

Implementation of FP7 audit results

It should be noted that there will always be a timelag between the start of the project, the payments, audits performed and recoveries made. Research projects are multi-annual and involve payments at different stages. Substantive payments (not prefinancing) only start around 2 years after the beginning of the project. Audits cannot start until substantive spending is made. When an overpayment is identified it may sometimes be recovered immediately through a recovery order, but it is more common that it is recovered by offsetting against another future payment, especially when projects are still ongoing. As payments are usually made at 18-24 month intervals, there will often be a considerable time lag between the identification of a recovery and the effective recovery. Given the pattern of payments, and the type of beneficiaries, this does not generally present a particular risk to the EU financial interests. However, it is one of the major reasons why there are many outstanding recoveries.

By the end of 2014, and in a cumulative way from the beginning of the programme, adjustments were proposed for 1 111 audited DG RTD participations. By the end of 2014 the amount to be recovered was EUR 26.3 million, of which more than EUR 20 million (78.6%) has been effectively recovered (this includes liquidated damages).

Table 7 Implementation of FP6 and FP7 audit results in DG RTD (cumulatively)

Cumulatively	Results from external audits		Adjustments pending implementation		Adjustments temporarily suspended		Adjustments implemented	
	Number of participations R=S+T	Funding adjustments set by AOSDs A=B+C	Number (S)	Value (B)	Number (S)	Value (B)	Number (T)	Value (C)
FP6	1 903	59 520 286 €	83	7 780 237 €	18	893 859 €	1 802	50 846 190 €
FP7	1 111	26 335 814 €	186	4 655 075 €	16	982 766 €	909	20 697 973 €

For 2014 alone, EUR 6.1 million was recovered for FP7 (including liquidated damages). In addition, EUR 1.3 million was recovered relating to the implementation of FP6 audit results. There are currently 269 FP6 and FP7 cases pending implementation for a total value of EUR 12.43 million.¹²²

Implementation of extrapolation

The extrapolation process allows correcting systemic errors of a beneficiary detected by an audit in all his ongoing participations. When the audit results mention systemic errors, all the contracts of the beneficiary are analysed, and for those where these systemic errors affect the expenditure, adjustments are made. It has to be noted that this process often takes place after

¹²² Data from ASUR application.

the audit is closed, which means 3-4 years after the final payment of the grant.

Regarding FP6, the implementation rate for extrapolation by the end of December 2014 was at 92.8% (84.1% in 2013) for DG RTD.

As regards the FP7 programme, in 2014 extrapolations were implemented for 244 DG RTD participations. The implementation rates for extrapolation by the end of December 2014 were considerably improved at 74.9% for FP7 (53.2% in 2013). Because most cases were identified in 2013 or 2014, and as it might take 18 months before new declarations are received, it is not unexpected to have a large number of open cases at this stage.

Table 8 Implementation of FP6 and FP7 extrapolation in DG RTD (cumulatively)

Cumulatively	Number of Contracts analysed for extrapolation A={B}+{C}+{D}+{E}	Implemented cases (B + C + D)					Number of cases to be implemented (E)
		Without systemic errors	With systemic errors				
			In favour of the COMMISSION		In favour of the BENEFICIARY		
			Number (B)	Number (S)	Amount €	Number (S)	
FP6	7 408	3 443	3 201	33 039 771 €	216	1 780 687 €	548
FP7	2 282	1 166	458	696 332 €	62	2 772 169 €	596

As for 2014 only, EUR 4.75 million was recovered from FP7 extrapolation and EUR 8.53 million from FP6 extrapolation.

Taking Tables 7 and 8 together shows that, to date, EUR 105m has been recovered following audits of FP6 and FP7.

Liquidated damages

Liquidated damages continue to be applied systematically where ineligible expenditure has been included in cost claims. In many cases, they do not result in a recovery order due to the application of the *de minimis* rule¹²³. By the end of 2014, out of the 765 cases processed¹²⁴, 269 were assessed as requiring recovery orders or liquidated damages. Pre-information letters were sent to beneficiaries in 65 of these cases and recovery orders were already been issued for 241 cases for a total value of EUR 1 939 245. The amount implemented by liquidated damages is a part of the total amount recovered through implementation of audit results and extrapolation cases.

Total costs and benefits of the audit and recovery process in 2014

Estimation of the annual costs of the ex-post audit

direct costs (internal and external) EUR 7 530 100

average cost per audit completed in 2014 EUR 21 826

¹²³ Liquidated damages will only be applied where the unjustified contribution exceeds 2% of the total contribution claimed for the given period.

¹²⁴ These figures also include the Coal and Steel Research Fund.

The costs for DG RTD have increased in 2014 because of the creation of the CAS, this has been balanced against reductions in the costs in other DGs. However, the other DGs remain responsible for the recoveries of their audits up to 2013. A direct comparison of the costs and benefits for RTD for 2014 would therefore not be reliable. However, the 2013 analysis showed, for RTD alone, that the audit and recovery process is cost-effective and this will not have changed significantly in 2014. Nevertheless, the number of audits must also be balanced against the policy considerations set out above, in particularly assuring a good balance of trust and control, and minimising the burden for participants.

As non-quantifiable benefits, audits have a deterrent effect within the programme, as many beneficiaries will take extra care preparing their cost claims knowing that audits may follow. The auditors can also avoid future errors by giving guidance to participants. At the beginning of FP7, this was a specific aim of some audits.

In addition, the experience of auditors on the ground has been important in many improvements proposed in the legislation and rules for Horizon 2020. For example, one of the drivers for a flat rate for indirect costs was the regular identification by auditors of errors in the use of real indirect costs, and the understanding of the complexities of real indirect costs for participants.

Total ex-post recoveries in 2014

from all sources of recoveries
EUR 20.68 million

FP6 and FP7 ex-post audits
EUR 7.4 million

FP6 and FP7 extrapolation
EUR 13.28 million

Coal and Steel Research Fund

Expenditure (final payments) on the Coal and Steel Research Fund in 2014 amounted to around EUR 9.3 million, less than 1% of total DG RTD expenditure.

The total number of projects financed under the Coal and Steel Research Fund is limited (588, out of which 263 running projects). It is, therefore, not cost-efficient to audit a representative sample selected on a statistical basis. For that reason, each year, a number of the largest beneficiaries are selected for audit. 27 audits have been completed since 2008, and a total amount of EUR 23.16 million of EC financial contribution from 79 participations has been audited.

The detected error rate for the audits completed so far is 2.18%. This error rate is not statistically representative but, given the relatively high rate of audit coverage for the Coal and Steel Research Fund, it is considered to be a reasonable estimate of the total amount of error in the population.

Recoveries and corrections that have followed will lead to a lower residual error. The residual rate of error and the net financial impact of errors will clearly be lower than the 2% materiality limit.

Overall, DG RTD considers that expenditure under the Coal and Steel Research Fund is not marked by a material level of error.

Overall cost efficiency of the controls

Overall costs of controls

Table 9 Cost of controls

	FTE		Other (external) inputs	Total costs
	Officials	Contractual staff		
Stage 1 – Programming and evaluation	103.87	46.80	€13 411 230	€30 397 527
Stage 2 – Contracting	78.39	35.32	0	€12 820 129
Stage 3 – Monitoring the execution (financial circuits)	191.77	86.40	0	€31 362 193
TOTAL EX-ANTE	374.03	168.52	€13 411 230	€74 579 849
Stage 4 – Ex-post controls and recoveries	46.93	21.14	€3 202 100	€7 674 126
TOTAL EX-POST	46.93	21.14	€3 202 100	€7 674 126
TOTAL COSTS	420.96	189.66	€16 613 330	€82 253 975

Benefits of controls

The benefits of the grant management control system are considered here as a whole, as they cannot only be expressed in monetary terms. The benefits are quantitative and qualitative and a simple cost-benefit evaluation would not reflect this reality.

The first objective of the control system is to achieve the main policy objective – to create growth and jobs, especially by contributing to more and better science in Europe. In this sense, the controls aim to ensure good work programmes, select the best proposals to be funded and verify the scientific deliverables. Thus, the benefits are much wider than the budget implemented in the given year.

The second objective of the control system is to ensure that the EC contribution paid to the beneficiaries is materially free of irregularities or errors. The challenge of this objective, and DG RTD's success in achieving it, has been extensively developed above.

As mentioned in the introduction of this chapter, 2014 was a special year because of the overlapping of two framework programmes. The organisational set up for FP7 and H2020 is very different, therefore this year's indicators for some stages demonstrate H2020 performance while others FP7's. In addition the gradual transfer of the activities during the year biases some figures, and the audit function is related to the whole Research Family, not only DG RTD.

For all these reasons, the overall indicator above includes elements from the two framework programmes and costs for DG RTD plus for the whole Research Family, against the only expenditure made by DG RTD. The interpretation of the overall result must therefore be done with caution. The figures are not comparable with the previous exercise.

Overall, given:

- the achievements of research policy as set out in Part 1;
- the quantitative and qualitative benefits arising from the control systems adopted;

- the error rates set out above, which are at a level considered as being an appropriate balance between different policy objectives and between trust and control;

Overall cost efficiency indicator	
Total cost of controls and financial management FTEs/ total value of operational payments made in 2014	
EUR 82 253 975/ EUR 1 931 329 749 =	4.26%
Total cost of controls and financial management FTE's/total value of operational payments and clearings made in 2014	
EUR 82 253 975/ EUR 3 510 959 525=	2.34%

- the costs of the control system compared to the level of expenditure.

It is considered that a cost-effective control system has been put in place, balanced with the objectives of research and innovation policy.

Fraud prevention and detection

As required by the Commission's overall anti-fraud strategy¹²⁵, DG RTD has developed its anti-fraud strategy and updated it in 2012. The related Action plan, largely completed by the end of 2013, focussed on three domains: assessing and analysing the fraud risk; raising the awareness of fraud risks; improving the capacities and the cooperation to counter it.

Anti-fraud measures and actions are embedded in various ex-ante and ex-post controls for prevention and detection purposes. There is an organised follow-up of fraud cases and fraud suspicions including coordination with OLAF. In this respect, during 2014 10 cases were referred to OLAF for examination and possible investigation (10 cases in 2013). In addition, in 2013 OLAF has initiated 6 cases which concern the activities of DG RTD based other sources of information (11 cases in 2013).

Once again, the integration of all the services implementing research policy is an important point to highlight. These services agreed in February 2015 the second Anti-Fraud Strategy for the Research Family, including a **common action plan**. It will continue to improve fraud risk awareness through communication activities and training for operational staff, by linking databases and information with other Research DGs and Services for intelligence analysis, and through risk-based audit preparation and selection.

One of the actions was to elaborate a common course material for the Anti-fraud awareness raising training, based on common experience and cases. This was already done for September 2014.

By December 2014, a total of 454 (377 in 2013) staff from all operational functions had attended the DG Research and Innovation fraud awareness training. The course has now been extended to staff of the Executive Agencies and Joint Undertakings. A specific session for managers took place in April 2014.

¹²⁵ COM(2011) 376 24.06.2011.

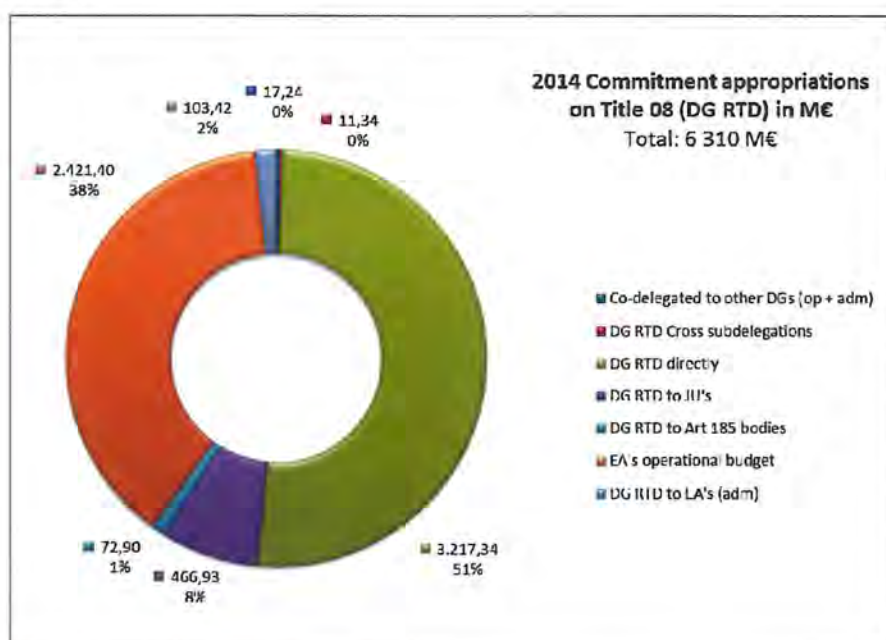
2.2 Budget implementation tasks entrusted to other DGs and entities.

This section reports and assesses the elements that support the assurance on the achievement of the internal control objectives as regards the results of the DG's supervisory controls on the budget implementation tasks carried out by other Commission DGs and entrusted entities distinct from the Commission.

As mentioned in 'The DG in Brief', DG RTD has entrusted parts of its budget for implementation (commitment appropriations) to other Commission services, Executive Agencies¹²⁶, Joint Undertakings, other bodies linked to Article 185 initiatives, and to the EIB.

The amount implemented by these entities is expected to rise to around 75% in the coming years of implementation of Horizon 2020.

Figure 2 – Distribution of expenditure by DG RTD and its Executive Agencies (in million euros and as %)



2.2.1 Cross-sub-delegations

As in previous years, DG RTD has cross-sub-delegated a number of activities to different services within the Commission, in order to arrange the provision of certain operations more efficiently.

¹²⁶ The EAs receive delegation directly from the Commission, the Executive Director of an EA is the AOD, who has to provide assurance on the operational expenditure of the EA in his/her AAR. Nevertheless, as far as the administrative/operating budget is concerned, the Parent DG remains responsible as it is a subsidy contribution from the Parent DG to the EA. Hence, those administrative expenditures are part of the expenditure on which the AOD of the parent DG must provide assurance in his/her DG AAR.

In 2014, EUR 11.34 million commitment appropriation was cross-delegated and EUR 4 million co-delegated on operational credits, and EUR 13.24 million for administrative expenditure. Being a Commission service itself, the AOD of the cross-delegated service is required to implement the appropriations subject to the same rules, responsibilities and accountability arrangements.

The cross-delegation agreements require the AODs of cross-delegated services to report on the use of these appropriations. The reports on the sub-delegations received from other DGs and offices did not provide any indication of any particular unfavourable observation with regard to the regularity and legality of the transactions concerned.

As the Table 11 shows, EUR 174.686 million of payment appropriation was implemented for DG RTD under cross/co-subdelegation. Out of this amount, EUR 13.215 million was paid for FP7 projects. Therefore, this specific part of the cross-sub-delegations is included in the FP7 reservation.

Table 10 2014 commitment appropriations cross/sub/co-delegated by DG RTD

Official Budget Item	FMC	CA
08 02 03 03	RTD/ENER	7 285 745.00
08 02 03 04	RTD/CNECT	1 000 000.00
08 02 03 06	RTD/ENTR	3 051 075.06
08 02 05	COMM	4 000 000.00
08 02 05	RTD>OP	5 000 000.00
08 01 05 X2	RTD>DEVCO	1 300 000.00
08 01 05 X3	RTD>DIGIT	4 773 173.00
08 01 05 X3	RTD>DIGIT	64 050.00
08 01 05 X3	RTD>DIGIT	85 090.00
08 01 05 X3	RTD>DEVCO	1 900 000.00
08 01 05 X3	RTD>SCIC	117 552.04
Total		28 576 645.10

Table 11 2014 payment appropriations cross/sub/co-delegated by DG RTD

FMC	Total	Reserve FP7
COMM	-	
RTD/CNECT	-	
RTD/ENER	6 290 289.64	6 290 289.64
RTD/ENTR	77 155.00	77 155.00
RTD/JRC	543 056.95	543 056.95
RTD/MOVE	3 104 730.51	3 104 730.51
RTD/OP	2 842 642.81	-
RTD: HR	160 999.50	-
RTD: OP	209 896.06	-
RTD: PMO	152 281 951.92	-
RTD > DEVCO	3 200 000.00	3 200 000.00
RTD > DIGIT	4 922 313.00	-
RTD > OP	913 878.11	-
RTD > SCIC	138 819.89	-
Grand Total	174 685 733.39	13 215 232.10

2.2.2 Executive Agencies

In 2014, DG RTD was the lead DG for the Executive Agencies REA and ERCEA. These agencies implemented a total of EUR 1 964million commitment appropriations on the budget lines 08 (RTD) ¹²⁷, and received EUR 87.64 million of administrative budget. Their payments on the same line amount at EUR 1 059 million.

On the budget line 08 (RTD), EASME and INEA, for which DG RTD is not lead DG, implemented in 2014 EUR 457 million commitment appropriations and EUR 1.7 million payment appropriations.

In Horizon 2020 some parts of the programme will also be implemented by the European Agency for Small and Medium-sized Enterprises (EASME) and the Innovation and Networks Executive Agency (INEA). RTD is a parent DG of these two agencies, although not the lead DG. The delegation to these two agencies of the different measures was substantially completed in 2014, although some smaller parts of the programme remain to be delegated in 2015.

In DG RTD, it is estimated that 11.48 FTE were employed in supervision and coordination activities related to these bodies. This relates to a total cost of around EUR 1.51 million, or 0.07% of the amount of the total expenditure of the Agencies (sub-delegated by DG RTD or managed directly).

The monitoring arrangements include membership of the Steering Committees and the assessment of the Annual Activity Reports (AARs), which are also communicated to the College. Agencies report quarterly to the Directorate-General on the use of resources. The preparation of the Executive Agencies' budgets and annual work plans is coordinated with the Directorate-General.

The Executive Agencies are subject to audit by the Internal Audit Service of the Commission and by the European Court of Auditors – DG RTD uses their reports as an element of the supervision of these bodies.

Moreover, the management of these Executive Agencies are staff of DG RTD on detachment.

The supervision of the Executive Agencies has continued throughout 2014. The preparation of the Annual Activity Reports of these Agencies was coordinated and reviewed by DG RTD and the Steering Committees of the Agencies. No unexpected issues arose that would need to be raised in this report. The reserves of the REA on a part of its expenditure mirror what is already reflected in this report and are well known to DG RTD.

In terms of the subsidy paid by RTD, EUR 87.64 million of administrative budget, the EA has justified its use and any unused appropriations have been recovered by the parent DGs

2.2.3 Joint Undertakings and Public-Public partnerships

The Joint Undertakings IMI, FCH, and Clean Sky and BBI implemented in 2014 a total of EUR 466.93 million commitment appropriations. In terms of payments, they received a total

¹²⁷ Not a direct part of the DG RTD budget and so not covered directly by the assurance in this report.

amount of EUR 324.97 million. In DG RTD, around 20.96 FTE are allocated to the supervision and coordination of these bodies.

During 2014 there were significant efforts to ensure the establishment of the second generation of these Joint Undertakings, including the creation of the Bio-based Industry Joint Undertaking, so that they can continue to operate under H2020.

Table 12 Budget delegated by DG RTD to JU's in 2014 (commitment appropriations)

Joint undertaking	Type of C1 appropriations	Amount	Total
IMI2	operational appropriations	€ 213 519 000	€ 214 023 700
	administrative appropriations	€ 504 700	
Clean Sky 2	operational appropriations	€ 103 000 000	€ 104 262 093
	administrative appropriations	€ 1 262 093	
FCH	operational appropriations	€ 96 154 620	€ 96 456 067
	administrative appropriations	€ 301 447	
BBI	operational appropriations	€ 51 500 000	€ 52 184 807
	administrative appropriations	€ 684 807	
Total			€ 466 926 667

The monitoring, supervisory and accountability arrangements include the following:

- The Commission is a member of the Governing Board. Arrangements are in place within the DG to ensure that all proposals to the Governing Board are properly assessed and the Commission position agreed;
- Each Joint Undertaking is required to produce an Annual Activity Report;
- The Joint Undertaking's Director signs a declaration of assurance in line with the one used in the Commission;
- The Commission prepares an Annual Progress Report on JTI Joint Undertakings that presents achievements and problems, if any. This report is submitted to Parliament and Council;
- The Joint Undertaking is required to inform the Commission without delay of any significant developments in the areas of risk management, control and audit;
- The Joint Undertakings have harmonised their ex-post audit strategies with the Commission; DG RTD is aware of the results of the ex-post audits carried out;
- DG RTD may request any additional information deemed necessary and has the right to audit the JTI Joint Undertakings' operations;
- The Commission's Internal Audit Service (IAS) may carry out audits in the JTI Joint Undertakings, and DG RTD will receive the reports for action if necessary;
- The European Court of Auditors is the external auditor of the JTI Joint Undertakings, and DG RTD receives copies of the reports for action if necessary;
- There are extensive informal and formal contacts regarding research matters, as well as on questions of internal control, audit (the JTIs are members of the Committee on Audit in Research), internal control, etc.

Many of the beneficiaries of JTIs are also beneficiaries of the Research DGs. The basic rules applied to grants awarded by JTIs are the same as for the Commission's research services. Thus it is not a surprise that audits undertaken by JTIs identify the same types of errors as the Commission services. This does not signal a failure on the part of the JTI. The ex-post audit work

carried out by these bodies continues, harmonised as far as possible with the work of Commission departments.

However, the JTIs do have a smaller pool of projects than RTD. This allows them to "clean" the budget more efficiently by recovery and corrective action. The residual error for two of them, Cleansky and FCH, is below the 2% level. As for BBI in 2014, there were no interim/final payment, therefore no audit was carried out. For IMI, however, which is larger and has been very successful in attracting SMEs into its programme¹²⁸, the residual error rate remains above 2% - currently the estimate of the IMI is 3%. This JTI also received, for its 2013 accounts, a qualified opinion from the European Court of Auditors on the legality and regularity of the transactions underlying the accounts. DG RTD continues to keep this situation under review, based on its own work and also the reports of the European Court of Auditors, but does not consider that there is a failure of the IMI itself or of its own supervision of the JTI.

Nevertheless, for reasons of prudence, the total amount of operational payments made to the IMI Joint Undertaking has been added to the scope of DG RTD FP7 reservation.

Apart from this, neither the Annual Activity Reports, nor the regular supervision of these bodies, raised particular issues that would need to be included in this report.

Overall, DG RTD considers that its supervision of these Joint Undertakings is effective and appropriate. Total costs of supervision are estimated at EUR 2.76 million, 0.85% of the EUR 324.97 million paid to these bodies.

2.2.4 European Joint Undertaking for ITER and the Development of Fusion Energy (F4E)

The European Joint Undertaking for ITER and the Development of Fusion Energy (F4E) was created to provide Europe's contribution to ITER, the world's largest scientific partnership that aims to demonstrate fusion as a viable and sustainable source of energy. ITER brings together seven parties that represent half of the world's population – the EU, Russia, Japan, China, India, South Korea and the United States. The construction and exploitation of the ITER experimental reactor, currently being built in Cadarache (France), will allow scientists and engineers to acquire the knowledge and technologies needed to develop in the future fusion power stations that will produce electricity.

The EU provides about 80% of the F4E resources. Nevertheless, it should be noted that the Council decision of 2007 establishing F4E gives the Commission only a limited number of votes on the Governing Board (GB) (5 votes out of 72).

Monitoring and supervision of F4E activities is organised at different levels:

Through the Commission's role in F4E's governance framework and the reporting of F4E Director

The Commission is represented by DG RTD in the governing bodies of F4E and in particular in its Governing Board (GB) (although with the limitation voting rights as set out above). The GB receives and approves the main documents regarding the governance of F4E and its activities

¹²⁸ See above where the increase in error rate linked to SMEs is discussed.

(the Work Programme, the Project Plan, the Resource Estimates Plan, the Budget, etc).

Regular reporting is provided by the F4E Director to the GB and to the Commission, and in particular an Annual Activity Report, which is accompanied by a declaration of assurance signed by the F4E Director.

Some key parts of the F4E rules, such as the Financial Regulation and Staff rules, are subject to the agreement of the Commission. The Commission has a special role in the selection of the Director.

Through regular contacts at working level between DG RTD and F4E

Given the importance of the ITER project (including the Broader Approach activities with Japan), DG Research and Innovation also has a unit of 17 people dedicated to following the implementation of it. In total, across the DG, around 5 staff are responsible for F4E in particular. There are a large number of formal and informal contacts at all levels to ensure that adequate monitoring is in place.

Through independent assessments requested by the Budgetary Authority

Both the European Parliament and the Council of the EU receive annually an independent assessment on F4E operations and F4E's progress report, carried out upon a specific Council's request made in 2010. DG Research and Innovation is a member of the steering committee responsible for the annual F4E independent assessment. The European Parliament has, in 2011, carried out a number of visits to the ITER site, and examined the operations of ITER and F4E closely.

Both the Council and the European Parliament have contracted private audit firms to examine the operations of F4E.

Through audit activities

In terms of audit, F4E's structure includes an internal audit capability and an Audit Committee, which analyses audits and F4E implementation plans of audits' recommendations and reports to the Governing Board. The Internal Audit Service of the Commission provides the internal audit service of F4E. A member of the Audit Committee is proposed by EURATOM.

Finally, the annual accounts of the Joint Undertaking are subject to the audit by the European Court of Auditors. On the 2013 F4E annual accounts, the Court of Auditors gave a positive opinion on the reliability of the accounts and on the legality and regularity of the transactions underlying the accounts. The Court signalled an "emphasis of matter" as follows:

"Without calling into question the opinions expressed in paragraphs 10 and 11, the Court draws attention to the following. The Council conclusions adopted on 7 July 2010 approved 6.6 billion euro (in 2008 values) for the Joint Undertaking contribution to the ITER construction phase of the project. This figure, which doubled the initial budgeted costs for this phase of the project, did not include an amount of 663 million euro proposed by the European Commission in 2010 to cover potential contingencies.

The amount of the Joint Undertaking contribution to the construction phase of the ITER project is exposed to significant risks of increase, mainly resulting from changes in the scope of the project deliverables and due to the current schedule which is considered unrealistic. In November 2013, the Joint Undertaking estimated the shortfall ("negative contingency") until the finalisation of the construction phase of the project to be 290 million euro. The slippage for the construction phase

of the project was estimated by the Joint Undertaking at the time of the audit (April 2014) to be at least 30 months.

In relation to these risks, the Joint Undertaking has not yet implemented a system at contract level to regularly monitor the cost deviations, and has not updated the valuation of the Joint Undertaking contribution to the ITER project beyond the finalisation of the construction phase."

The lack of contingency agreed by the budgetary authority, and the significant risk of increase in costs were already signalled in the DG RTD AAR for 2013 as well as in a number of independent assessments addressed both to the Council and the European Parliament. It was noted that actions were underway to mitigate the risk, especially by cost containment mechanisms, but that these can only reduce, not avoid, the risk. The probable slippage has been well documented in the different reports already published. DG RTD notes that the new Director-General of the ITER Organisation has made a commitment to re-examine the project's baseline, namely the costs and the schedule of the project, and to present the first results to the ITER council in 2015. At this stage it will be possible to have a more complete reassessment of the project's progress as a whole.

With respect to the monitoring of cost deviations, F4E already has a system to monitor these at the level of "Procurement Arrangements" (so-called level 4), but it needs to complete this to the level of individual contracts (so-called level 6). The exercise has been completed for the magnets. It is in progress for the vacuum vessel and the buildings and electrical power supplies. DG RTD is continuing to press for these developments to be completed.

Other issues raised by the Court concerned the reporting on the advancement of works in progress, the low level of implementation of the budget in 2013, the need to complete the internal control system and to implement internal audit findings and weaknesses in procurement procedures. All of these will be followed up by DG RTD.

The report of the Court will be examined by the discharge authority (Council and European Parliament) as discharge is given directly to F4E.

The different reports and monitoring reveal the difficulties that F4E has in implementing the project, arising largely from the complexity of the project (no fusion reactor has ever been built on this scale before), the limited level of competition (given the size and complexity of the parts that have to be built) and the complex governance structures for an international project. As the Court points out, the major risk arising is that the current budget for the project will be insufficient to complete the construction of the parts of the project for which the EU is responsible. This is exacerbated by the Council's decision, in 2010, not to foresee any financial contingency to cope with the inherent risks of such a large-scale first-of-a-kind project, although it was requested by the Commission and F4E.

This does not represent a risk to legality and regularity however, nor a lack of supervision by DG RTD, so is not reported as a reservation. Overall, it is concluded that there is adequate monitoring of the activities of F4E, by DG RTD but also by the other EU Institutions.

In 2014, in commitment appropriations, EUR 679.8 million of operational budget was allocated to F4E, with EUR 41.1 million of administrative budget.

As for the amounts paid to F4E in 2014, they were composed of EUR 422.98 million on operational budget and EUR 0.28 million on administrative budget. DG RTD's supervision costs are around 0.01% of the total budget.

2.2.5 Article 185 initiatives

Article 185 of the Treaty on the Functioning of the European Union (TFEU) enables the EU to participate in research programmes undertaken jointly by several Member States, including participation in the structures created for the execution of national programmes.

The actions supported may cover subjects not directly linked to the themes of the Framework Programme (FP), as far as they have a sufficient EU added value. They will also be used to enhance the complementarity and synergy between the FP and activities carried out under intergovernmental structures. The Article 185 bodies supported in 2014 are set out below.

In 2014 there were also efforts to implement the second generation of these bodies, including the EDCTP. An Article 185 body has also been established to ensure the implementation of the COST programme (run by the European Science Foundation in FP7).

In 2014, DG RTD allocated a total of EUR 76.5 million to Article 185 initiatives (payments).

The monitoring and supervisory arrangements include the following:

- The Commission is an observer in the boards;
- There is a delegation agreement between the Commission and the body setting out its obligations;
- The bodies are subject to an ex-ante readiness assessment
- The annual work plans are approved by the Commission
- The Commission receives annual reports from the bodies, including a management declaration and an audit certificate
- The Commission has the right to suspend payments if the reports are considered to be inadequate
- There are interim and ex-post evaluations to ensure that the bodies are achieving their policy objectives.

In 2014 DG RTD has not identified any particular issues that would need to be addressed in this report. The costs of their supervision amount to EUR 0.96 million, or 1.26% of the payments made in 2014. DG RTD considers that its management and supervision is effective and cost-effective.

Table 13 – Payments to Article 185 initiatives in 2014

Article 185 initiative	Mission	Entrusted amount
Eurostars	Joint research programme for R&D-performing SMEs and their partners, undertaken by 33 countries, in the context of EUREKA	€ 14 324 036.99
EMRP	Joint European Research Programme in the field of Metrology, the science of measurement, undertaken by 22 countries	€ 45 246 000.00
EDCTP	European and Developing Countries Clinical Trial Partnership	€ 16 937 906.06

2.2.6 Risk-Sharing Finance Facility (RSFF) and INNOVFIN

The RSFF is a credit risk-sharing scheme set up with the European Investment Bank (EIB) within the framework of FP7, in order to improve the access to debt finance of participants in RTD actions. A Cooperation Agreement between the Commission and the EIB, in respect of the RSFF, was signed on 5 June 2007. Under this agreement both parties made available EUR 1 billion

(since increased) to cover risks associated with loans provided for investments in RDI. The EUR 2 billion allocated by FP7 EC and the EIB to the RSFF was expected to allow the EIB to make total loans between EUR 8 and 13 billion.

Following the interim evaluation of RSFF and Parliament and Council requests, the Commission and the EIB amended on 5 December 2011 the RSFF Co-operation Agreement and a specific new sub-facility for SMEs and small mid-caps, the so-called 'Risk-Sharing Instrument' (RSI) which is implemented by the European Investment Fund (EIF), was developed.

The RSFF is managed by the EIB in accordance with its own rules, policies and procedures. Its implementation is supervised by a Steering Committee composed of at least 4 members from the EIB, and members from the Commission representing different interested DGs. The Steering Committee acts by consensus.

The Director-General of DG RTD is the authorising officer by delegation for the payment of the EU contribution to the RSFF. He is represented in the daily implementation of the RSFF Cooperation Agreement by a unit within the DG. DG ECFIN is the Asset Management Designated Service, and is responsible for monitoring the management by the EIB of the EU Financial Assets available on the EU RSFF Account. It approves the Asset Management Guidelines as well as the annual investment strategy which are to be followed by the EIB.

To decide on the eligibility of loans proposed by the EIB, an 'Eligibility Committee' has been established including members of DG RTD and relevant representative(s) of other Research family DGs.

The total EU Contribution from FP7 paid out by DG RTD since the start of the scheme is EUR 1.23billion (for RSFF: EUR 961 million; for RSI: EUR 270 million). The total portfolio of RSFF loans comprises 114 signed loans with a total amount of EUR 11.3 billion. Under RSI, a total guarantee volume of EUR 1 563 billion has been committed to support loan and leasing finance of, at least, EUR 3.2 billion to innovative SMEs and small midcaps. So far, 40 guarantee agreements were signed between the EIF and financial intermediaries allowing to provide loans and leases of EUR 1.06 billion to 1 800 companies.

Total fees incurred by the EIB for the management of the RSFF portfolio (over the whole period up to 2014) amount to around EUR 78.4 million. However, for the period 2007-2010, the Commission did not reimburse EIB for any administrative costs related to the RSFF implementation as such EIB costs were netted against revenues made by the EIB from RSFF operations. Effectively, since 2011, the total fees (administrative and performance-based fees) paid to EIB for the RSFF implementation amount to EUR 24.0 million (around 2.5% of the RSFF total contribution). There is so far only one impairment, with an amount of EUR 4.5 million. For the implementation of RSI, fees (administrative and performance-based) paid to the EIF amounted to EUR 9 197 million, and EUR 1.46 million for EIF's risk remuneration. This is around 3.7% of the RSI total contribution. An amount of EUR 32.65 million has been provisioned by the EIF to serve guarantee call claims from financial intermediaries.

DG RTD considers that the operational and financial reporting requested from, and provided by, the EIB Group in the context of the RSFF implementation is sufficient and provides relevant information and figures to ensure a sound and efficient management and follow-up. It considers that its internal structures, including the involvement of the expertise of ECFIN and of other DGs (including DG BUDGET) are adequate to ensure a satisfactory supervision of the RSFF. DG RTD will further adapt its reporting according to the requirements of the new Financial Regulation and in particular its Title VIII.

Around 5 FTE are needed for the supervision of these financial instruments. Added to the costs of fees this makes a total cost of around 2.8% of the amounts of the scheme. It should be noted that on the long term, the revenue of the transferred funds makes a good balance.

2.2.7 Conclusion on indirect management

For the 2014 reporting year, the cross-delegated AODs, Executive Agencies, Joint Undertakings, 'Article 185 initiatives' and the RSFF/INNOVFIN have themselves reported reasonable assurance on the delegated budget managed by them on our behalf. They have signalled no serious control issues.

From our own monitoring and supervision work done, which includes regular contacts/representation and/or the desk reviews of relevant management reports and audit reports, we have no indications that their reporting would not be reliable. We are aware of the reservations given by REA and IMI, as well as the issues arising in F4E with respect to the overall costs of the ITER project, but do not consider that these represent a failure by the organisation or of our supervision.

The costs of monitoring and supervision controls have been set out above and are very small in proportion to the amounts entrusted.

Consequently, in view of our responsibility for the indirect management of the parts of our budget via the cross-delegated AODs, Executive Agencies and entrusted entities mentioned above, we can conclude that there are no control weaknesses affecting assurance, except for the need to expand the scope and exposure from our own reservation for FP7 (see section 2.1) to include the related budget parts entrusted to IMI. (see section 4.1.)

2.3 Assessment of audit results and follow up of audit recommendations

This section reports and assesses the observations and conclusions reported by auditors which could have a material impact on the achievement of the internal control objectives, and therefore on assurance, together with any management measures taken in response to the audit recommendations.

2.3.1 Internal Audit Service (IAS)

During 2014, the Internal Audit Service carried out a number of audits on DG RTD, which led to the following conclusions:

- The '*Audit on Implementation of FP7 Control Systems (including supervision of external bodies)*' was concluded on 22/07/2014. The audit identified the following three Very Important issues: (1) DG RTD's staff responsible for supervision and monitoring activities needed to be fully aware of the EC's overall accountability with respect to Joint Undertakings; (2) the CAS Audit Plan was based on the assumption that 15 posts would be transferred from the research DGs but this had not happened at the date of the audit, which could result in delays for the future; and (3) the common anti-fraud strategy in the Research family (RAFS) needed more concrete objectives, which all services should achieve in a coordinated way. The report contained 7 recommendations, 3 of them very important.

- The 'Gap Analysis Review of the Legislation regarding Horizon 2020' was concluded on 13/01/2015. The objective was to analyse the Horizon 2020 legislation as decided by the co-legislators, compare it to the initial Commission proposal and highlight, for the most important areas, the additional risks the Commission is facing as a result of the co-legislative process. This was the first part of a wider review of the design of controls and preparations for implementing H2020. The IAS issued a single recommendation of a general nature, that DG RTD and other DGs and Agencies responsible for the implementation of Horizon 2020 take proper account of the changes listed in the report and adapt their internal processes in order to address the risks identified.
- The IAS finalised on 17/12/2014 the 'Follow-up Audit on Statistical Data Production'. It assessed that two of the three recommendations were concluded, while the third one, regarding a quality check clause by DG ESTAT in future contracts, had not yet been implemented. The recommendation will be addressed during the revision of the Memorandum of Understanding in 2015.
- The IAS finalised on 17/12/2014 the 'Follow-up Audit on Management and Monitoring of Staff Allocation in the Commission Services'. It assessed that all the remaining recommendations were adequately and effectively implemented.

After reviewing the reports, it is concluded that there is no impact on the assurance provided by this report.

2.3.2 Internal Audit Capability (IAC)

The Internal Audit Capability completed six audits¹²⁹, 2 follow-up engagements and 5 desk reviews in 2014.

The IAC "Opinion on the state of control" considered that, based on the results of audits carried during 2014, the internal control system in place in DG RTD **provides reasonable assurance** regarding the achievement of the business objectives set up for the audited processes, **except for** the following issues:

- **Audit on 'Management of Independent Experts':** There are weaknesses in the information used by the operational units for the selection of experts (experts' CVs, information on the previous performance) and issues related to data protection compliance for processing experts' personal data. The required reporting tool on previous participation of the experts was not used in the majority of the cases. The legal requirement to publish the list of all type experts that have assisted the Commission has not been fully respected since the beginning of FP7.
- **Audit on 'Implementation of Ex-post Audit results':** The procedures at DG RTD for the implementation of audit results, and related extensions, as well as of liquidated

¹²⁹ These were: Audit on *Management of Independent Experts*, Audit on *Contribution to Joint Undertakings*, Audit on *Risk-Sharing Financial Facilities (RSFF)*, Audit on *Grants to Named Beneficiaries*, Audit on *Contract Management and Payment* and Audit on *Implementation of Ex-Post Audit Results and Management of Extrapolations*.

damages are insufficiently detailed and not updated according to the Common Methodology approved in January 2013.

- **Audit on 'Objectives, Indicators and Monitoring (Strategic Planning and Programming Cycle)'**: The targets for the indicators not included in the Horizon 2020 legal basis are not appropriately challenged. The calculation of some indicators is not sufficiently accurate. The objectives and targets are not adequately shared and known by the DG RTD staff, including the management.
- **Audit on 'Management of Project Reports and Dissemination of Research Results FP7'**: A final draft strategy for the dissemination and exploitation of the remaining FP7 research results has been submitted to the senior management at the end of 2014 but it has not been adopted yet by the governance bodies of the Common support Centre.
- **Audit on 'The processes related to the closure of FP7 grants closure'**: There is no comprehensive integrated reporting and monitoring IT tool allowing the follow-up of the different steps of the closure of FP7 projects. No procedure has been defined for handling requests for additional payments coming after the two months period foreseen in the Grant Agreement.
- **Desk review on 'SEP Evaluation'**: This follow up audit identified that there is still a risk of unauthorised changes in the experts' reports, exacerbated by the lack of traceability of the changes done on behalf of the experts in SEP.
- **Audit on 'The Management of the Risk Sharing Finance Facility'**: Revenues and interests generated by the EU contribution are added directly to the EU contribution without being registered in the EU budget. This practice is not compliant with the Cooperation and Capacities SPs or with both article 8 paragraph 1 and article 20 of the FR Through such a practice, a source of financing has been created outside the EU budget and being recorded in the budget of the Commission. The aforementioned problem is, however, mitigated by the fact that expenditure from the EU RSFF contribution is booked in the EU RSFF accounts, which are integrated at year-end in the accounts of the Commission. The RSFF Financial Statements show that between 2007 and 2012 EUR 102 million of interests and revenues were generated, out of which EUR 51.6 million had not been allocated to any use at the time of the fieldwork.

In relation to this last point, and especially the use and recording of revenue, the IAC recommended that the Central Financial Service (CFS) of the Commission be consulted on the regularity of operations. This consultation took place in February 2014. The CFS agreed to book the revenue generated by the EU contribution in the EU budget as assigned revenue but did not wish there to be physical transfers of the cash amounts.

A number of elements in the management of RTD financial instruments have been modified in the light of the new, clearer, FR and the Horizon 2020 legislation.

All of the recommendations arising from final reports have been accepted and are covered by management action plans set up for the effective implementation of action plans. After reviewing the reports, the recommendations made and the risks identified it is concluded that there is no impact on the assurance provided by this report.

Note that, in line with the Commission's policy, the IAC was abolished as at 15/2/2015 and responsibilities transferred to the Internal Audit Service.

2.3.3 European Court of Auditors (ECA)

The Court's overall assessment of the supervisory and control systems in the Research area is that they are 'partially effective' (Table 14). The Court concluded that the most likely error rate for the expenditure area 'Research and other internal policies' was 4.6%.

Table 14 Impact indicators: Impact on the declaration of assurance

	2013	2014
European Court of Auditors: overall assessment of supervisory and control systems	Partially effective	Partially effective

The Court assessed the 2013 Annual Activity Report and the accompanying declarations of the Director-General for Research and Innovation and concluded that:

"The Court reviewed the annual activity reports of DG RTD... The Court found that the reports provide a fair assessment of financial management in relation to the regularity of underlying transactions, and the information provided corroborates the Court's findings and conclusions in most respects."

The Court recommended that in the area of the research FPs, the Commission should:

- (i) extend and intensify its communication campaign to raise awareness among beneficiaries and independent auditors about the eligibility rules for research spending under FP7
- (ii) across the policy group, make its control activities more risk-driven, focusing checks on high-risk beneficiaries (smaller entities or entities with less experience of European funding) and reducing the burden of checks on less risky beneficiaries;
- (iii) for the new 2014-2020 programmes for research and other internal policies, provide timely, consistent and comprehensive guidance to beneficiaries and managing authorities in respect of the revised eligibility and control requirements.

The Commission accepted the Court's recommendations.

As regards the first issue, DG Research and Innovation has already developed an extensive communication campaign and consequently provided guidance and feedback to participants and certifying bodies on the most common errors. Based on a document listing the 10 most common errors, it launched a communication campaign in 2012. This Communication campaign on FP7 financial errors and the new H2020 participation rules continued in 2014. About 750 participants have taken part in 11 events in Member States and associated countries, and two "coordinators' days" took place with 1 337 participants in Brussels. It has to be added to the 3 100 people participating in the communication events in 2013, out of whom around 300 were auditors.

Additional guidance, and clearer templates have been, and are being, prepared for Horizon 2020. They are published on the Participant Portal. The simplifications proposed in Horizon 2020 will also make the job of the auditors easier. (see recommendation 3).

The document listing the 10 most common errors was once more addressed to all participants at the beginning of 2015.

As regards the second issue, DG Research and Innovation accepts that its controls should be more risk driven. In the research area, awareness raising activities are already underway to alert Commission staff to the particular risks of different types of beneficiary. This relates both to the payment stage, where there can still be an effect on FP7, and the contracting stage, where naturally any effect will be on Horizon 2020. For Horizon 2020 this type of information will be built more systematically into the computer systems used by the Commission. It is expected that 83% of ex post audits for the period 2012-2016 will be selected using different risk factors, helping to meet the recommendation of the Court.

As regards the third issue, the Commission is aware of its obligation to provide timely and effective guidance to beneficiaries. For the 2014-2020 programmes guidance has already been offered at a much earlier stage than for any earlier programme. For research, a set of guidance documents is already available in the Participant Portal website (http://ec.europa.eu/research/participants/portal/desktop/en/funding/reference_docs.html).

Among these documents, the Horizon 2020 Annotated Grant Agreement (AGA) explains in detail, and with a large number of practical examples, all the provisions of the Horizon 2020 Grant Agreements. Special attention has been paid to those parts of the Grant Agreement which are significantly different from FP7, as for instance the new provisions for personnel costs.

Further targeted guidance will be developed as necessary.

2.3.4 Follow-up of action plans for audit from previous years (IAS, IAC, and ECA)

The implementation of recommendations issued by the Internal Audit Service has progressed during 2014. Eight recommendations from previous IAS audits have been closed. Eight recommendations remain open from the audits of *'Follow-up Audit on Statistical data Production'*, the *'Audit on Sygma Project Management (Phase 1)'* and the *'Audit on Implementation of FP7 Control Systems (including supervision of external bodies)'*, which will be implemented in 2015. None of them were overdue at the end of 2014.

Concerning the work of DG Research and Innovation's Internal Audit unit, 21 recommendations remain to be implemented, of which 8 are overdue.

4 very important recommendations remain open after their due date:

- 'Evaluation processes related to FP7' – the recommendation, related to the adoption of the Horizon 2020 evaluation and monitoring strategy, has been partially implemented and the target date has been extended to 30/6/2015. The strategy is under development.
- 'Document management'. There remains a backlog of closed files not yet sent to the central archives.
- 'Communication'. The recommendation, on the inclusion of performance indicators for the different activities in the annual communication plans, is only partially implemented.
- 'Research fund for Coal and Steel – the recommendation concerned checks for conflict of interest. The implementation of the recommendation led to the conclusion that the rules on such conflicts needed to be fully reviewed, and legislation amended, which has extended the time needed for implementation.

The progress of pending actions is closely monitored and residual risks resulting from the non-implementation of the overdue recommendations were addressed by the revised action plans.

After reviewing these recommendations and the risks identified it is concluded that there is no impact on the assurance provided by this report.

The Internal Audit unit also carried out the follow-up and desk review of finalised audits, which concluded that there has been effective implementation of the recommendations.

Overall, internal and external audit work contributes significantly to the continuing improvement in RTD systems and operations. All IAC and IAS recommendations are subject to a systematic follow up by the Directorate General. At the end of 2014, some 8 recommendations (28% of the 29 still open) are still open after the target date originally set. It is normal that this should happen in some cases, due to changes in priorities, additional complications not foreseen at the time of setting the original target, etc. After reviewing these cases, it is concluded that internal audit work does not reveal weaknesses that would require a reserve in this respect.

The findings and recommendations of the European Court of Auditors are similarly subject to a systematic follow-up. Action plans have been put in place and implemented. The overall findings of the Court with respect to the error rate are supported by the findings of Commission's own controls, and the effect of this is on the Director-General's declaration of assurance is set out in section 4.2 above.

After reviewing the follow-up of all recommendations and the risks identified it is concluded that there is no impact on the assurance provided by this report.

3. ASSESSMENT OF THE EFFECTIVENESS OF THE INTERNAL CONTROL SYSTEMS

The Commission has adopted a set of internal control standards, based on international good practice, aimed to ensure the achievement of policy and operational objectives. In addition, as regards financial management, compliance with these standards is a compulsory requirement.

DG RTD has put in place the organisational structure and the internal control systems suited to the achievement of the policy and control objectives, in accordance with the standards and having due regard to the risks associated with the environment in which it operates.

3.1 Effective implementation of the internal control standards

The effectiveness review carried out in 2014 concluded that all Internal Control Standards were effectively implemented in DG RTD. However, the Internal Control Framework is reviewed continuously, and different initiatives will be taken with respect to different Internal Control Standards.

Three Internal Control Standards (ICSs) were prioritised in 2014:

- ICS 3 – Staff allocation and mobility;
- ICS 8 – Processes and procedures;
- ICS 9 – Management supervision.

All three standards have been chosen because there is a good scope for improving their implementation under Horizon 2020. The respective reasons and foreseen actions for each standard are outlined below.

- For **ICS 3 (Staff allocation and mobility)**, the main reasons were the foreseen delegation of implementation, mainly to Executive agencies, the change of DG RTD into a policy-making organisation and the 5% staff cut in the Commission. There have also been a number of recommendations in the area of staff allocation, mobility and competencies from the Court of Auditors and the IAS. Work was under way to develop workload indicators, and to apply them to create a better match between workload and resources.
- **ICS 8 (Processes and procedures)** was suggested for prioritisation due to the development of business processes for Horizon 2020. The objective was to produce simple, yet robust procedures that allow both the granting body and the beneficiary to do the necessary paperwork as swiftly as possible. Another important objective was harmonisation; i.e. that the procedures followed should be the same in all bodies implementing Horizon 2020.
- **ICS 9 (Management supervision)** was chosen because of the extension of DG RTD's supervision responsibilities under Horizon 2020. In 2014, it became parent DG of four Executive agencies; adding INEA and EASME to its existing agencies REA and ERCEA. Adding to the complexity, for the two new agencies RTD is not lead DG but only one of several parents. Therefore, work was started to lay down a supervision strategy for each

agency. Of course, the efforts to review and complete DG RTD's supervision structure also concern the Joint Undertakings and Public-public bodies.

Re ICS 3 - During 2014 DG RTD continued its exercise to assess the resources used on its different activities. Workload and performance indicators are established to ensure a good match between workload and resources, identify negative priorities, enable more resources to be targeted on new priorities and increase efficiency.

Re ICS 8 - The development of processes and procedures for Horizon 2020 continued throughout 2014. This was particularly to allow for evaluations, grant preparation and signature and the payment of pre-financing. Further processes will be added in 2015. This process, though complex, was successful, as demonstrated by the time take to sign grants (TTG) set out earlier in this report. Detailed and comprehensive guidance on the different business processes covering the life cycle of grants was issued. This guidance is available on-line, both for staff in the different services and bodies implementing H2020, and for the external beneficiaries in the format of an "on-line manual" available on the Participants Portal. In addition and also provided by the CSC, the IT system ensures to the possible extent that actions are implemented according to the rules with embedded automatic controls whenever possible.

Re ICS 9 - The transfer of additional grant management responsibilities to Executive Agencies continued throughout the year, without undue difficulty, and is substantially complete.

No Internal Control Standards were prioritised for 2014. However, there is important on-going work on ICS 3 - Staff allocation and mobility and ICS 4 - Staff Appraisal and Development – in response to the cuts in resources and the move to a policy DG (workload assessment exercise, learning and development strategy), and this will continue.

4. MANAGEMENT ASSURANCE

This section reviews the assessment of the elements reported in Parts 2 and 3 and draw conclusions supporting of the declaration of assurance and namely, whether it should be qualified with reservations.

4.1 Review of the elements supporting assurance

The information reported in Parts 2 and 3 stems from the results of management and auditor monitoring contained in the reports listed. These reports result from a systematic analysis of the evidence available. This approach provides sufficient guarantees as to the completeness and reliability of the information reported and results in a complete coverage of the budget delegated to the Director-General of DG RTD.

The information reported in Part 3 does not result in any major issues meriting a reservation. As regards Part 2, assessment by the management, the analysis of the results of the controls in place, as shown in the indicators outlined above, and the examination of the evidence available, all suggest that DG Research and Innovation's management is in a position to provide unqualified reasonable assurance on the following areas:

- Policy-development activities;
- The processes relating to the selection of contractors and beneficiaries for Horizon 2020 projects and its underlying financial operations (legal and financial commitments);
- Payments relating to administrative expenditure and procurement;
- Horizon 2020 pre-financing payments for grants;
- Management of the RSFF/INNOVIN financial instruments and the underlying financial transactions with the EIB and EIF;
- Expenditure on the Coal and Steel Research Fund;
- Payments to FCH and Clean Sky Joint Undertakings, as well as to Fusion for Energy;
- The operating subsidy paid to the Executive Agencies.

In the light of concerns expressed in the 2013 discharge procedure, DG RTD has considered whether a reserve on all FP7 expenditure is appropriate, or whether it can be limited to certain parts of FP7 expenditure.

Firstly, it should be noted that, already in previous years, certain parts of FP7 expenditure were not covered by a reserve where there was evidence that the risks (and so the residual error rates) are significantly lower than for all expenditure. Within RTD this applies to expenditure given to F4E, Cleansky and FCH. Outside DG RTD, this also applies to expenditure by REA under the Marie Curie programme, and all expenditure from the ERCEA. This will continue in 2014.

However, the main collaborative research programme of FP7 managed by DG RTD cannot be sub-divided in terms of risk. Many of the same beneficiaries appear in each of the thematic areas (transport, health, etc), all have their share of SMEs and new entrants, the control system is precisely the same. Research spending is also not divided by Member State. Consortia must have a multinational character, and many beneficiaries are also present in several Member States. The representative sample covers all thematic areas without distinction.

Finally then, DG RTD concludes that its FP7 grant portfolio under direct management, made up of collaborative projects, cannot be divided up into different risk categories, and so any reserve must cover all of this portfolio. And for FP7 a residual error rate of 3% is above the materiality level set in the standing instructions and so a reserve must be made. For the indirect management parts of our budget entrusted to other entities, we can conclude that there are no control weaknesses affecting the assurance except for the need to expand the scope and exposure from our own reservation for FP7 to include the related expenditure parts entrusted to IMI Joint Undertaking, as the residual error rate is estimated at 3%.

As stated above, DG RTD considers that its overall control strategy ensures that trust, control and other policy objectives are kept in balance and that aiming to achieve a residual error rate of 2% at all costs is not a viable approach. This was set out explicitly in the financial statement accompanying the Horizon 2020 legislation, which was accepted by the legislative authority. DG RTD is also concerned about the obligation to make a reserve covering all of its directly managed FP7 expenditure, when in fact it can give full assurance over 97% of this expenditure. This gives a misleading impression about the overall standard of financial management in the DG. However, at the moment, and given the Standing Instructions for the assessment of reserves, DG RTD maintains a reserve for FP7 expenditure against cost statements in 2014. This can be reconsidered when Horizon 2020 expenditure starts.

4.2 Reservations and overall conclusion on assurance

4.2.1 Reservation

	DG RTD
Title of the reservation, including its scope	Reservation concerning the rate of the residual error within cost claims in the Seventh Research Framework Programme (FP7), implemented directly by DG RTD, and in the payments to the IMI Joint Undertaking.
Domain	Direct management grants paid by DG RTD and the funds entrusted as operational budget implemented by the IMI Joint Undertaking in the 7 th FP.
ABB activity and amount affected (= "scope")	08.025100; 08.035100 Payments made by DG RTD and via five cross-delegations (including Euratom expenditure) plus the operational budget paid to the IMI Joint Undertaking and three Art-185 Initiatives: EUR 1 939 million .
Reason for the reservation	At the end of 2014, the estimated ¹³⁰ residual error rate is not below the materiality threshold foreseen for the multi-annual period.
Materiality criterion/criteria	The materiality criterion is the residual error rate, i.e. the level of errors that remain undetected and uncorrected, by the end of the management cycle. The control objective is to ensure that the residual error rate on the overall population is below 2% at the end of the management cycle. As long as the residual error rate is not (yet) below 2% at the end of a reporting year within the FP's management lifecycle, a reservation would (still) be made.
Quantification of the impact (= actual exposure)	The maximum impact is calculated by multiplying the residual error rate in favour of the Commission by the amount of FP7 payments based on cost statements authorised in 2014 by RTD + the estimated amount of the pre-financing expenditure cleared in 2014 by DG RTD + the amount of FP7

¹³⁰ Because of the significant impact of the partial results of the second CRAS on the residual error rate by the end of the exercise, DG RTD considers that the estimated residual error rate gives a more reliable picture of 2014's expenditure. This will be used to calculate the reservation.

	payments based on cost statements authorised in 2014 by IMI on behalf of RTD + the amount of FP7 payments based on cost statements authorised by other DG's under cross-sub-delegation by DG RTD. Based on the expected results of audits, it is estimated that the Residual Error Rate is 3% . The estimated impact in 2014 is EUR 111.39 million .
Impact on the assurance	Legality and regularity of the affected transactions, i.e. only payments made against cost claims (interim payments and payments of balance). The impact on assurance is limited by the reduced net financial impact that will occur in some cases where eligible expenditure is limited by budget ceilings.
Responsibility for the weakness	The main reason for errors is : - the complexity of the eligibility rules as laid down in the basic acts decided by the Legislative Authorities, based on the reimbursement of actual eligible costs declared by the beneficiaries; - the fact that there are many thousands of beneficiaries making claims, and not all can be fully controlled. The different control provisions set out by the Commission services, along with the audit certificates on financial statements and ex-post audits, can mitigate these risks to a certain extent, but can never be carried out on 100% of the cost claims received.
Responsibility for the corrective action	The possibilities to simplify the FP7 rules have been exhausted, although there is some evidence that the simplification measures introduced in 2011 reduced errors. The remaining scope to reduce errors will be addressed in particular through the following actions: - continuing its on-going efforts to give guidance and feedback to the participants and certifying auditors to prevent errors occurring; - continuing with its control and audit work in order to further reduce the FP7 residual error rate.

FP7 reservation

For FP7, the Residual Error Rate is estimated at 3%.

Taking into account the FP6 experience, and the need to balance legality and regularity with other objectives such as the attractiveness and the success of EU research policy, international competitiveness, scientific excellence, the wish to encourage participation of SMEs and the costs of controls, it is not expected that by the end of the programming period the Residual Error Rate will be below the materiality threshold defined in **Annex 4 'Materiality Criteria'**. For that reason, DG RTD maintains the reservation for its FP7 grants, including operational payments made to the IMI joint undertaking.

Action plan to address the reservation for FP7

The following framework conditions need to be borne in mind when considering remedial actions to further reduce the error rate under FP7. These were set out in more detail in the 2012 AAR, and will continue to be applied:

A) Legal Framework

All of the contracts have been already signed under FP7, so further modification of the legal framework for FP7 is no longer an option. Over the course of FP7, however, DG Research and Innovation has attempted to simplify the system within the existing legal framework, for example the simplification measures adopted by the Commission on 24 January 2011 (Decision C (2011) 174).

Horizon 2020 includes a radical simplification of the legal framework for the Framework

Programme for Research and Innovation (2014-2020), in order to meet the expectations of both stakeholders and legislative authorities.

B) Guidance to beneficiaries and certifying auditors

2014 saw the continuation of a communication campaign targeting beneficiaries and certifying auditors, based on a document setting out the 10 most common causes of error. Guidance was given to beneficiaries at a number of different events involving coordinators, participants and finance specialists, for FP7 but also for Horizon 2020 (around 750 participants in 11 specific events)

"Coordinators' day" events were organised twice with a total of 1 337 participants. They mainly aimed the presentation of the new framework programme Horizon 2020, but a section on "how to avoid errors", also covering FP7, was also included. This can have a positive impact on the on-going FP7 cost claims, as some of the errors and most of the beneficiaries are common for the two programmes. It has to be added to the 3 100 people participating in the communication events in 2013, out of whom around 300 were auditors.

Comprehensive guidance and clearer templates have been, and are being, prepared for Horizon 2020. They are published on the Participant Portal. The simplifications proposed in Horizon 2020 will also make the job of the auditors easier. This is in addition to the possibilities that already exist for participants to ask for guidance – for example the Research Enquiry Service and the National Contact Points.

C) Continued control and audit

The DG will carry out an appropriate number of ex-post audits based on cost-effectiveness considerations, as referred to above, together with the subsequent recovery actions to ensure a further reduction of the residual error rate. However, it cannot greatly extend its audit campaign without adversely affecting the other objectives of the research programme (attractiveness, reduction of administrative burden, widening, etc).

Within these framework conditions and constraints, the remaining scope to reduce errors will be addressed by DG Research and Innovation through the following actions:

- Continuing its on-going efforts to give guidance and feedback to the participants and certifying auditors to prevent errors occurring;
- Continuing its control and audit work in order to further reduce the FP7 residual error rate
- a second representative audit sample has been defined for the research family (audits started by April 2014) in order to refine/update the representative error rate figures for FP7.

4.2.2 Overall conclusion on assurance

In respect of DG Research and Innovation's operational activities, no qualification is made on its policy activities. There is also no reservation on the procedures relating to the selection of contractors and beneficiaries for FP7 projects and its underlying financial operations (legal and financial commitments). This is also the case for payments relating to administrative expenditure and procurement, as well as for Horizon 2020 pre-financing payments in the case of grants, and payments from the Coal and Steel Research Fund, payments to the FCH and Clean Sky Joint Undertaking's, as well as to Fusion for Energy and the operating subsidy paid to the Executive Agencies.

The amount that may be affected by material errors is expenditure against FP7 cost statements under the direct responsibility of DG RTD in 2014 and the contribution to the IMI Joint Undertaking. All other expenditure is not affected by material error. The error rates for this expenditure are then either in the range 0-2%¹³¹, or sometimes 0%¹³².

Table 15 Financial impact of errors by type of expenditure

Type of expenditure	Amount paid or cleared in 2014 (€)	Direct or indirect expenditure	Assurance given by	Error rate lower estimate	Error rate higher estimate	Financial impact of errors lower estimate	Covered by a reservation	Financial impact of errors higher estimate
Administrative expenditure of RTD	30 255 027,02	Direct	DG RTD	0,00%	2,00%	-	-	605 110,97
Administrative expenditure by externalised bodies (mainly executive agencies)	97 655 878,64	Indirect	DG RTD and the externalised body	0,00%	2,00%	-	-	1 953 117,57
Horizon 2020 pre-financing for projects run by RTD NOT INCLUDED in the total	162 689 748,44	Direct	DG RTD	0,00%	0,00%	-	-	-
Horizon H2020 other operational payments	6 392 704,23	Direct	DG RTD	0,00%	2,00%	-	-	127 854,94
FP7 payments for projects signed by RTD	1 505 583 339,05	Direct	DG RTD	3,00%	3,00%	45 167 500,72	YES	2 145 100,11
FP7 clearings in 2014	1 842 686 437,69	Direct	DG RTD	3,00%	3,00%	55 280 581,30	YES	18 000 000,00
FP7 payments under cross-sub-delegation by DG RTD to other DG's	13 215 232,10	Indirect	DG RTD	3,00%	3,00%	396 456,96	YES	396 456,96
Previous Framework programmes operational payments	4 388 791,84	Direct	DG RTD	2,45%	2,45%	107 526,40	-	107 526,40
Coal and Steel operational payments	49 119 539,64	Direct	DG RTD	0,00%	2,00%	-	-	982 391,37
Elispsis related operational payments	4 525 586,03	Direct	DG RTD	0,00%	2,00%	-	-	90 511,22
EURATOM expenditure	203 593 613,40	Direct	DG RTD	3,00%	3,00%	61 078 084,00	YES	6 107 409,42
INNOVIN financial instrument, implemented by the European Investment Bank	651 614 939,40	Indirect	DG RTD and EIB	0,00%	0,00%	-	-	-
Expenditure delegated to JU IMI	161 187 993,00	Indirect	DG RTD and IMI	3,00%	3,00%	4 835 639,79	YES	4 835 639,79
Expenditure by other implementing bodies, mainly Joint Undertakings	606 227 568,98	Indirect	RTD and the Joint Undertakings	0,00%	2,00%	-	-	12 124 551,38
Total amount paid or cleared in 2014	€ 176 446 661,00					111 895 823,88		123 770 089,85
In %	100%		Part of the budget affected by error	between	2,16%	and		2,47%
			Assurance given by	between	97,84%	and		97,53%

Comparing the amounts at risk as shown above to the total relevant expenditure in 2014¹³³ allows the conclusion that it is possible to give assurance regarding the 97.53-97.84% of the budget implemented in 2014.¹³⁴

¹³¹ i.e. it is below 2% but some level of error will exist.

¹³² For example for the implementation of the financial instruments, the notion of "error" is not relevant.

¹³³ Total payments (excluding prefinancing paid in 2014) and pre-financing cleared in 2014.

¹³⁴ The Weighted Average Error Rate (WAER) for the reporting year 2014 following the Commission-wide methodology based on the annual payments reported in Annex 3 is 2.80%. The corrective capacity, as notified by the central services, and based on the analysis of 5 years recovery context in ABAC, is 1.2%. If applied to the DG's total payments made in 2014 (3739 M€), this would imply respectively 105 M€ and 45 M€ in amounts.

5. DECLARATION OF ASSURANCE

I, the undersigned,

Director-General of DG Research and Innovation

In my capacity as authorising officer by delegation

Declare that the information contained in this report gives a true and fair view.

State that I have reasonable assurance that the resources assigned to the activities described in this report have been used for their intended purpose and in accordance with the principles of sound financial management, and that the control procedures put in place give the necessary guarantees concerning the legality and regularity of the underlying transactions.

This reasonable assurance is based on my own judgement and on the information at my disposal, such as the results of the self-assessment, ex-post controls, the work of the internal audit capability, the observations of the Internal Audit Service and the lessons learnt from the reports of the Court of Auditors for years prior to the year of this declaration.

Confirm that I am not aware of anything not reported here which could harm the interests of the institution

However the following reservation should be noted:

The reservation concerning the rate of residual errors with regard to the accuracy of cost claims in the Seventh Framework Programme (FP7) grants and the payment to the IMI joint undertaking.

Brussels, 25 MARS 2015

[signed in ARES]

*Robert-Jan Smits
Director-General*

6. LIST OF ACRONYMS USED

AAR	Annual Activity Report
BBi	Biobased Industries Joint Undertaking
BONUS	Joint Baltic Sea Research and Development Programme (Art. 185 TFEU)
COSME	Programme for Competitiveness of Enterprises and SMEs
COST	European Cooperation in Science and Technology
CSC	Common Support Centre
DG	Directorate-General (European Commission)
DG RTD	Directorate-General for Research and Innovation (European Commission)
DG ECFIN	Directorate-General for Economic and Financial Affairs (European Commission)
EASME	Executive Agency for Small and Medium-sized Enterprises
EDCTP	Europe-Developing Countries Clinical Trials Partnership (Art. 185 TFEU)
EERA	European Energy Research Alliance
EFPIA	European Federation of Pharmaceutical Industries and Associations
EIB	European Investment Bank
EIF	European Investment Fund
EMPIR	European Metrology Programme for Innovation and Research (Art. 185 TFEU)
ERA	European Research Area
ERA-NET	European Research Area Network
ERC	European Research Council
ERCEA	European Research Council Executive Agency
ERIC	European Research Infrastructure Consortium
ESFRI	European Strategy Forum on Research Infrastructures
ESIF	European Structural and Investment Funds
F4E	Fusion for Energy Joint Undertaking
FCH	Fuel Cells and Hydrogen Joint Undertaking
FP	Framework Programme (Art. 182 TFEU)
FP7	Seventh FP for research, technological development and demonstration

	activities (2007-2013)
GA	Grant agreement
GEO	Group on Earth Observations
GEOSS	GEO 'System of Systems'
IMI	Innovative Medicines Initiative Joint Undertaking
INEA	Innovation and Networks Executive Agency
ITER	International Thermonuclear Experimental Reactor
ITRE	Industry, Technology and Research Committee (European Parliament)
JTI	Joint Technology Initiative
KPI	Key Performance Indicator
LEIT	Leadership in Enabling and industrial technologies
MP	Management Plan
OJ	Official Journal
P2P	Public-Public Partnership
PPP	Public-Private Partnership
PSF	Policy Support Facility
R&D	Research and Development
R&I	Research and Innovation
RDI	Research, Development and Innovation
REA	Research Executive Agency
RFCS	Research Fund on Coal and Steel
SME	Small and Medium Enterprise
TFEU	Treaty on the Functioning of the European Union
SET Plan	Strategic Energy Technology Plan
SMEs	Small- and Medium-sized Enterprises

ANNEXES

ANNEX 1: Statement of the Internal Control Coordinator

The statement¹³⁵ of the Internal Control Coordinator (ICC)¹³⁶ aims at informing the report's reader about the information flow between the ICC and the Director-General on internal control matters in the context of the AAR's preparation. By signing the statement, the ICC also certifies that the information in the annexes to the report is accurate and exhaustive. In the event of a disagreement between the ICC and the Director-General on an important issue regarding internal control matters or the annexes to the AAR, this will be brought as early as possible to the attention of the responsible Commissioner, the Secretary-General and the Director-General of DG BUDG in writing.

"I declare that in accordance with the Commission's communication on clarification of the responsibilities of the key actors in the domain of internal audit and internal control in the Commission¹³⁷, I have reported my advice and recommendations to the Director-General on the overall state of internal control in the DG.

I hereby certify that the information provided in Parts 2 and 3 of the present AAR and in its annexes is, to the best of my knowledge, accurate and exhaustive."

Brussels,

25 MARS 2015

[signed in ARES]

Wolfgang Bartscher
Internal Control Coordinator

¹³⁵ This statement was introduced by the note SEC(2004)147 of 19.02.2004 in order to reflect the information flow between the key actors in the AAR process.

¹³⁶ In DG RTD, the Deputy Director-General in charge of Framework Programme: Policy and Management is entrusted with the function of Internal Control Coordinator. The Director of Resources reports to him.

¹³⁷ SEC(2003)59 of 21.01.2003.

ANNEX 2: Human and Financial resources

DG	Activity		Establishment Plan posts	External Personnel	Total
RTD	08 02	Horizon 2020	561	261	822
	08 03	Euratom Framework Programme	52	8	60
	08 04	ITER Programme	53	6	59
	08 05	Research fund for coal and steel	11	10	21
	08 AWBL-01	Administrative support for the Directorate-General for research and innovation	116	54	170
	08 AWBL-02	Horizon 2020 Common Support Centre	81	39	120
	08 AWBL-03	Policy strategy and coordination for the Directorate-General for research and innovation	254	94	348
	08 AWBL-04	Innovation Union and European Research Area	76	42	118
	08 AWBL-05	International Cooperation	46	41	87
RTD Total			1 250	555	1 805
Grand Total			1 250	555	1 805

ANNEX 3: Draft annual accounts and financial reports

Annex 3 Financial Reports - DG RTD - Financial Year 2014

Table 1 : Commitments

Table 2 : Payments

Table 3 : Commitments to be settled

Table 4 : Balance Sheet

Table 5 : Statement of Financial Performance

Table 6 : Average Payment Times

Table 7 : Income

Table 8 : Recovery of undue Payments

Table 9 : Ageing Balance of Recovery Orders

Table 10 : Waivers of Recovery Orders

Table 11 : Negotiated Procedures (excluding Building Contracts)

Table 12 : Summary of Procedures (excluding Building Contracts)

Table 13 : Building Contracts

Table 14 : Contracts declared Secret

Additional comments

Tables 1 and 2 include EU, EFTA, third countries' contribution as well as C4 and C5 credits together with commitments that can be implemented in 2015 (N+1) or until the end of H2020.

When we take into consideration only the credits authorised by DG RTD that may not be carried forward to the next year, the implementation rates reach 100% as well for commitments as for the payments.

Tables 11, 13 and 14 have no data to be reported.

TABLE 1: OUTTURN ON COMMITMENT APPROPRIATIONS IN 2014 (in Mio €)					
			Commitment appropriations authorised	Commitments made	%
			1	2	3=2/1
Title 02 Enterprise and Industry					
02	02 01	Administrative expenditure of the `Enterprise and Industry- policy area	0,193691	0,193691	100,00 %
Total Title 02			0,193691	0,193691	100,00%
Title 06 Mobility and transport					
06	06 01	Administrative expenditure of the `Mobility and transport- policy area	0,107507	0,107507	100,00 %
Total Title 06			0,107507	0,107507	100,00%
Title 08 Research and Innovation					
08	08 01	Administrative expenditure of the `Research and Innovation- policy area	274,4919461	274,100615	99,86 %
	08 02	Horizon 2020 - Research	3393,682694	3266,8187	96,26 %
	08 03	Euratom Programme - Indirect actions	201,9270358	196,157473	97,14 %
	08 04	ITER Programme	772,2787957	722,798822	93,59 %
	08 05	Research programme of the research fund for coal and steel	56,01253444	50,551512	90,25 %
Total Title 08			4698,393006	4510,42712	96,00%
Title 09 Communications networks, content and technology					
09	09 01	Administrative expenditure of the `Communications networks, content and technology- policy area	7,7670966	7,7670656	100,00 %
Total Title 09			7,7670966	7,7670656	100,00%
Title 15 Education and culture					
15	15 01	Administrative expenditure of the `Education and culture- policy area	0,041612	0,041612	100,00 %
	15 03	Horizon 2020	0,04827	0	0,00 %
Total Title 15			0,089882	0,041612	46,30%
Title 32 Energy					
32	32 01	Administrative expenditure of the `Energy- policy area	0,053754	0,053754	100,00 %
Total Title 32			0,053754	0,053754	100,00%
Total DG RTD			4706,604937	4518,59075	96,01 %

* Commitment appropriations authorised include, in addition to the budget voted by the legislative authority, appropriations carried over from the previous exercise, budget amendments as well as miscellaneous commitment appropriations for the period (e.g.

TABLE 2: OUTTURN ON PAYMENT APPROPRIATIONS IN 2014 (in Mio €)					
Chapter			Payment appropriations authorised	Payments made	%
			1	2	3=2/1
Title 02 Enterprise and Industry					
02	02 01	Administrative expenditure of the `Enterprise and Industry- policy area	0,193691	0,193691	100,00 %
Total Title 02			0,193691	0,193691	100,00%
Title 06 Mobility and transport					
06	06 01	Administrative expenditure of the `Mobility and transport- policy area	0,107507	0,107507	100,00 %
Total Title 06			0,107507	0,107507	100,00%
Title 08 Research and Innovation					
08	08 01	Administrative expenditure of the `Research and Innovation- policy area	309,4814033	275,2291817	88,93 %
	08 02	Horizon 2020 - Research	3201,888	2781,448109	86,87 %
	08 03	Euratom Programme - Indirect actions	225,9109856	203,9611149	90,28 %
	08 04	ITER Programme	472,4620507	422,9820769	89,53 %
	08 05	Research programme of the research fund for coal and steel	65,30170287	48,95422461	74,97 %
Total Title 08			4275,044142	3732,574707	87,31%
Title 09 Communications networks, content and technology					
09	09 01	Administrative expenditure of the `Communications networks, content and technology- policy area	7,7670966	3,20274954	41,23 %
Total Title 09			7,7670966	3,20274954	41,23%
Title 15 Education and culture					
15	15 01	Administrative expenditure of the `Education and culture- policy area	0,041612	0,02904458	69,80 %
	15 03	Horizon 2020	2,88011832	2,8199013	97,91 %
Total Title 15			2,92173032	2,84894588	97,51%
Title 32 Energy					
32	32 01	Administrative expenditure of the `Energy- policy area	0,053754	0,053754	100,00 %
Total Title 32			0,053754	0,053754	100,00%
	Total DG RTD		4286,087921	3738,981354	87,24 %

* Payment appropriations authorised include, in addition to the budget voted by the legislative authority, appropriations carried over from the previous exercise, budget amendments as well as miscellaneous payment appropriations for the period (e.g. internal and external assigned revenue).

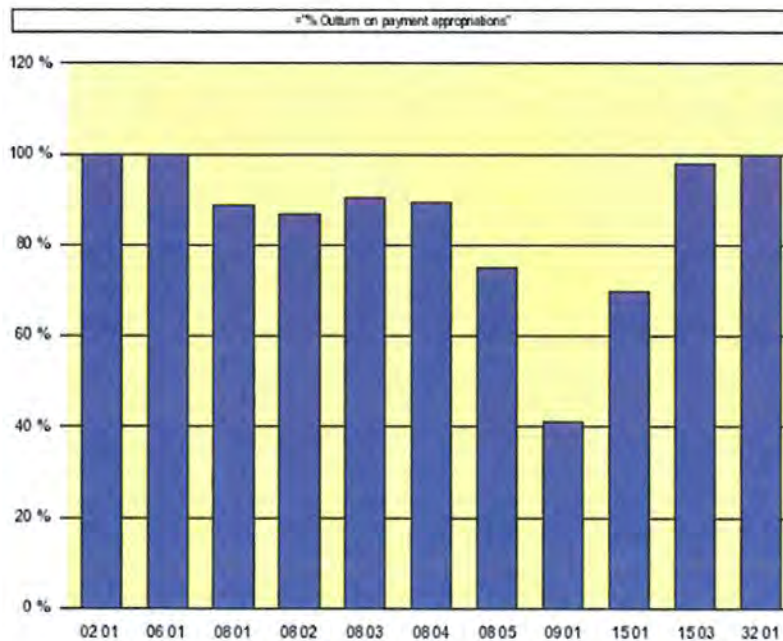


TABLE 3 : BREAKDOWN OF COMMITMENTS TO BE SETTLED AT 31/12/2014 (in Mio €)									
Chapter			2014 Commitments to be settled				Commitments to be settled from financial years previous to 2014	Total of commitments to be settled at end of financial year 2014 (incl corrections)	Total of commitments to be settled at end of financial year 2013 (incl. corrections)
			Commitments 2014	Payments 2014	RAI 2014	% to be settled			
			1	2	3=1/2	4=1/2/1	5	6=3+6	7
Title 02 : Enterprise and Industry									
02	02 01	Administrative expenditure of the 'Enterprise and Industry- policy area	0,193691	0,19	0	0,00 %	0,00	0,00	0,00
Total Title 02			0,193691	0,19	0	0,00%	0	0	0
Title 06 : Mobility and transport									
06	06 01	Administrative expenditure of the 'Mobility and transport- policy area	0,107507	0,11	0	0,00 %	0,00	0,00	0,00
Total Title 06			0,107507	0,11	0	0,00%	0	0	0
Title 08 : Research and Innovation									
08	08 01	Administrative expenditure of the 'Research and Innovation- policy area	270,7810469	247,85	22,9298811	8,47 %	0,00	22,93	34,99
	08 02	Horizon 2020 - Research	3266,818695	858,37	2408,449356	73,72 %	4.201,33	6.609,78	6263,52
	08 03	Euratom Programme - Indirect actions	196,1574726	132,12	64,04008014	32,65 %	95,39	159,43	173,64
	08 04	ITER Programme	722,7988219	55,52	667,282697	92,32 %	1.708,76	2.376,04	2076,22
	08 05	Research programme of the research fund for coal and steel	50,551512	20,00	30,55423967	60,44 %	93,02	123,57	126,08
Total Title 08			4507,107549	1313,85	3193,256254	70,85%	6098,49069	9291,746943	8674,45422
Title 09 : Communications networks, content and technology									
09	09 01	Administrative expenditure of the 'Communications networks, content and technology- policy area	7,76701054	3,20	4,564261	58,76 %	0,00	4,56	0,00
Total Title 09			7,76701054	3,20	4,564261	58,76%	0	4,564261	0
Title 15 : Education and culture									
15	15 01	Administrative expenditure of the 'Education and culture- policy area	0,02904458	0,03	0	0,00 %	0,00	0,00	0,00
	15 03	Horizon 2020	0	0,00	0	#DIV/0	7,22	7,22	10,61
Total Title 15			0,02904458	0,03	0	0,00%	7,22284373	7,22284373	10,6131041
Title 32 : Energy									
32	32 01	Administrative expenditure of the 'Energy- policy area	0,053754	0,05	0	0,00 %	0,00	0,00	0,00
Total Title 32			0,053754	0,05	0	0,00%	0	0	0
	Total DG RTD		4515,258556	1317,44	3197,820515	70,82 %	6105,713533	9303,534046	8685,06733

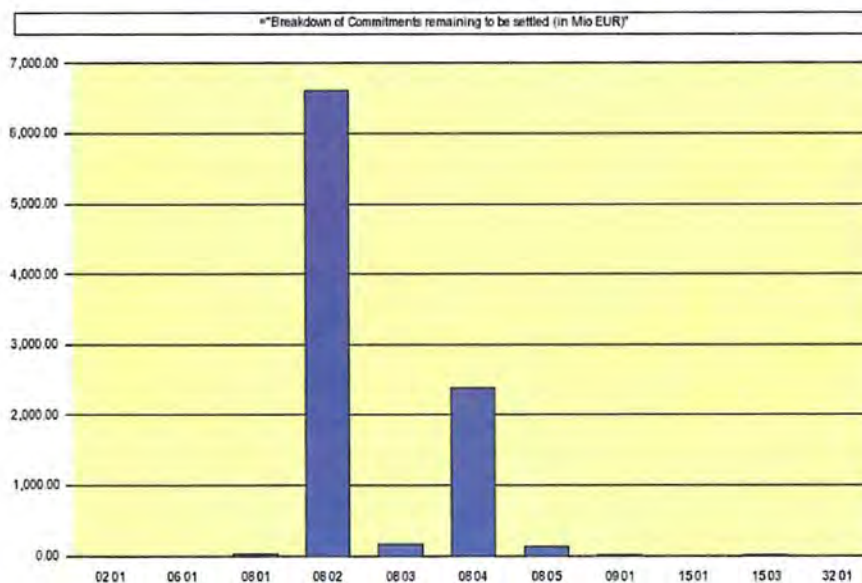


TABLE 4 : BALANCE SHEET

BALANCE SHEET	2014	2013
A.I. NON CURRENT ASSETS	1198127692	1389465713
A.I.1. Intangible Assets	10.349.549,59	5.937.468,19
A.I.3. Invstmnts Accntd For Using Equity Meth	0,00	0,00
A.I.4. Non-Current Financial Assets	1.020.130.889,14	789.093.088,14
A.I.5. LT Receivables	43.100.000,00	49.598.021,70
A.I.6. Non-Current Pre-Financing	124.547.253,54	
A.I.7. OLD LT Pre-Financing	0,00	544.837.135,14
A.II. CURRENT ASSETS	1974676366	2456584933
A.II.2. Current Pre-Financing	1.210.041.112,35	1.752.322.286,53
A.II.3. Current Financial Assets	335.863.639,93	407.620.440,93
A.II.4. Exchange Receivables	33.224.936,31	24.042.412,35
A.II.5. Non-Exchange Receivables	157.948.069,29	169.199.247,32
A.II.7. Cash and Cash Equivalents	237.598.608,30	103.400.546,30
ASSETS	3172804058	3846050647
P.I. NET ASSETS/LIABILITIES	-5552943,54	-8769961,54
P.I.1. Reserves	-5.552.943,54	-8.769.961,54
P.II. NON CURRENT LIABILITIES	-16102338	-3024704
P.II.2. Long-term provisions	-16.102.338,00	-3.024.704,00
P.III. CURRENT LIABILITIES	-532107527	-514503998,5
P.III.2. Short-term provisions	-17.515.328,76	-6.306.607,75
P.III.4. Accounts Payable	-220.637.215,91	-242.669.595,33
P.III.5. Accrued charges and deferred income	-293.954.982,31	-265.527.795,41
LIABILITIES	-553762808,5	-526298664
NET ASSETS (ASSETS less LIABILITIES)	2619041250	3.319.751.982,57

P.I.2. Accumulated Surplus / Deficit	3061248766	104917302,4
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Non-allocated central (surplus)/deficit*	-5680290016	-3424669285
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TOTAL	0,00	0,00
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It should be noted that the balance sheet and economic outturn account presented in Annex 3 to this Annual Activity Report, represent only the (contingent) assets, (contingent) liabilities, expenses and revenues that are under the control of this Directorate General. Significant amounts such as own resource revenues and cash held in Commission bank accounts are not included in this Directorate General's accounts since they are managed centrally by DG Budget, on whose balance sheet and economic outturn account they appear. Furthermore, since the accumulated result of the Commission is not split amongst the various Directorates General, it can be seen that the balance sheet presented here is not in equilibrium.

TABLE 5 : STATEMENT OF FINANCIAL PERFORMANCE

STATEMENT OF FINANCIAL PERFORMANCE	2014	2013
II.1 REVENUES	-350124282,1	-736193708,5
II.1.1. NON-EXCHANGE REVENUES	-313759040,2	-683281888,7
II.1.1.5. RECOVERY OF EXPENSES	-10.904.788,93	-16.029.435,62
II.1.1.6. OTHER NON-EXCHANGE REVENUES	-302.854.251,26	-667.252.453,09
II.1.2. EXCHANGE REVENUES	-36365241,94	-52911819,82
II.1.2.1. FINANCIAL INCOME	-14.614.911,96	-41.298.340,46
II.1.2.2. OTHER EXCHANGE REVENUE	-21.750.329,98	-11.613.479,36
II.2. EXPENSES	3879349399	3692525172
II.2. EXPENSES	3879349399	3692525172
II.2.10. OTHER EXPENSES	164.197.615,35	124.773.923,41
II.2.1. EXP IMPL BY MEMBER STATES (SHARED)		0,00
II.2.2. EXP IMPL BY COMMISS&EXAGENC. (DM)	2.867.997.552,90	2.926.942.958,12
II.2.3. EXP IMPL BY OTH EU AGENC&BODIES (IM)	313.088.610,39	157.134.607,23
II.2.5. EXP IMPL BY OTHER ENTITIES (IM)	57.382.538,10	
II.2.6. STAFF AND PENSION COSTS	-878.356,57	-504.710,45
II.2.8. FINANCE COSTS	48.170,11	15.233.581,73
II.2.9. SHARE NET DEFICIT JOINT VENT & ASSOC	477.513.269,00	468.944.811,99
STATEMENT OF FINANCIAL PERFORMANCE	3.529.225.117,15	2.956.331.463,50

It should be noted that the balance sheet and economic outturn account presented in Annex 3 to this Annual Activity Report, represent only the (contingent) assets, (contingent) liabilities, expenses and revenues that are under the control of this Directorate General. Significant amounts such as own resource revenues and cash held in Commission bank accounts are not included in this Directorate General's accounts since they are managed centrally by DG Budget, on whose balance sheet and economic outturn account they appear. Furthermore, since the accumulated result of the Commission is not split amongst the various Directorates General, it can be seen that the balance sheet presented here is not in equilibrium.

Additionally, the figures included in tables 4 and 5 are provisional since they are, at this date, still subject to audit by the Court of Auditors. It is thus possible that amounts included in these tables may have to be adjusted following this audit.

TABLE 6: AVERAGE PAYMENT TIMES FOR 2014 - DG RTD

Legal Times							
Maximum Payment Time (Days)	Total Number of Payments	Nbr of Payments within Time Limit	Percentage	Average Payment Times (Days)	Nbr of Late Payments	Percentage	Average Payment Times (Days)
30	4388	4036	91,98 %	15,69772052	352	8,02 %	53,73011364
45	585	559	95,56 %	20,09660107	26	4,44 %	117,8076923
60	17	17	100,00 %	29,11764706			
90	1568	1469	93,69 %	58,18652144	99	6,31 %	106,3232323
105	383	382	99,74 %	50,14397906	1	0,26 %	107

Total Number of Payments	6941	6463	93,11 %		478	6,89 %	
Average Payment Time	30,58997263			27,80690082			68,21966527

Target Times							
Target Payment Time (Days)	Total Number of Payments	Nbr of Payments within Target Time	Percentage	Average Payment Times (Days)	Nbr of Late Payments	Percentage	Average Payment Times (Days)
20	431	360	83,53 %	11,51111111	71	16,47 %	28,78873239
30	1941	1774	91,40 %	15,74633596	167	8,60 %	49,16167665
60	31	31	100,00 %	23,22580645			
75	20	14	70,00 %	27,14285714	6	30,00 %	91,16666667
90	352	343	97,44 %	46,83090379	9	2,56 %	99,11111111

Total Number of Payments	2775	2522	90,88 %		253	9,12 %	
Average Payment Time	21,9581982			19,52458366			46,2173913

Suspensions							
Average Report Approval Suspension	Average Payment Suspension Days	Number of Suspended Payments	% of Total Number	Total Number of Payments	Amount of Suspended Payments	% of Total Amount	Total Paid Amount
6	73	2586	37,26 %	6941	1 355 406 015,03	39,31 %	3 447 746 302,80

Late Interest paid in 2014			
DG	GL Account	Description	Amount (Eur)
RTD	65010000	Interest expense on late payment of charges	0,00
RTD	65010100	Interest on late payment of charges New FR	38 837,38
			38 837,38

TABLE 7 : SITUATION ON REVENUE AND INCOME IN 2014

Chapter		Revenue and income recognized			Revenue and income cashed from			Outstanding
		Current year RO	Carried over RO	Total	Current Year RO	Carried over RO	Total	balanca
		1	2	3=1+2	4	5	6=4+5	7=3+6
52	REVENUE FROM INVESTMENTS OR LOANS GRANTED, BANK AND OTHER INTEREST	1387336,81	55685,71	1443022,52	1387336,81	5006,68	1392343,49	50679,03
57	OTHER CONTRIBUTIONS AND REFUNDS IN CONNECTION WITH THE ADMINISTRATIVE OPERATION OF THE INSTITUTION	56655,81	0	56655,81	56655,81	0	56655,81	0
59	OTHER REVENUE ARISING FROM ADMINISTRATIVE MANAGEMENT	3356149,75	0	3356149,75	3356149,75	0	3356149,75	0
60	CONTRIBUTIONS TO UNION PROGRAMMES	258809890,5	1916000	260725890,5	257558385,9	1916000	259474385,9	1251504,6
61	REPAYMENT OF MISCELLANEOUS EXPENDITURE	53340315,34	80038,53	53420353,87	53054032,51	27038,53	53081071,04	339282,83
66	OTHER CONTRIBUTIONS AND REFUNDS	420143678,1	15235951,46	435379629,5	412500126	4177363,03	416677489	18702140,52
70	INTEREST ON LATE PAYMENTS	0	61684,63	61684,63	0	0	0	61684,63
90	MISCELLANEOUS REVENUE	961029,03	663894,17	1624923,2	486121,98	134937,75	621059,73	1003863,47
Total DG RTD		738055055,3	18013254,5	756068309,8	728398808,7	6260345,99	734659154,7	21409155,08

TABLE 8 : RECOVERY OF UNDUE PAYMENTS
(Number of Recovery Contexts and corresponding Transaction Amount)

INCOME BUDGET RECOVERY ORDERS ISSUED IN 2014 Year of Origin (commitment)	Error		Irregularity		OLAF Notified		TOTAL Qualified		OTAL RC(incl. non-qualified)		% Qualified/Total RC	
	Nbr	RO Amount	Nbr	RO Amount	Nbr	RO Amount	Nbr	RO Amount	Nbr	RO Amount	Nbr	RO Amount
2002			2	33591,01			2	33.591,01	2	33.591,01	100,00%	100,00%
2003	2	61124,49	5	41627,76			7	102.752,25	7	102.752,25	100,00%	100,00%
2004	2	4257,03	55	1122527,88	1	74599,4	58	1.201.384,31	61	1.254.793,86	95,08%	95,74%
2005	1	33640,38	49	439626,7	3	47012,62	53	520.279,70	57	613.604,10	92,98%	84,79%
2006	3	45638,58	66	1616139,43	15	139825,75	84	1.801.603,76	93	2.391.088,83	90,32%	75,35%
2007	1	863,55	23	1257360,19			24	1.258.223,74	31	1.469.972,74	77,42%	85,60%
2008	7	199430,78	94	3263214,07			101	3.462.644,85	161	6.411.661,06	62,73%	54,01%
2009	3	60669,52	62	955772,24			65	1.016.441,76	139	5.009.899,57	46,76%	20,29%
2010	3	63649,84	16	385474,07			19	449.123,91	65	2.456.369,22	29,23%	18,28%
2011			14	858060,85			14	858.060,85	35	21.877.340,94	40,00%	3,92%
2012	1	85314,44	5	367937,98			6	453.252,42	19	1.923.002,60	31,58%	23,57%
2013			1	14872,92			1	14.872,92	7	6.740.939,27	14,29%	0,22%
No Link	1	19160,63	26	649415,39	17	728763,87	44	1.397.339,89	96	54.263.004,89	45,83%	2,58%
Sub-Total	24	573749,24	418	11005620,49	36	990201,64	478	12.569.571,37	773	104.548.020,34	61,84%	12,02%

EXPENSES BUDGET	Error		Irregularity		OLAF Notified		TOTAL Qualified		OTAL RC(incl. non-qualified)		% Qualified/Total RC	
	Nbr	Amount	Nbr	Amount	Nbr	Amount	Nbr	Amount	Nbr	Amount	Nbr	Amount
INCOME LINES IN INVOICES	1	92547,02	22	438697			23	531244,02	58	1.439.586,37	39,66%	36,90%
NON ELIGIBLE IN COST CLAIMS	50	592830,18	1070	44892925,44			1120	45485755,62	1676	109.291.561,81	66,83%	41,62%
CREDIT NOTES	44	922380,41	2	557,57			46	922937,98	93	3.007.269,73	49,46%	30,69%
Sub-Total	95	1607757,61	1094	45332180,01			1189	46939937,62	1827	113738417,9	65,08%	41,27%

GRAND TOTAL	119	2181506,85	1512	56337800,5	36	990201,64	1667	59509508,99	2600	218286438,3	64,12%	21,79%
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TABLE 9: AGEING BALANCE OF RECOVERY ORDERS AT 31/12/2014 FOR RTD

	Number at 01/01/2014	Number at 31/12/2014	Evolution	Open Amount (Eur) at 01/01/2014	Open Amount (Eur) at 31/12/2014	Evolution
1993	2	2	0,00 %	281.333,80	281.333,80	0,00 %
1994	1	1	0,00 %	46.307,00	46.307,00	0,00 %
1996	1	1	0,00 %	132.500,00	132.500,00	0,00 %
2000	1	1	0,00 %	375.718,96	375.718,96	0,00 %
2001	4	4	0,00 %	316.121,27	316.121,27	0,00 %
2002	3	3	0,00 %	120.182,37	120.182,37	0,00 %
2003	4	3	-25,00 %	199.123,66	172.788,00	-13,23 %
2004	2	1	-50,00 %	120.944,14	14.662,33	-87,88 %
2005	6	5	-16,67 %	384.929,62	283.203,99	-26,43 %
2006	3	2	-33,33 %	159.025,77	139.946,36	-12,00 %
2007	8	2	-75,00 %	1.324.748,11	41.370,00	-96,88 %
2008	6	4	-33,33 %	433.042,52	348.300,17	-19,57 %
2009	17	12	-29,41 %	1.277.954,51	991.144,38	-22,44 %
2010	14	7	-50,00 %	490.091,37	345.895,34	-29,42 %
2011	12	8	-33,33 %	1.898.261,91	1.846.486,50	-2,73 %
2012	19	13	-31,58 %	4.646.100,50	4.579.667,49	-1,43 %
2013	91	28	-69,23 %	5.806.868,99	1.717.280,55	-70,43 %
2014		127			9.656.246,57	
	194	224	15,46 %	18.013.254,50	21.409.155,08	18,85 %

TABLE 10 : RECOVERY ORDER WAIVERS IN 2014 >= EUR 100.000

	Waiver Central Key	Linked RO Central Key	RO Accepted Amount (Eur)	LE Account Group	Commission Decision	Comments
1	3233140005	3230900576	-149.059,83	Private Companies		
2	3233140006	3240902490	-223.540,00	Private Companies		
3	3233140013	3240902439	-218.872,03	Private Companies		
4	3233140014	3240902412	-122.155,00	Private Companies		
5	3233140015	3240902427	-530.951,96	Private Companies		
6	3233140017	3240902444	-140.914,00	Private Companies		
7	3233140131	3240703293	-101.725,63	Private Companies		
8	3233140153	3240606435	-106.281,81	Private Companies		

Total DG	-1.593.500,26
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Number of RO waivers	8
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RO1 to RO6: C(2013) 8707 Private Companies
RO7: C(2014) 4415 Private Companies
RO8: C(2014) 5819 Private Companies

TABLE 11 : CENSUS OF NEGOTIATED PROCEDURES - DG RTD - 2014

Negotiated Procedure Legal base	Number of Procedures	Amount (€)
Total		

No data to be reported

TABLE 12 : SUMMARY OF PROCEDURES OF DG RTD EXCLUDING BUILDING CONTRACTS

Internal Procedures > € 60,000		
Procedure Type	Count	Amount (€)
Open Procedure (Art. 127.2 RAP)	4	7 840 340,00
TOTAL	4	7 840 340,00

Additional comments

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TABLE 13 : BUILDING CONTRACTS

Total number of contracts :

Total amount :

Legal base	Contract Number	Contractor Name	Description	Amount (€)

No data to be reported

ANNEX 4: Materiality criteria

The Standing Instructions for the preparation of Annual Activity Reports stipulate that the quantitative materiality threshold **must not exceed 2% of the authorised payments of the reporting year of the ABB expenditure**. However, the Guidance on AARs also allows a multi-annual approach, especially for budget areas (e.g. programmes) for which a multi-annual control system is more effective. In such cases, the calculation of errors, corrections and materiality of the residual amount at risk should be done on a "cumulative basis" on the basis of the totals over the entire programme lifecycle.

Because of its multiannual nature, the effectiveness of the Research services' control strategy can only be fully measured and assessed at the final stages in the life of the framework programme, once the ex-post audit strategy has been fully implemented and systematic errors have been detected and corrected.

In addition, basing materiality solely on ABB expenditure for one year may not provide the most appropriate basis for judgements, as ABB expenditure often includes significant levels of pre-financing expenditure (e.g. during the initial years of a new generation of programmes), as well as reimbursements (interim and final payments) based on cost claims that 'clear' those pre-financings. Pre-financing expenditure is very low risk, being paid automatically after the signing of the contract with the beneficiary.

The general control objective for the Research services, following the standard quantitative materiality threshold proposed in the Standing Instructions, is to ensure for each FP (and the Coal and Steel Research Fund for DG RTD), that **the residual error rate, i.e. the level of errors which remain undetected and uncorrected, does not exceed 2% by the end of each FP's management cycle**. The question of being on track towards this objective is to be (re)assessed annually, in view of the results of the implementation of the ex-post audit strategy and taking into account both the frequency and importance of the errors found as well as a cost-benefit analysis of the effort needed to detect and correct them.

Notwithstanding the multiannual span of their control strategy, the Director-Generals of the Research DGs (and the Directors of ERCEA, REA, and, for Horizon 2020, EASME and INEA) are required to sign a statement of assurance for each financial reporting year. In order to determine whether to qualify this statement of assurance with a reservation, the effectiveness of the control systems in place needs to be assessed not only for the year of reference but also with a multiannual perspective, to determine whether it is possible to reasonably conclude that the control objectives will be met in the future as foreseen. In view of the crucial role of ex-post audits defined in the common FP7 and future Horizon 2020 audit strategy, this assessment needs to check in particular whether the scope and results of the ex-post audits carried out until the end of the reporting period are sufficient and adequate to meet the multiannual control strategy goals.

The criteria for making a decision on whether there is material error in the expenditure of the DG or service, and so on whether to make a reservation in the AAR, will therefore be principally, though not necessarily exclusively, based on the level of error identified in ex-post audits of cost claims on a multi-annual basis.

Effectiveness of controls

The starting point to determine the effectiveness of the controls in place is the cumulative level of error expressed as the percentage of errors in favour of the EC, detected by ex-post audits, measured with respect to the amounts accepted after ex-ante controls.

However, to take into account the impact of the ex-post controls, this error level is to be adjusted by subtracting:

- Errors detected corrected as a result of the implementation of audit conclusions.
- Errors corrected as a result of the extrapolation of audit results to non-audited contracts with the same beneficiary.

This results in a residual error rate, which is calculated in accordance with the following formula:

$$ResER\% = \frac{(RepER\% * (P - A)) - (RepERsys\% * E)}{P}$$

where:

ResER%	residual error rate, expressed as a percentage.
RepER%	representative error rate, or error rate detected in the common representative sample, expressed as a percentage. For FP 7 this rate is the same for all Research services.
RepERsys%	portion of the RepER% representing (negative) systematic errors, expressed as a percentage. The RepER% is composed of two complementary portions reflecting the proportion of negative systematic and non-systematic errors detected.
P	total aggregated amount in euros of EC share of funding in the auditable population. In FP7, the population is that of all received cost statements, and the euros amounts those that reflect the EC share included in the costs claimed in each cost statement.
A	total EC share of all audited amounts, expressed in euro. This will be collected from audit results.
E	total non-audited amounts of all audited beneficiaries. In FP7, this consists of the total EC share, expressed in euro, excluding those beneficiaries for which an extrapolation is ongoing).

If the residual error rate is not (yet) below 2% at the end of a reporting year within the FP's management lifecycle, a reservation must be considered.

The Common Representative Audit Sample (CRAS) is the starting point for the calculation of the residual error rate. It is representative of the expenditure of each FP as a whole. Nevertheless, the Director-General (or Director for the Executive Agencies) must also take into account other

information when considering if the overall residual error rate is a sufficient basis on which to draw a conclusion on assurance (or make a reservation) for specific segment(s) of FP7/Horizon 2020. This may include the results of other ex-post audits, ex-ante controls, risk assessments, audit reports from external or internal auditors, etc. All this information may be used in assessing the overall impact of a weakness and considering whether to make a reservation or not.

If the CRAS results are not used as the basis for calculating the residual error rate this must be clearly disclosed in the AAR, along with details of why and how the final judgement was made.

In case a calculation of the residual error rate based on a representative sample is not possible for a FP for reasons not involving control deficiencies,¹³⁸ the consequences are to be assessed quantitatively by making a best estimate of the likely exposure for the reporting year based on all available information. The relative impact on the Declaration of Assurance would be then considered by analysing the available information on qualitative grounds and considering evidence from other sources and areas. This should be clearly explained in the AAR.

Adequacy of the audit scope

The quantity of the (cumulative) audit effort carried out until the end of each year is to be measured by the actual volume of audits completed. The data is to be shown per year and cumulated, in line with the current AAR presentation of error rates. The multiannual planning and results should be reported in sufficient detail to allow the reader to form an opinion on whether the strategy is on course as foreseen.

The Director-General (or Director for the Executive Agencies) should form a qualitative opinion to determine whether deviations from the multiannual plan are of such significance that they seriously endanger the achievement of the internal control objective. In such case, she or he would be expected to qualify his annual statement of assurance with a reservation.

Materiality is assessed for each Framework Programme

In 2014, the Research services managed financial operations under the sixth, seventh and Horizon 2020 framework programmes, and the Coal and Steel Research Fund. Each is managed under different sets of regulatory and contractual provisions. Therefore, the assessment of the performance of the internal controls has to take into account these differences.

However, it has to be noted that

1. the expenditure for the 6th Framework Programme is now a very small part of operations, and given the full disclosure on the results for this FP in the AAR 2012, information on the 6th FP should only be reported if there are exceptional elements, the non-disclosure of which would result in the reader being misled.
2. no payment against cost claim has been made and no audit has been carried out, thus no error rate has been calculated for Horizon 2020.

¹³⁸ Such as, for instance, when the number of results from a statistically-representative sample collected at a given point in time is not sufficient to calculate a reliable error rate.

ANNEX 5a: Internal Control Templates for budget implementation (ICTs)

Grants direct management – FP7 and Horizon 2020

Stage 1: Programming, evaluation and selection of proposals

A - Preparation, adoption and publication of the Annual Work Programme and Calls for proposals

Main control objectives: Ensuring that the most promising projects for meeting the policy objectives are among the proposals submitted; Compliance; Prevention of fraud

Main risks It may happen (again) that...	Mitigating controls	How to determine coverage, frequency and depth	How to estimate the costs and benefits of controls	Control indicators
The annual work programme and the subsequent calls for proposals do not adequately reflect the policy objectives, priorities, are incoherent and/or the essential eligibility, selection and award criteria are not adequate to ensure the evaluation of the proposals. The annual work programmes are not consistent within the Research family and with the 7 years' framework The programme Horizon 2020 implementation (procedures, monitoring arrangements, communication with beneficiaries, budget planning, etc) is not consistent within the Research family and with the 7 years' framework	Hierarchical validation within the authorising department Inter-service consultation, including all relevant services Adoption by the Commission Explicit allocation of responsibility. The Common Support Centre in RTD provides all the members of the Family with harmonised procedures, guidance and IT tools. DG RTD centralises the budget planning and the monitoring of the Horizon 2020's budget implementation	Coverage / Frequency: 100% Depth: All work programmes are thoroughly reviewed at all levels, including for operational and legal aspects. Coverage/ Frequency: 100% Depth All the underlying implementation tools are defined et developed at family level.	Costs: estimation of cost of staff involved in the preparation and validation of the annual work programme and calls. Benefits: Only qualitative benefits. A good Work Programme and well publicised calls should generate a large number of good quality projects, from which the most excellent can be chosen. There will therefore be real competition for funds. Costs: costs of the staff involved in Family coordination activities Benefits: Qualitative benefits: Optimised procedures, common approach on multiple issues (audits, fraud, legal aspects, reporting...); better reporting on the whole programme – better management of the programme.¹³⁹	% of budget "over-subscription" from proposals received

¹³⁹ The mutualisation of the support services represents a quantitative benefit which is certain but not accurately quantifiable in the context of reorganisations, new programme's setting up, general HR offsetting through the Commission...

B - Selecting and awarding: Evaluation, ranking and selection of proposals

Main control objectives: Ensuring that the most promising projects for meeting the policy objectives are among the proposals selected; Compliance; Prevention of fraud

Main risks It may happen (again) that...	Mitigating controls	How to determine coverage, frequency and depth	How to estimate the costs and benefits of controls	Control indicators
The evaluation, ranking and selection of proposals is not carried out in accordance with the established procedures, the policy objectives, priorities and/or the essential eligibility, or with the selection and award criteria defined in the annual work programme and subsequent calls for proposals.	Selection and appointment of expert evaluators Assessment by independent experts Comprehensive IT system supporting the stage and allowing better monitoring of the process Validation by the AOSD of ranked list of proposals. In addition, if applicable: Opinion of advisory bodies; comitology; inter-service consultation and adoption by the Commission; publication Systematic checks on operational and legal aspects performed before signature of the GA Redress procedure	100% vetting (including selecting) of experts for technical expertise and independence (e.g. conflicts of interests, nationality bias, ex-employer bias, collusion) 100% of proposals are evaluated. Coverage: 100% of ranked list of proposals. Supervision of work of evaluators. 100% of contested decisions are analysed by redress committee	Costs: estimation of cost of staff involved in the evaluation and selection of proposals. Cost of the appointment of experts and of the logistics of the evaluation. Benefits: Qualitative benefits Expert evaluators from outside the Commission bring independence, state of the art knowledge in the field and a range of different opinions. This will have an impact on the whole project cycle : better planned, better implemented projects	% of number of (successful) redress challenges / total number of proposals received Average time to publication of selection results (FR 128.2 and/or Horizon 2020 limits) % of Time-To-Inform on time cost of evaluating + selecting grants / value of grants contracted % of budget "over-subscription" from proposals received

Stage 2: Contracting

Main control objectives: : Ensuring that the most promising projects for meeting the policy objectives are among the proposals contracted; SFM (optimal allocation of the budget available); Compliance; Prevention of fraud

Main risks It may happen (again) that...	Mitigating controls	How to determine coverage, frequency and depth	How to estimate the costs and benefits of controls	Control indicators
The description of the action in the grant agreement includes tasks which do not contribute to the achievement of the programme objectives. and/or that the budget foreseen overestimates the costs necessary to carry out the action. The beneficiary lacks operational and/or financial capacity to carry out the actions. Procedures do not comply with regulatory framework. The evaluation stage hasn't detected a potentially fraudulent proposal/beneficiary.	Project Officers implement evaluators' recommendations. Hierarchical validation of proposed adjustments. Validation of beneficiaries (operational and financial viability). Systematic checks on operational and legal aspects performed before signature of the GA Ad hoc anti-fraud checks for riskier beneficiaries Signature of the grant agreement by the AO. Financial verification where necessary Participant Guarantee Fund.	100% of the selected proposals and beneficiaries are scrutinised. Coverage: 100% of draft grant agreements. Depth may be differentiated; determined after considering the type or nature of the beneficiary (e.g. SMEs, joint-ventures) and/or of the modalities (e.g. substantial subcontracting) and/or the total value of the grant. Note that, given the constraints on the time to grant set out in the Horizon 2020 legislation, "negotiation" of projects is kept to a minimum, as far as possible the positively evaluated projects are accepted without modification.	Costs: estimation of cost of staff involved in the contracting process. Benefits: Qualitative benefits: The whole committed budget checked for quality (prevention of later errors). This stage should lead to a higher assurance on the achievement of the projects – and policy objectives.	Average time to grant (FR 128.2) % of Time-to-grant on time % cost over annual amount contracted

Stage 3: Monitoring the implementation

Main control objectives: ensuring that the operational results (deliverables) from the projects are of good value and meet the objectives and conditions; ensuring that the related financial operations comply with regulatory and contractual provisions; prevention of fraud; ensuring appropriate accounting of the operations

Main risks It may happen (again) that...	Mitigating controls	How to determine coverage, frequency and depth	How to estimate the costs and benefits of controls	Control indicators
The actions foreseen are not, totally or partially, carried out in accordance with the technical description and requirements foreseen in the grant agreement. The amounts paid exceed what is due in accordance with the applicable contractual and regulatory provisions. The cost claims are irregular or fraudulent. Lack of harmonised approach within the family with the consequence of unequal treatment of the beneficiaries	Kick-off meetings and "launch events" involving the beneficiaries in order to avoid project management and reporting errors Effective external communication about guidance to the beneficiaries Anti-fraud awareness raising training for the project officers Enhanced family approach (anti-fraud cooperation; common legal and audit service; comprehensive and common IT system for all the family) Operational and financial checks in accordance with the financial circuits. Operation authorisation by the AO For riskier operations, more in-depth ex-ante controls Selection and appointment of expert for scientific reviews of intermediate and/or final reporting If needed: application of Suspension/interruption of payments, Penalties or liquidated damages. Referring grant/beneficiary to OLAF	100% of the projects are controlled, including only value-adding checks. Riskier operations subject to more in-depth controls. The depth depends on risk criteria. However, as a deliberate policy to reduce administrative burden, and to ensure a good balance between trust and control, the level of control at this stage is reduced to a minimum High risk operations identified by risk criteria. Red flags: suspicions raised by staff, audit results, EWS, individual or "population" risk assessment Audit certificates required for any beneficiary claiming more than EUR 375000 (FP7)/EUR 325 000 (Horizon 2020).	Costs: estimation of cost of staff involved in the actual management of running projects. Benefits: budget value of the costs claimed by the beneficiary, but rejected by staff Reductions in error rates identified by audit certificates. Benefits due to operational review of projects and consequent corrective actions imposed on projects	Average number & value of running projects managed 'per' staff FTE Time-to-pay: % of payments made on time Time-to pay: Average nb days net/gross + suspension days cost of control from contracting and monitoring the execution up to payment included/ amount paid (%) Average project mngt cost (staff FTE * standard staff cost) per running* project

Stage 4: Ex-post controls

A - Reviews, audits and monitoring

Main control objectives: Measuring the level of error in the population after ex-ante controls have been undertaken; detect and correct any error or fraud remaining undetected after the implementation ex-ante controls; identifying possible systemic weaknesses in the ex-ante controls, or weaknesses in the rules

Main risks It may happen (again) that...	Mitigating controls	How to determine coverage, frequency and depth	How to estimate the costs and benefits of controls	Control indicators
The ex-ante controls (as such) do not prevent, detect and correct erroneous payments or attempted fraud to an extent going beyond a tolerable rate of error. Lack of consistency in the audit strategy within the family. Lack of efficiency for absence of coordination: multiple audits on the same beneficiary, same programme: reputational risk and high administrative burden on the beneficiaries' side.	Common Ex-post control strategy for the entire Research family (Horizon 2020), implemented by a central service (Common Support Centre, DG RTD): - At intervals carry out audits of a representative sample of operations to measure the level of error in the population after ex-ante controls have been performed - Additional sample to address specific risks - when relevant, joint audits with the Court of Auditors Multi-annual basis (programme's lifecycle) and coordination with other AOs concerned Validate audit results with beneficiary In case of systemic error detected, extrapolation to all the projects run by the audited beneficiary If needed: referring the beneficiary or grant to OLAF	- Common Representative audit Sample (CRaS): MUS sample across the programme to draw valid management conclusions on the error rate in the population. - RTD risk-based sample, determined in accordance with the selected risk criteria, aimed to maximise deterrent effect and prevention of fraud or serious error	Costs: estimation of cost of staff involved in the coordination and execution of the audit strategy .Cost of the appointment of audit firms for the outsourced audits. Benefits: budget value of the errors detected by the auditors. Non quantifiable benefits: Deterrent effect. Learning effect for beneficiaries. Improvement of ex-ante controls or risk approach in ex-ante controls by feeding back findings from audit. Improvement in rules and guidance from feedback from audit.	Representative error rate Residual error rate in comparison to the materiality threshold. Amount of errors and corrections concerned. Number of audits finalised (+ % of beneficiaries & value coverage) cost of control ex post audits/ value of grants audited

B - Implementing results from ex-post audits/controls

Main control objectives: Ensuring that the (audit) results from the ex-post controls lead to effective recoveries; Ensuring appropriate accounting of the recoveries made

Main risks It may happen (again) that...	Mitigating controls	How to determine coverage, frequency and depth	How to estimate the costs and benefits of controls	Control indicators
The errors, irregularities and cases of fraud detected are not addressed or not addressed in a timely manner	Systematic registration of audit / control results to be implemented and actual implementation. Validation of recovery in accordance with financial circuits. Authorisation by AO Notification to OLAF and regular follow up of detected fraud.	Coverage: 100% of final audit results <i>with a financial impact</i>. Depth: All audit results are examined in-depth in making the final recoveries. Systemic errors are extrapolated to all the non-audited projects of the same beneficiary	Costs: estimation of cost of staff involved in the implementation of the audit results. Benefits: budget value of the errors, detected by ex-post controls, which have actually been corrected (offset or recovered). Loss: budget value of such ROs which are 'waived' or have to be cancelled.	Amounts being recovered and offset Number/value/% of audit results pending implementation Number/value/% of audit results implemented

ANNEX 5b: Internal Control Templates for budget implementation (ICTs)

Indirect entrusted management DG RTD - FP7 and Horizon 2020

The ICT covers: (1) the executive agencies REA, ERCEA, INEA and EASME (the two later for Horizon 2020¹⁴⁰) (2) cross delegations to other Commission services (3) the joint undertakings (4) the Article 185 entities.

Stage 1: Establishment (or prolongation) of the mandate to the entrusted entity ("delegation act"/ "contribution agreement" / etc).

Main control objectives: Ensuring that the legal framework is fully compliant and regular (legality & regularity), delegated to an appropriate entity (best value for public money, economy, efficiency), without any conflicts of interests (anti-fraud strategy), and gives all the references necessary for a smooth running of the new entity.

Main risks It may happen (again) that...	Mitigating controls	How to determine coverage, frequency and depth	How to estimate the costs and benefits of controls	Control indicators
The establishment (or prolongation) act of the mandate of the entrusted entity lacks clear references regarding the responsibilities of each involved actor. For PPPs: the evaluation method of the in-kind contributions provided by the industry partners is not clear.	Ex-ante evaluation Widespread consultation, internally and with external stakeholders. Hierarchical validation within the authorising department Inter-service consultation, including all relevant DG. Adoption by the Commission	Coverage/Frequency: 100%/once for the establishment and partial for amendments or extensions.	Costs: This stage implies several DGs, doesn't happen regularly and can be very different for each entity. A systematic cost calculation wouldn't give exploitable data Benefits: Benefits cannot be calculated in terms of budget.	Overall supervision cost per (type of) entrusted entity (%)

¹⁴⁰ In fact only the operating administrative budget of the executive agencies is actually paid by DG RTD. The operational budget is directly allocated to the Agency – in this case DG RTD does not strictly have a financial responsibility, but does still have a responsibility to supervise the agency in terms of the achievement of results.

Stage 2: Assessment and supervision of the entrusted entity's financial and control framework (towards "budget autonomy"; "financial rules").

Main control objectives: Ensuring that the entrusted entity is fully prepared to start/continue implementing the delegated funds autonomously with respect of all 5 ICOs.

Main risks It may happen (again) that...	Mitigating controls	How to determine coverage, frequency and depth	How to estimate the costs and benefits of controls	Control indicators
The financial and control framework deployed by the entrusted entity is not fully mature to guarantee achieving all 5 ICOs	Ex-ante assessment, conditional to granting budget autonomy Hierarchical validation within the authorising department Use of Model- or Framework- financial rules (MFR or FFR) Standard business processes and IT tools (EAs and JTIs) Secondment or selection of key staff Continuous cooperation within the Research family (IC network, FAIR...) in order to harmonize the IC framework Review of audit reports (IAS, ECA)	Coverage/frequency: 100% of entrusted entities/once at the beginning and partial (problem focussed) for amendments or work arrangements Depth is determined after considering the type or nature of the entrusted entity, its form and/or the value of the budget concerned.	Costs: estimation of cost of staff involved in the ex-ante assessment process (which may include missions, if applicable). Benefits: The total budget amount entrusted to the entity,	overall supervision cost per (type of) entrusted entity (%)

Stage 3: Operations: monitoring, supervision, reporting.

Main control objectives: Ensuring that the Commission is fully and timely informed of any relevant management issues encountered by the entrusted entity, in order to possibly mitigate any potential financial and/or reputational impacts (legality & regularity, achievement of scientific objectives, sound financial management, true and fair view reporting, anti-fraud strategy).

Main risks It may happen (again) that...	Mitigating controls	How to determine coverage, frequency and depth	How to estimate the costs and benefits of controls	Control indicators
The Commission is not informed of relevant management issues encountered by the entrusted entity in a timely manner The Commission does not react upon and mitigate notified issues in a timely manner which may reflect negatively on the Commission's governance reputation and quality of accountability reporting. The programme Horizon 2020 implementation (procedures, monitoring arrangements, communication with beneficiaries, budget planning, etc) is not consistent within the Research family and with the 7 years' framework	Delegation Act/ Contribution agreement/etc specifying the control, accounting, audit, publication, etc related requirements – incl. the modalities on reporting back relevant and reliable control results Membership of the Governing Boards (JTIs – 50% voting rights) or the Steering Committee (EAs) Monitoring or supervision of the entrusted entity e.g. 'regular' monitoring meetings at operational level to review progress in achieving operational results; review of reported control results and any underlying management/audit reports; scrutiny of annual report, etc. Management review of the supervision results. If appropriate/needed: - reinforced monitoring of operational and/or financial aspects of the entity - potential escalation of any major governance-related issues with entrusted entities The Common Support Centre in RTD provides all the members of the Family with harmonised procedures, guidance and IT tools. DG RTD centralises the budget planning and the monitoring of the Horizon 2020's budget implementation.	Coverage: 100% of the entities are monitored/supervised. Frequency: key KPI's reported on a monthly basis, regular steering committee or Governing Board meetings), annual reports (AAR and operational reporting), evaluation reports. In case of operational and/or financial issues, appropriate mitigating measures are available and should be used Coverage/ Frequency: 100% Depth: All the underlying implementation tools are defined et developed at family level.	Costs: estimation of cost of staff involved in the actual (regular or reinforced) monitoring of the entrusted entities. Benefits: The average annual budget amount entrusted to the entity. Costs: costs of the staff involved in Family coordination activities Benefits: Qualitative benefits: Optimised procedures, harmonised approach to beneficiaries on multiple issues (audits, fraud, legal)	overall supervision cost per (type of) entrusted entity (%)

Stage 4: Commission contribution: payment or suspension/interruption.

Main control objectives: Ensuring that the Commission adequately assesses the management situation at the entrusted entity, before either paying out the (next) contribution for the operational and/or operating budget of the entity, or deciding to suspend/interrupt the (next) contribution. This is very closely linked to stage 3 above

Main risks It may happen (again) that...	Mitigating controls	How to determine coverage, frequency and depth	How to estimate the costs and benefits of controls	Control indicators
The Commission pays out the (next) contribution to the entrusted entity, while not being aware of the management issues that may lead to financial and/or reputational damage. Bad cash forecast leading to the Commission paying too much compared to the EE's needs In times of shortage of credits, the budget appropriations are not optimised with the current needs within the family	Delegation Act/ Contribution agreement/etc specifying the control, accounting, audit, publication, etc related requirements – including reporting Management review of the supervision results. Standard procedures for the validation of all payments and recovery of non-used operating budget subsidy Good internal communication to ensure that issues are known and dealt with (see stage 3) Family level budget coordination in DG RTD	Coverage: 100% of the contribution payments. Frequency: following the rhythm of the payments There is a review before each payment is made. However, the depth will depend on identified issues and on the body involved.	Costs: estimation of cost of staff involved (part of the general supervision costs also linked to stage 3 above) Benefits: The average annual budget amount entrusted to the entity Qualitative benefit: optimised credit implementation	Overall supervision cost per (type of) entrusted entity (%)

Stage 5: Audit and evaluation, Discharge for Joint Undertakings

Main control objectives: Ensuring that assurance building information on the entrusted entity's activities is being provided through independent sources as well, which may confirm or contradict the management reporting received from the entrusted entity itself (on the 5 ICOs).

Main risks It may happen (again) that...	Mitigating controls	How to determine coverage, frequency and depth	How to estimate the costs and benefits of controls	Control indicators
The Commission has not sufficient information from independent sources on the entrusted entity's management achievements, which prevents drawing conclusions on the assurance for the budget entrusted to the entity – which may reflect negatively on the Commission's governance reputation and quality of accountability reporting.	Delegation Act/Contribution agreement/etc specifying the control, accounting, audit, publication, etc related requirements – including independent audit function (where appropriate) and cooperation with IAS and ECA. The IAS is the internal auditor for all EAs and JTIs. The ECA has access to all the bodies for which a recourse to new management modes has been done and gives a separate opinion (leading to separate discharge) for JUs and EAs for their administrative budget. Harmonised ex-post audits (common audit strategy for Horizon 2020), common audit service- potential escalation of any major governance-related issues with entrusted entities - Exchange of relevant anti-fraud information about shared beneficiaries within the Research family Interim evaluations by independent experts of achievement of policy objectives	Coverage: sample as needed (e.g. random/representative, value-targeted, risk-based). Frequency: whenever necessary. The depth depends on the type of entity and the level of risks assessed., Annual report of the ECA on all JUs.	Costs: estimation of cost of (RTD) staff involved in the supervision of this stage (goes together with the costs of supervision in stages 3 and 4).	Assurance being provided (via managementt/audit reporting); representative error rate, residual error rate within a tolerable range; Situation confirmed by audit opinions. overall supervision cost per (type of) entrusted entity (%)

ANNEX 5c: Internal Control Templates for budget implementation (ICTs)

ICT for InnovFin (the H2020 financial instrument)

IFI = (entrusted) International Financial Institution (eg EIB/EIF, etc); *FI* = (further entrusted) Financial Intermediaries; *"sub"-FI* = (further) sub-delegated FI; *FR* = Final Recipient

Stage 1 – Set-up/design of the Financial Instrument and designation of International Financial Institution (IFI)

Main control objectives:

- Ensuring that the Financial Instrument is adequate for meeting the policy or programme objectives (effectiveness); Compliance (legality & regularity); Prevention of fraud (anti-fraud strategy)
- Ensuring that the most promising International Financial Institution (IFI) is pre-determined or selected to ensure that the Financial Instrument is implemented effectively and efficiently; Sound financial management; Legality and regularity; Fraud prevention and detection

Main risks <i>It may happen (again) that...</i>	Mitigating controls	How to determine coverage frequency and depth	How to estimate the costs and benefits of controls	Possible control indicators
a) The actions supported through the Financial Instrument do not adequately reflect the policy objectives	a) Hierarchical validation (incl. at DG level) of the: 1) Regulation (approved by the Legislative Authority); 2) Delegation agreement, including notably an ex-ante evaluation (required by RAP art. 224); 3) Annual work programme for "Access to risk finance" (part of the H2020 WP) with an annual budget Inter-service consultation of relevant DGs (horizontal and operational) Consultation of the H2020 Advisory Group on Access to Risk Finance Formal adoption by the Legislative Authority (for the Regulation), by Commission decision (for the DA), and by the Budgetary Authority (for the WP and the annual budget). Regular evaluations (see Stage 3)	If risk materialises, the Financial Instrument would be irregular. Theoretical impact 100% of the funds involved and significant reputational consequences. <u>Coverage /frequency:</u> 100%	<u>Costs:</u> Estimation of the total cost of monitoring and supervision by RTD <u>Benefits:</u> The total value of the Financial Instrument (this is our maximum risk exposure if the basic acts are inadequate)	<u>Effectiveness:</u> Where applicable, opinions by advisory bodies (recommendations, actions taken)

Main risks <i>It may happen (again) that...</i>	Mitigating controls	How to determine coverage frequency and depth	How to estimate the costs and benefits of controls	Possible control indicators
b) The Delegation Agreement is inadequate in coverage of operational and management provisions (RAP art. 217 & 222-225)	b) The main principles were agreed with the IFI in the FAFAs (managed by ECFIN)			
c) The selection of <u>the IFI</u> is not in line with FR & RAP criteria, especially re: 'alignment of interests' (FR art 140.2e)	c) EIB and EIF were pre-determined in accordance with FR art. 58.1c. They were also chosen in order to ensure continuity between FP7 and H2020.	(see above)		Findings in audit reports
d) The IFI (and the (sub)FI) does not have the experience and financial capacity / administrative & control capacity to ensure an effective & sound implementation of the Financial Instrument (FR art 60.2)	d) The Council asked the Commission to continue working with the EIB and EIF, since these had managed RSFF/RSI well and therefore had demonstrated that they had the experience required. The negotiations with EIB/EIF for InnovFin focussed on the market gaps to be addressed, but also ensured that the necessary administrative capacity existed.			

Main risks <i>It may happen (again) that...</i>	Mitigating controls	How to determine coverage frequency and depth	How to estimate the costs and benefits of controls	Possible control indicators
e) The RSM (Risk-Sharing Mechanism) is too generous to the IFI (risk of unbalanced risks)	e) <i>Same controls as for a) above</i> The EU's risk share is defined in the Delegation agreement. The risk sharing model was agreed in line with horizontal guidance for Financial instruments from DG BUDG and ECFIN. It was also subject to a formal Commission decision.			

Stage 2 – Implementation of the Financial Instr't by the International Financial Institution (IFI), via Financial Intermediaries (FIs)

Main control objectives:

- Ensuring that the funds allocation is optimal (best value for public money; effectiveness, economy, efficiency); ensuring that the most promising Financial Intermediaries (FI), Final Recipients (FR) are selected to meet the policy objectives (effectiveness)
- Ensuring that the remuneration paid to the IFI is adequate (cost-effectiveness)
- Compliance (legality & regularity); Prevention of fraud (anti-fraud strategy); Safeguarding of assets and information; Reliable reporting (true and fair view)

Main risks <i>It may happen (again) that...</i>	Mitigating controls	How to determine coverage frequency and depth	How to estimate the costs and benefits of controls	Possible control indicators
a) The call for and selection of the <u>contracted FIs and FRs</u> is not in line with FR & RAP criteria for eligibility or exclusion, especially ' <u>alignment of interests</u> ' and ' <u>no relations with offshore banking and tax havens</u> '	a) Responsibility for the call, for evaluating, proposing and selecting FIs, lies with the IFI (the FIs do not perform calls). Due diligence by the IFI, which checks as part of the evaluation that banks are not registered in tax havens etc. Redress procedure for FIs not selected (part of EIF's and EIB's evaluation procedure) Implementation of various controls by the IFI/FIs in accordance with the FAFA and Delegation agreement EIB's control strategy is presented to the Commission Ex-ante controls by IFIs at "contracting" stage – EIB has a large department with experts in specific technology areas who check ex-ante that the proposed projects are eligible, excellent science and financially viable. An Eligibility Committee, managed by the RTD "Designated Service" (DS), is consulted on compliance with the <u>eligibility criteria</u>, before attribution of every direct EIB loan. <u>On-the-spot</u> verifications by IFIs – a "monitoring team" visits FIs and FRs before project and after project finalisation	<u>Coverage / frequency</u>: determined by the IFI/FIs in accordance with the Delegation agreement <u>Depth</u>: determined by the IFI/FIs in accordance with the Delegation agreement		<u>Effectiveness</u>: Number of appeals to the selection decision (redress procedure) Number of cases obtaining redress <u>Efficiency</u>: Time to publication of selection results Time to contract <u>Cost-effectiveness</u>: Total cost of monitoring and supervision by RTD

Main risks <i>It may happen (again) that...</i>	Mitigating controls	How to determine coverage frequency and depth	How to estimate the costs and benefits of controls	Possible control indicators
b) The design of the accounting and reporting arrangements would not provide a True & Fair View c) the remuneration (structure and/or level) of the IFI¹⁴¹, the reimbursement of any exceptional costs and costs for technical assistance or additional tasks would not be in line with the SFM objective (e.g. admin fees unjustifiably high)	b) Separate records per Financial Instrument are to be kept by the IFI; and harmonised reporting has been required by the Commission. c) Fees and incentives are defined in the FAFA and the Delegation agreement, including an overall cap. The agreements foresee a possible review by the Steering Committee in 2016 of the multi-annual objectives that have to be met if performance fees are to be paid.	c) In-depth assessment of the statement of expenses		c) Remuneration and costs for actually managed funds (compared to benchmark)

Stage 3 - Monitoring and supervision of the Financial Instrument by the Commission, incl. ex-post control and assurance building

Main control objectives:

- Ensuring that the operational results (deliverables) from the Financial Instrument are of good value and meet the objectives and conditions (effectiveness & efficiency); ensuring that the related financial operations comply with regulatory and contractual provisions (legality & regularity); prevention of fraud (anti-fraud strategy); ensuring appropriate accounting of the operations (reliability of reporting, safeguarding of assets and information)
- Ensuring appropriate accounting of the repayments and assigned revenue made (reliability of reporting)
- Ensuring that the (audit) results from the ex-post controls lead to assurance for the accountable AOD (5 ICOs)

¹⁴¹ Remuneration may include administrative fees, treasury management fees and incentives as well as exceptional and unforeseen expenses.

Main risks <i>It may happen (again) that...</i>	Mitigating controls	How to determine coverage, frequency and depth	How to estimate the costs and benefits of controls	Possible control indicators
a) The IFI (and the (sub)FI) provide support to activities which are not contributing to achieving the policy objectives and the implementation is not in compliance with applicable regulations and is not in accordance with the principle of sound financial management b) Internal control weaknesses, irregularities, errors and fraud are not detected and corrected by the IFI (and the (sub)FI), resulting in the EU funds not achieving the policy objectives and not complying with applicable regulations c) The IFI does not report information that RTD considers crucial d) The Financial Instrument transactions lead to contingent liabilities for the EU budget	a,b) Monitoring and supervision of the IFI/FIs is organised formally through the InnovFin Debt Steering Committee. Regular reporting (quarterly, annually and ad hoc) by the IFI to the Commission "Designated Service" on operational and financial performance and administrative costs. <u>Annual reporting:</u> Financial statements; Management declaration; Summary report of audits and controls; independent (external) audit opinion. <u>In case of a key issue (weak reporting, negative audit opinion, high risk operations, etc):</u> Reinforced monitoring and supervision, <u>If needed:</u> The Commission has the right to suspend or interrupt payments, or even apply the exit strategy (winding-up) Referring IFI/FI to OLAF c) Annual report has to be audited by an independent auditor, who also reports on the control system d) The H2020 legal base stipulates that the EU's liability (i.e. financial risk) is limited to the contribution it has paid, so there can be no contingent or off-balance sheet liabilities over this amount.	<u>Coverage:</u> 100% of the funding payments to the entrusted entity are controlled	<u>Costs:</u> Estimation of the total cost of monitoring and supervision by RTD (+ cost of contracted services, if any) <u>Benefits:</u> value of the funding provided and leverage, as well as scientific excellence (innovation) <u>Losses:</u> e.g. write-offs of equity/loans, loan guarantees called	<u>Effectiveness:</u> <i>Success ratios and KPIs for policy objectives</i> (e.g. "leverage", "co-risk taking", number of FRs supported by the Financial Instrument, disbursement rate) Internal control, auditing and monitoring "issues"; interventions; issues under reinforced internal control, auditing and monitoring; critical audit findings <u>Cost-Effectiveness:</u> Total cost of monitoring and supervision by RTD over value delegated Management fees over value delegated The sum of the total cost of monitoring/supervision by RTD and management fees, over value delegated

ANNEX 6: Implementation through national or international public-sector bodies and bodies governed by private law with a public sector mission

European Joint Undertaking for ITER and the Development of Fusion Energy (F4E)

Programmes concerned

Seventh Framework Programme of the European Atomic Energy Community (Euratom) for nuclear research and training activities – Thematic area 'Fusion Energy research'

Research and Training Programme of the European Atomic Energy Community (2014-2018)

Annual budgetary amount entrusted

The following budgetary amounts were entrusted to this body in 2014 (EU contribution only):

Commitment appropriations operational under 2014 credits (C1):	EUR 720 917 805.00
Commitment appropriations administrative under 2014 credits:	EUR 910 293.83
Payment appropriations operational under 2014 credits:	EUR 422 982 076.93
Payment appropriations administrative under 2014 credits:	EUR 281 380.26

Duration of the delegation

Until 18 April 2042 (parallel with the ITER International Agreement)

Justification of the recourse to indirect centralised management

2007/198/Euratom: Council Decision of 27 March 2007 establishing the European Joint Undertaking for ITER and the Development of Fusion Energy and conferring advantages upon it (OJ L 90, 30.3.2007, p. 58)

Justification of the selection of the bodies (identity, selection criteria, possible indication in the legal basis etc).

Not applicable

Summary description of the implementing tasks entrusted to these bodies

See Art. 1(2) of Council Decision 2007/198/Euratom

Bio-based Industries Joint Undertaking (BBI)

Programmes concerned

The specific programme implementing Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020) – Societal Challenge 2

Annual budgetary amount entrusted

The following budgetary amounts were entrusted to this body in 2014 (includes EFTA contributions and transfers):

Commitment appropriations operational under 2014 credits:	EUR 51 500 000.00
Commitment appropriations administrative under 2014 credits:	EUR 684 807.00
Payment appropriations operational under 2014 credits:	None
Payment appropriations administrative under 2014 credits:	EUR 581 758.00

Duration of the delegation

Until 31 December 2024

Justification of the recourse to indirect centralised management

Council Regulation (EU) No 560/2014 of 6 May 2014 establishing the Bio-based Industries Joint Undertaking (OJ L 169, 7.6.2014, p. 130)

Justification of the selection of the bodies (identity, selection criteria, possible indication in the legal basis etc).

Not applicable

Summary description of the implementing tasks entrusted to these bodies

See Art. 2 of Council Regulation (EU) No 560/2014

Innovative Medicines Initiative 2 Joint Undertaking (IMI2)

Programmes concerned

Specific Programme Cooperation implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013): Thematic area 'Health' (08 02)

The specific programme implementing Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020)

Annual budgetary amount entrusted

The following budgetary amounts were entrusted to this body in 2014 (includes EFTA contributions and transfers):

Commitment appropriations operational under 2014 credits:	EUR 213 519 000.00
Commitment appropriations administrative under 2014 credits:	EUR 504 700.00
Payment appropriations operational under 2014 credits:	EUR 161 187 993.00

Payment appropriations administrative under 2014 credits:

EUR 4 440 000.00¹⁴²

Duration of the delegation

Until 31 December 2024

Justification of recourse to indirect centralised management

Council Regulation (EU) No 557/2014 of 6 May 2014 establishing the Innovative Medicines Initiative 2 Joint Undertaking (OJ L 169, 7.6.2014, p. 54)

Justification of the selection of the bodies (identity, selection criteria, possible indication in the legal basis, etc)

Not applicable

Synthetic description of the implementing tasks entrusted to these bodies

See Art. 2 of the Council Regulation (EU) No 557/2014

Clean Sky 2 Joint Undertaking (Clean Sky 2)

Programmes concerned

Specific Programme Cooperation implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013): Thematic area 'Aeronautics' (08 07)

The specific programme implementing Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020)

Annual budgetary amount entrusted

The following budgetary amounts were entrusted to:

Commitment appropriations operational under 2014 credits:	EUR 103 000 000.00
Commitment appropriations administrative under 2014 credits:	EUR 1 262 093.00
Payment appropriations operational under 2014 credits:	EUR 121 671 994.00
Payment appropriations administrative under 2014 credits:	EUR 3 175 539.00

Duration of the delegation

Until 31 December 2024

Justification of recourse to indirect centralised management

Council Regulation (EU) No 558/2014 of 6 May 2014 establishing the Clean Sky 2 Joint Undertaking

¹⁴² EUR 490 000 for IMI2 and EUR 3 950 000 for the first IMI.

(OJ L 169, 7.6.2014, p. 77)

Justification of the selection of the bodies (identity, selection criteria, possible indication in the legal basis, etc)

Not applicable

Synthetic description of the implementing tasks entrusted to these bodies

See Art. 2 of Council Regulation (EU) No 558/2014

Fuel Cells and Hydrogen 2 Joint Undertaking (FCH2)

Programmes concerned

Specific Programme Cooperation implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013) – Nanosciences, Nanotechnologies, Materials and New Production Technologies, Energy, Environment (including climate change) and Transport (including aeronautics) (08 04, 8 05, 08 06 and 08 07)

The specific programme implementing Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020)

Annual budgetary amount entrusted

The following budgetary amounts were entrusted to this body in 2014 (includes EFTA and other DGs' contributions and transfers):

Commitment appropriations operational under 2014 credits:	EUR 96 154 620.00
Commitment appropriations administrative under 2014 credits:	EUR 301 447.00
Payment appropriations operational under 2014 credits:	EUR 40 361 555.00
Payment appropriations administrative under 2014 credits:	EUR 856 666.00

Duration of the delegation

Until 31 December 2024

Justification of recourse to indirect centralised management

Council Regulation (EU) No 559/2014 of 6 May 2014 establishing the Fuel Cells and Hydrogen 2 Joint Undertaking (OJ L 169, 7.6.2014, p. 108)

Justification of the selection of the bodies (identity, selection criteria, possible indication in the legal basis, etc)

Not applicable

Synthetic description of the implementing tasks entrusted to these bodies

See Art. 2 of Council Regulation (EU) No 559/2014

Eurostars-2

Programmes concerned

Specific Programme Capacities implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013) – Research for the benefit of SMEs

The specific programme implementing Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020)

Annual budgetary amount entrusted

The following budgetary amounts were entrusted to this body in 2014 (EU contribution only) (a maximum of 4.5% of the EU contribution shall be used by the dedicated implementation structure to contribute to the overall operational costs of the partnership):

Commitment appropriations under 2014 credits:	EUR 33 774 036.99
Payment appropriations under 2014 credits:	EUR 14 324 036.99

Duration of the delegation

Until 31 December 2024

Justification of recourse to indirect centralised management

Decision No 553/2014/EU of the European Parliament and of the Council of 15 May 2014 on the participation of the Union in a Research and Development Programme jointly undertaken by several Member States aimed at supporting research and development performing small and medium-sized enterprises (OJ L 169, 7.6.2014, p. 1)

Justification of the selection of the bodies (identity, selection criteria, possible indication in the legal basis, etc)

Recital (19) of Decision No 553/2014/EU

Synthetic description of the implementing tasks entrusted to these bodies

The ESE shall act as the dedicated implementation structure of the Eurostars Joint Programme and is in charge of the execution of the Programme. A more detailed list of tasks can be found in section 4 of Annex II to Decision 743/2008/EC of the European Parliament and of the Council.

European Metrology Programme for Innovation and Research (EMPIR)

Programmes concerned

Specific Programme Cooperation implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

The specific programme implementing Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020)

Annual budgetary amount entrusted.

The following budgetary amounts were entrusted¹⁴³ to this body in 2014 (EU contribution only):

Commitment appropriations under 2014 credits:	EUR 0
Payment appropriations under 2014 credits:	EUR 45 246 000

Duration of the delegation

Until 31 December 2024

Justification of recourse to indirect centralised management

Decision No 555/2014/EU of the European Parliament and of the Council of 15 May 2014 on the participation of the Union in a European Metrology Programme for Innovation and Research (EMPIR) jointly undertaken by several Member States (OJ L 169, 7.6.2014, p. 27)

Justification of the selection of the bodies (identity, selection criteria, possible indication in the legal basis, etc)

Recital (13) of Decision No 555/2014/EU

Synthetic description of the implementing tasks entrusted to these bodies

See Annex I of the Decision No 555/2014/EU

European and Developing Countries Clinical Trial Partnership (EDCTP)

Programmes concerned

Specific Programme Cooperation implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013) – Health

The specific programme implementing Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020)

Annual budgetary amount entrusted

The following budgetary amounts were entrusted to this body in 2014 (includes EFTA contributions and transfers):

Commitment appropriations operational under 2014 credits:	EUR X
Commitment appropriations administrative under 2014 credits:	EUR X
Payment appropriations operational under 2014 credits:	EUR 16 937 906.06
Payment appropriations administrative under 2014 credits:	EUR X

¹⁴³ A maximum of 4.5% of the Community financial contribution shall be used by the dedicated implementation structure to contribute to the overall operational costs of the Eurostars Joint Programme. This ceiling has been respected.

Duration of the delegation

Until 31 December 2024

Justification of recourse to indirect centralised management

Decision No 556/2014/EU of the European Parliament and of the Council of 15 May 2014 on the participation of the Union in a second European and Developing Countries Clinical Trials Partnership Programme (EDCTP2) jointly undertaken by several Member States (OJ L 169, 7.6.2014, p. 38)

Justification of the selection of the bodies (identity, selection criteria, possible indication in the legal basis, etc)

Recital (23) of Decision No 556/2014/EU

Synthetic description of the implementing tasks entrusted to these bodies

See Annex I of Decision No 556/2014/EU

Joint Baltic Sea Research and Development Programme (BONUS)

Programmes concerned

The Specific Programme Cooperation implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

Annual budgetary amount entrusted

There were no additional 2014 commitment credits since the total EU contribution foreseen for BONUS was committed under FP7. Due to a carry-over from 2013, there was no payment in 2014.

Duration of the delegation

The duration of the delegation covers the remaining implementation phase (minimum period of 5 years until the full lifecycle of all BONUS-funded projects has ended). The implementation agreement was signed by the Commission and entered into force on 18 October 2012. This means that the implementation phase (and duration of delegation) will last, at least, until October 2017.

Justification of recourse to indirect centralised management

The use of indirect centralised management is foreseen in the Decision No 862/2010/EU of the European Parliament and of the Council of 22 September 2010 on the participation of the Union in a Joint Baltic Research and Development Programme (BONUS) undertaken by several Member States (OJ L 256, 30.09.2010, p. 1).

Justification of the selection of the bodies (identity, selection criteria, possible indication in the legal basis, etc)

Recital (19) of Decision No 862/2010/EU

Synthetic description of the implementing tasks entrusted to these bodies

See Art. 2 and Art. 5 of Decision No 862/2010/EU

ANNEX 7: EAMR of the Union Delegations (not applicable)

[Not applicable]

ANNEX 8: Decentralised agencies (not applicable)

[Not applicable]

ANNEX 9: Performance information included in evaluations

This Annex lists evaluations¹⁴⁴ foreseen in the MP 2014 and carried out in 2014.

Title of the Evaluation:	Performance of SMEs within FP7 – An Interim Evaluation of FP7 Components
ABB activity:	ABB activity: 08 02 51 Completion of previous research framework programme — Seventh Framework Programme — EC indirect action (2007 to 2013) ABB activity: 08 13 Capacities – Research for the benefit of SMEs (FP7)
Type of evaluation:	Expenditure programme
Summary of performance-related findings and recommendations:	This study was the interim evaluation of SME participation in the Cooperation Specific Programme and the 'Research for the benefit of SMEs' (RSME) schemes under the Capacities Programme of FP7. The target of at least 15% of the funding available under the Cooperation Programme being allocated to SMEs set in the legal basis has been exceeded. Participating SMEs scored much better than non-participating SMEs with regard to employment growth and operating revenue. In Cooperation, 54% of all SMEs reported a positive impact on turnover, for employment the figure is 50% and for exports it is 38%. Where participants were able to estimate the degree of improvement, the average increases were substantial: turnover was +22%, employment +25% and export +28%. In the RSME scheme, 32% of SMEs reported impacts on turnover, for employment 30% and exports 27%. European added value (EAV) was generally considered to be rather high, notably for those SMEs located in Member States with low levels of national support for research and innovation. Especially in RSME, participants reported a high EAV as these projects provided a framework to international performance that was otherwise out of reach for participating SMEs. Funding from FP7 was often complementary to national funding that might be used as a step to accessing EU funding. About 35% of SMEs in the Cooperation Programme and nearly 40% of the SMEs in the RSME scheme reported a positive effect on their innovation behaviour. Additionality scored also relatively high. Only 2% of the SMEs in Cooperation and 4% in the RSME stated that they would have undertaken the project the same way without EC funding. As much as 53% of SMEs in Cooperation and 62% of SMEs in the RSME schemes stated they would not have been able to undertake the project at all without EC funding. The main recommendations were to develop an overall support strategy with clear distinctions between target groups, collect more information to properly assess type of SME, develop objectives that are SMART, assure better insight in actual role of SMEs within the projects, include more instruments for commercialisation of project results and set up support structure for SME associations.
Availability of the report on Europa:	http://ec.europa.eu/research/sme-techweb/pdf/volume i smes in fp7-may2014.pdf

¹⁴⁴ Surveys, rolling reviews, data collection, public consultations, legal implementation reports or other types of studies do not qualify as evaluations and are usually not included in this Annex.

Title of the Evaluation	European Added Value of EU Science, Technology and Innovation actions and EU-Member State Partnership in international cooperation
ABB activity:	ABB activity: 08 17 Capacities – Activities of International Cooperation (FP7)
Type of evaluation:	Expenditure programme
Summary of performance-related findings and recommendations:	The EU action in international cooperation provides a more concrete regional approach to the spirit of international research cooperation rather than bilateral approaches. Some of the current instruments are very effective but strategy and operation can be better connected. INCO-Nets and ERA-Nets are successful instruments, tackling the needs of many. The effectiveness of Science and Technology bilateral agreements, however, is debated, as well as the introduction of many new instruments with the risk of increasing the bureaucracy. The link between the EU strategy and high policy objectives, and the activities that take place at the thematic level and in other parts of the EU at the operational level could, however, be stronger. A new EAV framework for international Science and Technology cooperation includes five criteria: networking, facilitating excellence and capacity building, coordinating critical mass, fostering mutual learning and harmonisation in and beyond Europe and avoiding redundancies. The report makes a number of recommendations. These include making sure that long-term planning leads to sustainability of international engagement at the national level. The issue of whether it is more effective to combine existing instruments, perhaps with a thematic or geographic focus, should be explored. There should be increased focus on the development of framework conditions for innovation in EU-Third Country collaborations and to what extent there is a European added value rationale for innovation activities should be explored. Finally, the five European added value criteria, both in the proposal phase of the actions, as well as during their evaluation phase through an 'EAV test', should be better integrated.
Availability of the report on Europa:	http://ec.europa.eu/research/iscp/pdf/publications/Final_European_Added_Value_inco_MainReport.pdf

Title of the Evaluation	Evaluation of pertinence and impact of the EU research infrastructure activity in FP7
ABB activity:	ABB activity: 08 12 Capacities – Research Infrastructures (FP7)
Type of evaluation:	Expenditure programme
Summary of performance-related findings and recommendations:	In the FP7 research infrastructure activity was well-aligned with the programme's higher-level policy objectives and the objectives of the ERA. The activity addressed the fragmentation of research infrastructure policies at national and European level and was successful in improving the coherence. Relevance was high, with objectives corresponding to policy needs and projects funded largely consistent with meeting those objectives and users' needs. The effects reached by the programme on an improved structuring of the European research base were: • The conduct of scientific research and its effects on the advancement of knowledge and knowledge flow, within the research as well as educational components of the European knowledge society. • To build capacity in the use of advanced research tools and technologies and the development and implementation of new research methods. An important evolution in this context is the eScience paradigm shift. • To foster and accelerate an improved structuring of the European research base and considerably enhanced European and international cooperation in research. The FP7 RI programme has shown that there is potential for impacts on industrial innovation from the involvement of industry in the RI projects, both as suppliers or users of the RIs, by fostering capacity building and knowledge transfer. However, there is a need for further actions in this respect. The programme has been efficient in involving a broad range of stakeholder communities although there was little participation by the private sector. The relatively high participation and funding rate of organisations located in smaller EU15 and newer EU member states was noted. The potential for impacts on society at large is high in areas such as environment. Close to 20% of the funding was allocated to the environmental sciences. Support has been provided to networks of RIs and development of new distributed RIs in atmospheric research, arctic, ocean and marine research, and biodiversity. The impacts are also high in the sphere of health. The programme supported the development of the European life sciences ecosystem of facilities and resources, from biological resource centers to medical research facilities and food and agriculture facilities. The action in the field of social sciences and humanities has also high potential for achieving effects on policy making in other areas of societal importance. The main recommendations include addressing the issue of sustainability through new funding or governance models, promoting a more holistic and comprehensive view among national policy makers, improve strategy coordination among DGs and synergies with other EC services and initiatives, support the development of distributed infrastructures in social sciences and strengthen the innovation element. Consideration should be given to whether it is satisfactory that the ESFRI roadmap be the sole driver of research infrastructure funding priorities.
Availability of the report on Europa:	http://ec.europa.eu/research/infrastructures/index_en.cfm?pg=publications

Title of the Evaluation**Final Evaluation of the Eurostars Joint Programme**

ABB activity:	ABB activity: 08 13 Capacities – Research for the benefit of SMEs (FP7)
Type of evaluation:	Expenditure programme
Summary of performance-related findings and recommendations:	Eurostars contributes to ERA and to the economic growth of Europe by filling an important gap in ERA on industrial R&D as it is a unique market-oriented and bottom-up programme. Eurostars is relevant for the growth of R&D-performing SMEs. Evidence is based on counter-factual analysis showing that R&D performing SMEs with R&D projects funded by Eurostars grew twice as fast as R&D performing SMEs which applied but did not receive funding. The partnership has accelerated the development and the roll-out of new and improved products, processes and services. It has stimulated new cross-border collaborations that the members of the funded consortia intend to continue beyond the Eurostars funding period. It has also contributed to generating jobs in R&D-performing SMEs. EU funding has a leverage effect by stimulating national policy-makers to adopt clear goals and allocate enough funds for the partnership. Eurostars had a positive impact on the technological potential of funded firms. The estimated number of patent applications by funded firms exceeded the number for non-funded applicants. Specifically, on average, firms below the quality threshold filed five patent applications between 2005 and 2013 (1,362 observations). 483 firms were ranked above the quality threshold, but did not obtain funding. These filed on average 3.7 patent applications. There are 808 funded firms, and they filed 5.4 patent applications on average. At the same time, there is a need for improvement in harmonising funding rules and synchronising national processes. The effectiveness of central governance, administration and operations also needs to be improved. The recommendations address the target group and scope of the activity, the governance, the management and operations and funding.

Availability of the report on Europa: https://ec.europa.eu/research/sme-techweb/pdf/ejp_final_report_2014.pdf

Title of the Evaluation:	Evaluation of the impact of projects funded under the 6th and 7th EU Framework Programme for R&D in the area of non-nuclear energy
ABB activity:	ABB activity: 08 05 Cooperation – Energy (FP7)
Type of evaluation:	Expenditure programme
Summary of performance-related findings and recommendations:	The most remarkable result of the FP6 and FP7 Energy projects is related to the construction of ERA. The FP energy programmes permitted the creation and organisation of activities that would have not been possible at the national level. They have supported the emergence of global research champions and allowed the EU to take or maintain a leadership position in certain areas such as biofuels, wind and smart grids. Projects had strong impacts on transnational cooperation, networking and collaboration within the value chain. Participants indicate that their participation has led to substantial organisational impacts, especially in terms of improved networks and knowledge position. For all these measures more than 50% of participants indicate that there is more than a small effect on their organisation for these two aspects. Scientific outputs of FP participants have been substantial. Scientific organisations reported on average around 8 scientific publications per participation, half of which were published in high impact journals. A (rough) extrapolation for (almost) finished projects shows that in total around 18,000 articles and 8000 articles in high impact journals have been published so far. Just over 11% of participants indicate that their participation is associated with at least one patent application or grant. Two-thirds of participants said they see marketable outcomes to their projects. These innovations are roughly equally divided across products, services and processes (each around 20%), with business models only around 6%.The large majority of companies said that there has been an increase in their competitiveness. However, FP6 and FP7 have not yet succeeded in achieving the level of commercialisation that was expected. In terms of economic impact so far, around 20-25% of participating companies see a substantial improvement of more than 5% for turnover and profit. The large majority (76%) of companies indicate that there has been an increase in their general competitiveness. In total 18% of participations indicate to have had an impact on national policy making. Areas with particular high impact were Smart Grids, Other Renewable Energy sources. Furthermore the FPs have permitted to elaborate the long-term energy strategy of the EU. The potential impact on energy savings, renewable energy production and CO2-emission reduction are substantial but limited yet. Main recommendations include continued investment in energy research, development of a more systemic vision, maintaining a broad portfolio of support instruments, more systematic attention for valorisation of research results, capitalisation of results from demonstration projects, reducing administrative burdens and supporting new entrants.
Availability of the report on Europa:	http://ec.europa.eu/energy/en/studies/evaluation-impact-projects-funded-under-6th-and-7th-eu-framework-programme-rdd-area-non

Title of the Evaluation	Ex-Post Evaluation of FP7 Cooperation Programme Theme: "Environment (including Climate Change)"
ABB activity:	ABB activity: 08 06 Cooperation – Environment (including climate change) (FP7)
Type of evaluation:	Expenditure programme
Summary of performance-related findings and recommendations:	The Environment activity of FP7 contributed to the objectives of ERA through developing networks and research communities. The activity was designed to support the EU and Member States by providing high quality science-based advice throughout the policy cycle and to anticipate and understand emerging global challenges. While its direct link with decision-making may not have always been evident, the main policy role of the activity was more in creating knowledge that would subsequently be by intermediaries. The activity also played a pivotal role in creating a critical mass of highly relevant research, in providing opportunities to early-stage researchers and in structuring research communities. The FP7-Environment programme produced 2,876 papers (as of November 2014), of which 44% were published in high ranked journals. On average, each project produced 13.6 publications. At the top of the list, 35 papers were published in <i>Nature</i>, <i>Science Nanotechnology</i>, and <i>Science</i>, with SJR indexes of 14.5, 12 and 11.2 respectively. Several projects accomplished highly relevant innovation results, reaching the exploitation stage with success. The overall economic and societal impact, however, was considered to be below the potential of the programme. By extrapolation from the projects surveyed, the activity as a whole could lead to 20-60 successful innovations with large economic impacts, generating around €1.5 billion of sales and €7.5 billion of energy and raw materials savings over their innovation lifetime (typically, 20 years). More importantly, FP7- Environment as a whole could generate around €7-20 billion of sales and €30-100 billion in terms of resource savings. The activity also played a key role in the development and aggregation of climate change models, with a strong impact at the International Panel on Climate Change (IPCC). This contributes to the creation of international standards that avoid fragmentation of research and funding. Main recommendations were clustered within four key areas: development of a project monitoring system for assessing impacts, focus on exploitation and applicability of project output, integration of research excellence and innovation with policy support and identifying evidence gaps to prioritise research and to take a solution-based approach to policies.
Availability of the report on Europa:	http://bookshop.europa.eu/en/ex-post-evaluation-of-fp7-cooperation-programme-theme-environment-including-climate-change--pbKI0614224/

Title of the Evaluation	International Science and Technology Cooperation in the EU's Seventh Framework Programme: the specific programme 'Cooperation' and its thematic areas
ABB activity:	Various 08 activities
Type of evaluation:	Expenditure programme
Summary of performance-related findings and recommendations:	International cooperation in FP7 has contributed to widening ERA and to improving the framework conditions for international S&T cooperation. FP7 international cooperation supported further development of previous joint research activities, access to complementary know-how and knowledge-sharing in the specific area, the achievement of specific goals with Third Countries and partners and improved networking with Third Country and EU research actors. The vast majority of researchers, both from EU and Third Countries, perceive positive impacts of the FP7 international cooperation on their respective organisations and the organisations' strategies. FP7 international cooperation shows positive effects on scientific publications and helped open up new markets and adapt product development to local needs. It also supported the development of various new skills in terms of application of scientific tools and methods or R&I project management. Flexibility requirements of S&T development are combined with the accountability needs of public policies. The activities are complementary and synergetic with FP research activities overall. However, the majority of EU coordinators see potential to improve and simplify formalities and reduce the administrative burden. Main recommendations propose both better coordination and a flexible approach. Coordination at Commission level could include the development of templates to describe international R&I cooperation results and impacts and which could be shared internally. The study also calls for flexibility in, for example, leaving to the initiative of the services holding the subject matter expertise the performance of analysis and assessments.
Availability of the report on Europa:	http://ec.europa.eu/research/iscp/pdf/publications/Final Intern Science Techno logy Coop-MainReport.pdf#view=fit&pagemode=none

Title of the Evaluation: Assessing the Research Management Performance of FP projects

ABB activity: Various

Type of evaluation: Other

Summary of performance-related findings and recommendations: This study was an exploratory study to identify the diversity of structures, roles, tasks, skills and tools in FP6 and FP7 collaborative projects in relation to research management performance. It also sought to establish their effect on project success (assessed against four criteria of accountability, output, impact, efficiency).

Six enabling factors and three management models conducive to good research management performance are identified. It was found that FP schemes and themes have only a limited effect on research management performance. In general, the findings indicate that research management is first and foremost about people, not about complex management models and management tools.

Findings included that project success is positively affected by research management performance. However, project success does not necessarily benefit from partner involvement, trust (between project partners on a personal level) at the end of the project and certain management styles.

The Main findings regarding structures and models put in place by the Commission include that FP7 and Horizon 2020 better facilitate effective research management than previous FPs, Intellectual Property Rights remain an issue and Commission tools are not considered as useful to the majority of respondents.

Recommendations regarding structures and models put in place by the Commission include a flexible approach to research management, specific requirements regarding consortia to be mentioned and evaluated, researcher training to become an objective in the calls and the development of a strong monitoring system. The Commission should also explore the possibilities of simplifying the IP rules and ensure a better alignment with WTO/TRIPS and anti-trust rules. Finally, Commission tools should be reviewed to ensure interface with other management tools and developing networking and social media-based communication.

Availability of the report on Europa: http://ec.europa.eu/research/evaluations/pdf/archive/other_reports_studies_and_documents/rmp_study_final_report.pdf

Title of the Evaluation	Assessing the contribution of the Framework Programmes to the Development of Human Research Capacity
ABB activity:	Various
Type of evaluation:	Other
Summary of performance-related findings and recommendations:	This study analysed the impact of participation in projects funded through FP6 and FP7 on human research capacity, at three levels. At the individual level FP participation had a significantly positive effect on the development of individual skills and expertise, contributes to further enhancing the mobility of researchers and offers mid- and longer-term career perspectives to researchers. Almost half of the researchers perceive positive effects of FP participation on their research career (survey data). At team level, FP funding contributed to a small change in the ratio of permanent/fixed-term contracts and a shift to greater use of fixed-term contracts in the participating research teams. The use of full-time fixed-term contracts rose in 27% of FP research teams, whereas the use of full-time permanent contracts grew by 20%. Participation in FP-funded activities was the strongest factor contributing to the reported changes in the mix of the contract types used. Finally, at system level, FP facilitates knowledge transfer inside and outside the EU, nevertheless the real impact on longer term extra-EU mobility seems to be limited. FP participation also contributes to maintaining levels of researchers' employment in Europe. The study assesses that around 142,000 additional researchers were hired by the beneficiary research teams during the implementation of FP projects, or an average of 1.3 researchers per research team. This figure varies substantially across Specific Programmes, regions and disciplines. Furthermore, a large part of those additionally hired researchers stayed in the beneficiary research teams: about 43%, or 61,000, of the additionally hired researchers stayed in their teams after project completion. The share of additionally hired international researchers among the research teams in "Capacities" and "Cooperation" was significantly lower than 50%. By contrast, among the teams involved in specific programmes that emphasise the strategic goal to attract more researchers from abroad ("Ideas" and especially "People"), international researchers constituted about two-thirds of all additionally hired researchers. Internationalisation is also the main impact realised at team and individual level. Main recommendations include considering the introduction of an FP-related label reflecting the importance of FP participation on researchers' skills and career paths. Emphasis should be placed on industry's and SMEs' participation to help increase the use of open-ended contracts and maximise the impact of FP funding on team size.
Availability of the report on Europa:	http://ec.europa.eu/research/evaluations/pdf/archive/other_reports_studies_and_documents/fp_hrc_study_final_report.pdf

Title of the Evaluation	Ex-post evaluation of Transport Research and Innovation in the FP7 'Cooperation' Programme (TRI-VALUE)
ABB activity:	ABB activity: 08 07 Cooperation – Transport (including aeronautics) (FP7)
Type of evaluation:	Expenditure programme
Summary of performance-related findings and recommendations:	FP7 Transport research was generally positively evaluated. Projects give consideration to policy objectives in particular for greenhouse gas reduction and safety and transport research is responding to societal challenges in different ways across modes. It had a substantial contribution to the formulation, implementation and assessment of policies and has provided initiatives to engage the public beyond the research community. There is overwhelming evidence that FP7 Transport research and innovation (TRI) projects are producing a large quantity of relevant outputs. A very high share of projects (>60%) delivered peer review publications and testing activities (validations and verifications). Development of software, tools, models and applications (not marketed) occurs in more than half of the projects. However, only a small proportion of projects (<20%) delivered new services, new products, new norms and standards or patents, which may reflect that fact that TRI in FP7 focused much more on basic research and early stage development rather than closer to market applications. While it is still too early to say whether the project results will result in economic exploitation, a survey of project coordinators shows that about 40% of the respondents undertook technology transfer activities during the project period, increasing to almost 50% after the project conclusion. Projects have been successful in creating formal networks within the project and a large majority (86%) continued to cooperate even after completing the project. Recommendations include improving coherence between research and policy objectives, greater emphasis on cross-cutting issues, creation of favourable conditions for the uptake of results and improve measurement of impact and quantification of benefits. They also include establishing a framework to assess a Technological Innovation System, consistent global strategies, addressing sustainability and competitiveness, focus on international cooperation projects on network promotions and increased engagement of civil society organisations.
Availability of the report on Europa:	Not published yet

