

2018

Annual Activity Report

**Directorate-General
for Research
and Innovation**

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FOREWORD

Dear Reader,

As the Director General for DG RTD since 1st April 2018, I am delighted to present this report on the work of DG Research and Innovation (DG RTD) in 2018. Following our strategy set for 2016-2020, we focused our efforts on those priorities of President Juncker where research and innovation can have the highest impact: creating jobs and growth and leveraging investment; moving towards a digital single market; achieving a sustainable energy union; and making Europe a stronger global actor.

Furthermore, DG RTD has taken forward **Commissioner Moedas' priorities for Open Science, Open Innovation, and Open to the World** in many areas, including progress towards a European Innovation Council to support breakthrough, market-creating innovation; progress towards the launch of the Fund of Funds to boost investment in new generations of highly innovative European firms; the Scientific Advice Mechanism to support better regulation by providing independent scientific advice; the introduction of the 'Innovation Principle' to systematically assess the impact of new EU policy and legislative initiatives on innovation; and the steering of the Mission Innovation initiative, a global initiative on clean energy innovation. The DG has invested heavily in Research Policy Instruments such as the Policy Support Facility and the European Semester process, supporting countries in reforming their national science and innovation systems.

In the Communication "A renewed European Agenda for Research and Innovation - Europe's chance to shape its future" DG RTD presented, to the informal EU Leaders' meeting on innovation in Sofia on 16 May 2018, the actions needed to boost the EU Research and Innovation. The Communication concluded:

"Europe's economic and social prosperity depends on our ability to innovate. Sustaining Europe's social and economic model, modernising industry and building a cohesive and inclusive European Union means ensuring that innovation permeates all policies as well as social, economic and industrial decisions.

The changing nature of innovation will bring new opportunities to drive job creation and growth in Europe. We must be in a position to seize these opportunities, while addressing the challenges and uncertainty. In doing so, we must be vigilant that the benefits are fairly distributed within our society.

This transformation will require a shared ambition and a change in mind-set regarding innovation and science in Europe. A shared agenda between regions, Member States and the European Commission is essential. We must build on Europe's strengths and give a new direction and a new impetus so that Europe becomes a true global leader in innovation for all."

The European Council conclusion of 28 June 2018 concluded that Europe must further develop its high-quality research across the EU and turn it into new products, services and business models. We need a stronger, inclusive innovation ecosystem to foster breakthrough and market-creating innovation and provide comprehensive support for businesses, including SMEs, with disruptive potential to successfully enter global markets."

It then:

- "invited the Commission to launch a new pilot initiative on breakthrough innovation within the remaining period of Horizon 2020. A European Innovation Council will be set up under the next Multiannual Financial Framework to identify and scale up breakthrough and disruptive innovation."

- “insisted on improving businesses' access to financing, including by better coordinating EU and national research and innovation funding schemes and instruments, on providing a favourable regulatory environment that supports greater risk-taking, and on promoting digital skills as well as links between academia, industry and governments. Cooperation between research, innovation and education should be encouraged, including through the European Universities initiative.”

This conclusion is the driving force behind many of the different activities of the DG in 2018 and in looking to set the agenda for the future. What is needed is a transition - a transition by 2030 of our economy, society and environment to a new setting - working within planetary and social boundaries - for a better future for Europe and for our citizens. It requires a Research, Innovation and Investment Agenda setting the long-term direction for investment and delivery to identify solutions that overcome trade-offs between economic, social and ecological objectives, and which can pilot, de-risk and demonstrate breakthroughs and prepare the pipeline from innovation into investment scaling-up. In future, Horizon Europe will deploy these systemic innovative solutions in synergy with other programmes. The political economic and social risks of the transitions ahead may require a distinctly European way to harness opportunities and minimize disruption.

Whilst continuing to support excellence, DG RTD is determined to address the continuing innovation divide in the European Union. Several instruments (e.g. teaming, twinning and ERA chairs) were introduced under Horizon 2020 to tackle the low participation of some Member States in Framework Programme projects and to reduce the differences in Research and Innovation achievements across the EU. To consider what can be done better in the future, an event called “**Bridging the EU innovation divide together**” was organised in April 2018 to exchange ideas on how to reach across the divide and increase collaboration in the areas of research and innovation between different regions and Member States. This event was key in the development of new efforts in Horizon Europe. The Commission’s proposals, augmented by ideas from the legislative authority, will address a number of the issues that have led to the under-representation of some Member States in Commission programmes.

The implementation of **Horizon 2020**, by DG RTD and also by the Executive Agencies and Joint Undertakings that implement the programme under the supervision of the DG, reached its cruising speed, benefitting from a mature support system and simplified rules. The Executive Agencies that now implement large parts of the programme continue to meet their objectives and contribute to the success of the Programme. The Interim Evaluation of Horizon 2020 demonstrated the relevance, European added value, effectiveness, efficiency and coherence of this programme, its contribution towards the achievement of the Europe 2020 objectives, and the benefits it brought for the lives of Europe's citizens in general.

Building on the success of Horizon 2020, the biggest ever Research and Innovation Framework Programme, and taking into account the recommendations outlined in its Interim Evaluation, DG RTD, in close collaboration with the Research family, has prepared the Commission proposal for **Horizon Europe**, which is the next generation Framework Programme for Research and Innovation. This proposal was adopted in 2018. A provisional partial agreement was reached between the European Parliament and the Council on the Horizon Europe Framework Programme Regulation at the trilogue on 19 March. The proposal, and the implementation that will follow, take full account of the recommendations of the European Court of Auditors in its Briefing Paper and Special Report on Horizon 2020 simplification. This will ensure that the operation of the Programme is efficient and effective, in terms of delivery and Sound Financial Management.

The Horizon Europe proposal is the most ambitious research and innovation programme ever and it will make Europe a world-class leader in research and innovation by making a real difference in the lives of citizens and society as a whole.

On top of all these activities, I launched "**The R&Innovate process**" with the ambition of making DG RTD a 21st century, innovative public administration, and preparing the service for the future Commission.

This new approach of working has been discussed among all staff in a participatory way at R&Innovate workshops. The workshops were grouped around eight key questions with the objective to make DG RTD a 21st century, innovative public administration fit for the new Research & Innovation programme "Horizon Europe" and the new European Commission.

At the end of the year, the results of the consultations were analysed, disseminated to staff and translated into a variety of actions, representing the stepping-stones towards the future DG RTD. This includes a change to the organisational structure of the DG to make it fit for a new Research & Innovation programme in a new European and global political context (expected to be implemented in May 2019) but also developments in the working environment in DG RTD, especially to boost innovation and co-creation.

Finally, a transition network has been established to prepare for the new Commission, and particularly to support the Commissioner designated for Research and Innovation in his/her preparations for the hearings at the European Parliament and for the important decisions to be made in 2019 and 2020.

The detailed narrative of our operational and administrative efforts and results, with their strengths and challenges, sets out the state of play of this collective undertaking.

Jean-Eric Paquet

Director-General DG RTD

THE DG IN BRIEF

DG RTD defines and implements European research and innovation (R&I) policy with a view to reinforcing the science and technology base, promoting innovation and turning societal challenges into innovation opportunities that will help deliver on the European Commission priorities. 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.

The DG contributes to the Commission's priorities^[1] for growth, jobs and investment, the Digital Single Market, the Energy Union and global action. In order to maximise the contribution of R&I to these priorities, the Commissioner for Research, Science and Innovation, Carlos Moedas, has grouped R&I activities under three lead objectives called the 3 Os:

- Open Innovation – working with Member States to strengthen Europe's R&I systems and achieve the European Research Area, and establishing the right framework conditions for innovation in Europe;
- Open Science – ensuring excellent science and open access to results and ensuring that Europe benefits from the digital age to drive innovation;
- Open to the World – ensuring that Europe's strengths in science and technology allow it to become a leading global actor.

Horizon 2020, the Framework Programme for Research and Innovation for 2014-2020, is designed to deliver on European research and innovation policy objectives. RTD continues to implement an important part of the Programme, but many of the implementation functions have already been delegated to the Executive Agencies, Joint Undertakings (JUs) and 'Article 185 initiatives'. The Commission proposal for Horizon Europe, the next generation Framework Programme for Research and Innovation, was adopted in 2018 and DG RTD will continue to reduce its direct involvement in contract management (e.g. calls, contract finalisation, payments, etc.).



This is to allow the DG to continue to strengthen its role as a policy-oriented DG. Within Horizon 2020 this means the definition of work programmes and the coordination of the

^[1] "A New Start for Europe: My Agenda for Jobs, Growth, Fairness and Democratic Change, Political Guidelines for the next European Commission" and "Opening Statement in the European Parliament Plenary Session".

Research family of DGs, etc.). For Research and Innovation more widely, it allows the DG to work extensively on the 3 Os agenda of Commissioner Moedas, and on making progress towards the key Strategic Plan objectives, especially working better with the Member States, increasing innovation potential in Europe, the Digital Single Market, and decarbonisation of the energy sector.

On 1 March 2018, the Director General of DG RTD Mr Robert-Jan Smits left the DG. Mr Jean-Eric Paquet became Director-General of DG RTD on 1 April 2018.

EXECUTIVE SUMMARY

The Annual Activity Report is a management report of the Director-General of DG RTD to the College of Commissioners. Annual Activity Reports are the main instrument of management accountability within the Commission and constitutes the basis on which the College takes political responsibility for the decisions it takes as well as for the coordinating, executive and management functions it exercises, as laid down in the Treaties¹.

a) Key results and progress towards the achievement of general and specific objectives of the DG (executive summary of section 1)

PUTTING SCIENCE AND INNOVATION AT THE HEART OF POLICY MAKING

In 2018, economists reaffirmed **R&I's crucial contribution to fostering economic growth**, creating new and better jobs, improving health outcomes and developing new sustainable energy technologies that can help fight and mitigate climate change².

DG RTD published a new edition of the **European Innovation Scoreboard** and it shows that the EU's innovation performance continues to improve, but further efforts are needed to ensure Europe's global competitiveness. This year's edition reveals a positive trend in the majority of EU countries – most notably in Malta, the Netherlands, and Spain, with Sweden remaining the EU innovation leader. Commissioner for research and innovation Carlos Moedas said:

"This edition of the Scoreboard shows once again that Europe is strong in science but underperforming on innovation. The **Renewed Agenda for Research and Innovation** sets out a range of measures for Europe to become a global innovation leader. Our proposals for Horizon Europe, the next EU research and innovation programme, will accelerate innovation along the full value chain and support the identification and scale-up of breakthrough innovations."

The Renewed Agenda, produced for an informal leaders' meeting in Sofia in May 2018, details a series of concrete actions aimed at ensuring essential public investment and stimulating private investment, making regulatory frameworks fit for innovation, making Europe a frontrunner in market-creating innovation, setting EU-wide research and innovation missions, supporting rapid dissemination of innovation and uptake throughout the Union, and investing in skills at all levels and empowering European universities to become more entrepreneurial and interdisciplinary.

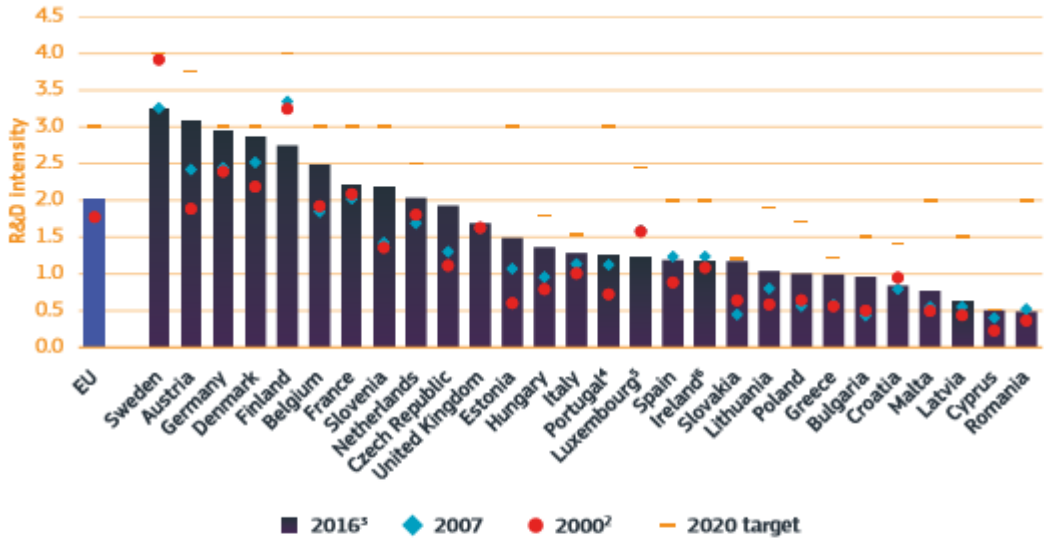
DG RTD made, again, a substantial contribution to the **European Semester**, contributing to 13 country-specific recommendations calling upon the Member States concerned to strengthen their national science and innovation systems. The message is

¹ Article 17(1) of the Treaty on European Union.

² Please see reports: '**The Rationale for public R&D funding and its impacts**': <https://publications.europa.eu/en/publication-detail/-/publication/0635b07f-07bb-11e7-8a35-01aa75ed71a1/language-en>

The Science, Research and innovation Performance of the EU, 2018: https://ec.europa.eu/info/sites/info/files/srip-report-full_2018_en.pdf

that, in the period 2018-2019, Member States should take action, individually and collectively, to support policies that would continue the development of euro-area and respect **the objective of investing 3% of GDP in R&D**.



Science, Research and Innovation performance of the EU 2018
 Source: DG Research and Innovation – Unit for the Analysis and Monitoring of National Research and Innovation Policies
 Data: Eurostat, Member States
 Notes: ¹CZ, UK: R&D intensity targets are not available. ²EL, SE: 2001; HR: 2002; MT: 2004. ³BG, CZ, EE, FR, LV, LT, HU, PL, RO, SI, SK: 2015. ⁴PT: The R&D intensity target is between 2.70% and 3.30% (3.00% was assumed). ⁵LU: The R&D intensity target is between 2.30% and 2.60% (2.45% was assumed). ⁶IE: The R&D intensity target is 2.5% of GNP which is estimated to be equivalent to 2.0% of GDP. ⁷DK, EL, FR, LU, HU, NL, PT, RO, SI, SE, UK: Breaks in series occur between 2000 and 2016.
 Stat. link: https://ec.europa.eu/info/sites/info/files/snip/partii_3-a_figures/fs_rd_intensities_ms.xlsx

Through the **Horizon 2020 Policy Support Facility (PSF)** (sp. obj. 1.1), DG RTD provided in 2018, support to a number of countries on the reforms of their national science and innovation systems.

Through its support for the **Strategic Advice to Policy Making mechanism (SAM)**, DG RTD contributes to providing the College of Commissioners with the tools to underpin their future (legislative) initiatives with scientific facts and figures. In 2018, advice on Novel Carbon Capture and Utilisation Technologies (May 2018) and Authorisation Processes of Plant Protection Products in Europe (June 2018) were delivered to Commissioners Cañete and Andriukaitis respectively. In addition, the Advisors’ Statements were published as well as those of the European Group on Ethics in Science and New Technologies.

Through **Mission Innovation**, the DG has been able to encourage an increasing number of countries from around the globe, to double their research spending on clean energy, which supports the ambitions of the **Energy Union**.

APPROPRIATE FRAMEWORK CONDITIONS FOR INNOVATION

The development of appropriate framework conditions for research and innovation was very much driven by the **3 Os agenda of Commissioner Moedas**: Open Innovation, Open Science, Open to the World.

As part of the **Open Innovation agenda**, DG RTD launched a pilot on the **Innovation Principle**. In the future, new EU legislation should be assessed, as part of the regulatory process, on its potential consequences on innovation.

Substantial progress was made on the development of the **European Innovation Council (EIC)** whose aim is to provide support to disruptive, market creating innovators. A dedicated High Level Group provided its first recommendations on the EIC³ and a pilot phase was launched in October. The first phase of the EIC pilot has already supported a significant number of innovators: as of 20 December 2018, a total of 1 276 projects with EUR 731.15 million EU funding. In line with the conclusions of the European Council of June 2018 inviting the Commission to launch a new pilot initiative on breakthrough innovation, an enhanced version of the pilot is available for 2019 and 2020.

Open Science is about the transformation of our science system as a result of "big data"; digital technologies, working in teams, sharing information and data and internationalisation. It requires a cultural change inside our academic institutions. The expert reports on '**Rewards and Skills**' provided useful input for the necessary transformation to take place.

In 2018, the Commission created the governance system of the European Science Cloud (EOSC). This initiative aims at tapping the potential of EU research and innovation by interlinking "people, data, services and training, publications, projects and organisations across borders and scientific disciplines". On the strategic level, it convened the first meeting of the EOSC board, composed of Member States and Associated States representatives, and appointed the members of the executive board, that will assist the Commission on the EOSC development up until the end of 2020.

The Commission updated its Recommendation on access to, and preservation of, scientific information, taking into account the evolution of the technological and institutional backdrop. In order to speed up the transition to open access, the initiative Plan S was launched, together with national funding agencies. From 2020 on, all scientific publications stemming from public funded research should be published in compliant Open Access journals or platforms.

In the context of **Open to the World**, and the Commission priority on 'Europe as a stronger Global Actor' DG RTD continued its policy dialogue with its main global partners.

2018 has seen important progress on a range of bilateral and multilateral S&T cooperation relations, such as the new EU strategy on India, the Atlantic Ocean R&I cooperation extending beyond the US, Canada, the EU and Member States to the South Atlantic (South Africa, Brazil, Argentina). PRIMA, the Partnership on Research and Innovation in the Mediterranean Area, was launched.

HORIZON 2020 AND THE WORK TOWARDS HORIZON EUROPE

In October, the Commission modified the **Work Programme** 2018-2020, adopting the

³ https://ec.europa.eu/info/sites/info/files/eic_hlg_bz_web.pdf

calls for proposals for 2019. The calls will cover, inter alia, four focus areas: Building a low-carbon, climate resilient future; Connecting economic and environmental gains - the Circular Economy; Digitising and transforming European industry and services; and Boosting the effectiveness of the Security Union. DG RTD also made the necessary legislative proposals for the extension of the nuclear research activities under **EURATOM**.



That the DG reached once again a **100% execution of our budget** is notably the result of the work done by the RTD Administrative and Financial Units (AFU) and its Executive Agencies. Moreover, the Commission was granted the **Discharge** of last year's budget.

DG RTD is part of the Core Group of DGs preparing the Commission proposal for **the next Multi Annual Financial Framework (MFF)** of the EU. In spring 2018, the Commission presented its proposal for the next MFF.

The Commission's proposal for Horizon Europe, the next Framework Programme for Research and Innovation, with a proposed budget of around EUR 100bn for 2021-2027, was adopted and the subject of intense scrutiny by the Council and European Parliament.

THE R&INNOVATE PROCESS

"**The R&Innovate process**" has the goals of making DG RTD a 21st century, innovative public administration, and of preparing for the new Research & Innovation programme "Horizon Europe" and the next European Commission.

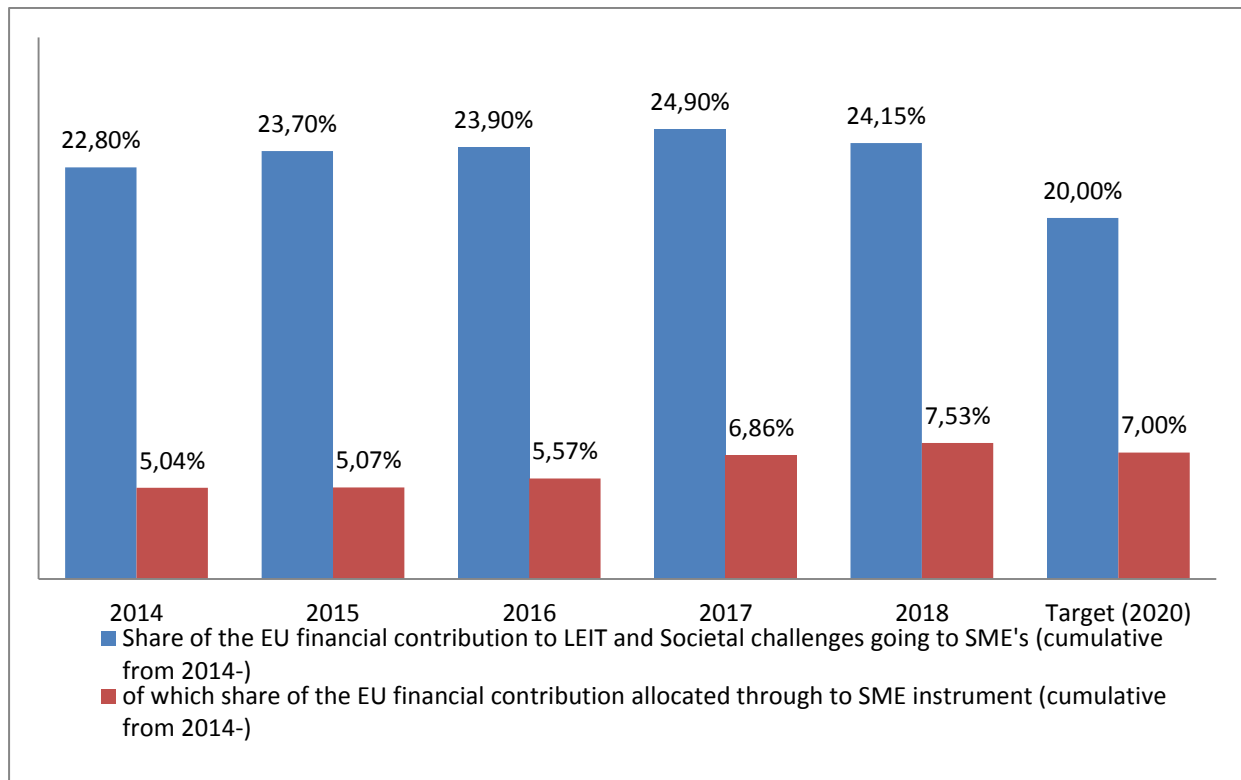
This new approach of working was discussed among staff in a participatory way at a series of R&innovate workshops, with the objective of redesigning the structure and the functioning of the DG in order to be prepared for our future. The conclusions of this process were analysed, disseminated to staff and translated into a variety of actions, representing the stepping-stones towards the future DG RTD. This includes a change to the organisation structure of the DG to make it fit for a new Research & Innovation programme in a new European and global political context (expected to be implemented in May 2019) but also developments in the working environment in DG RTD, especially to boost innovation and co-creation.

b) Key Performance Indicators (KPIs)

In its Strategic Plan for 2016-2020, DG RTD identified five main indicators to report on its achievements. Four of them are related to policy priorities of the Horizon 2020 framework programme and one concerns the administrative performance of the

programme management.

Figure 1: KPI 1 Share of funds allocated to SMEs in the Horizon 2020 societal challenges and in the enabling and industrial technologies (LEIT)*, of which share of the EU financial contribution allocated through to SME instrument⁴**



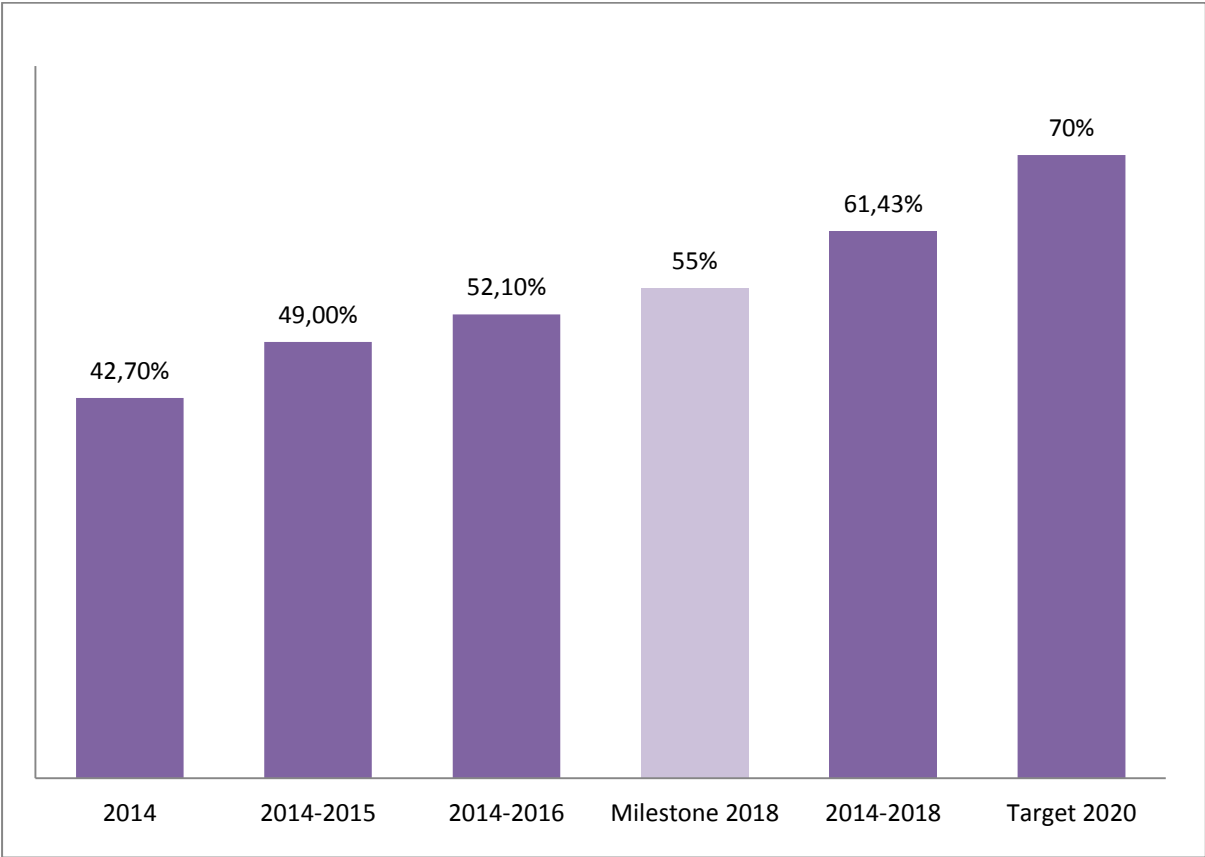
The level of SME participation in the Leadership in Enabling and Industrial Technologies (LEIT) part and the Societal Challenges Pillar of the Horizon 2020 programme continues to be above the target for the Programme, reflecting the considerable efforts made to attract SMEs to the Programme and the simplifications made to facilitate their participation. By the end of December 2018, SMEs had received a cumulative EU financial contribution of over EUR 5.3 billion out of the total of EUR 22 billion that went to the LEIT part and the Societal Challenges Pillar; the target set by the EU Council and Parliament of 'at least 20%' has been exceeded.

Support for SMEs continued to be provided through the SME Instrument: 920 new SME Instrument actions (616 under phase 1 – feasibility assessment; and 269 under phase 2 - innovation, development & demonstration purposes) were selected for funding in 2018. This helped raise the cumulative share of funds allocated through the SME Instrument to 7.53%; well above the 7.00% target.

⁴ * Results based on data extracted from CORDA; compilation of budgets allocated to SMEs in the framework of Horizon 2020 grant agreements signed in 2014, 2015, 2016, 2017 and 2018.

** Results based on 2018 results, this is the total EU financial contribution allocated through to the SME Instrument.

Figure 2: KPI 2 Share of newcomers among the successful applicants*⁵ (H2020)

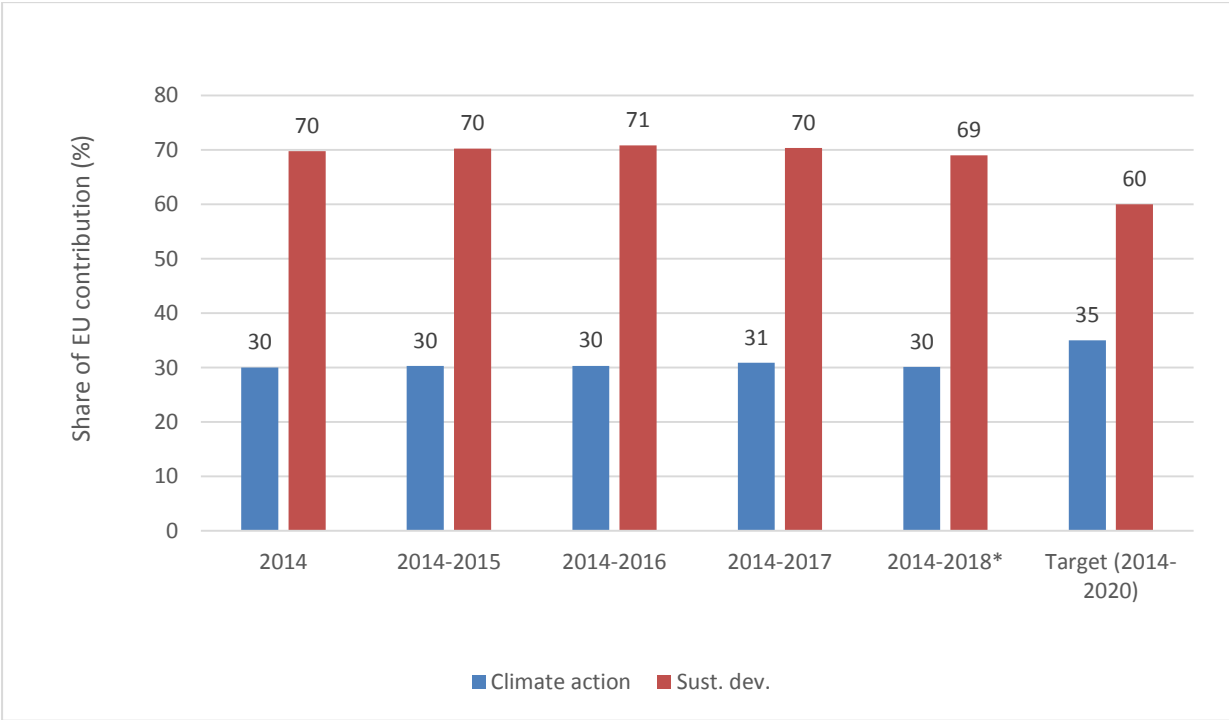


This indicator demonstrates the attractiveness of the Horizon 2020 programme amongst newcomers (those that did not participate in the previous framework programme). It is measured by the number of successful applicants that are newcomers compared to all the successful applicants.

During the period 2014-2018, out of the 25 844 successful participants, 15 876 (61.43%) were newcomers. The milestone for 2018 has been exceeded. Following the current trend, the Programme is on track to reach the target of 70% by the end of the Programme.

⁵ Source: CORDA

Figure 3: KPI 3 Climate-related and sustainability-related expenditure (H2020)⁶



Sustainable development and climate in particular, are important cross-cutting priorities of the Horizon 2020 programme.

The Regulation establishing Horizon 2020 states that at least 60% of the overall Horizon 2020 budget should be related to sustainable development. It is also expected that climate-related expenditure should exceed 35% of the overall Horizon 2020 budget.

The indicators above show the share of Horizon 2020 expenditure allocated to climate and sustainability related projects. The figures are cumulative for the indicated periods and cover all projects signed under Horizon 2020. Climate-related expenditure is a subset of sustainability related expenditure.

According to the tracking methodology, Horizon 2020 has invested, so far, EUR 11.6 billion on climate change and EUR 26.7 billion on sustainable development.

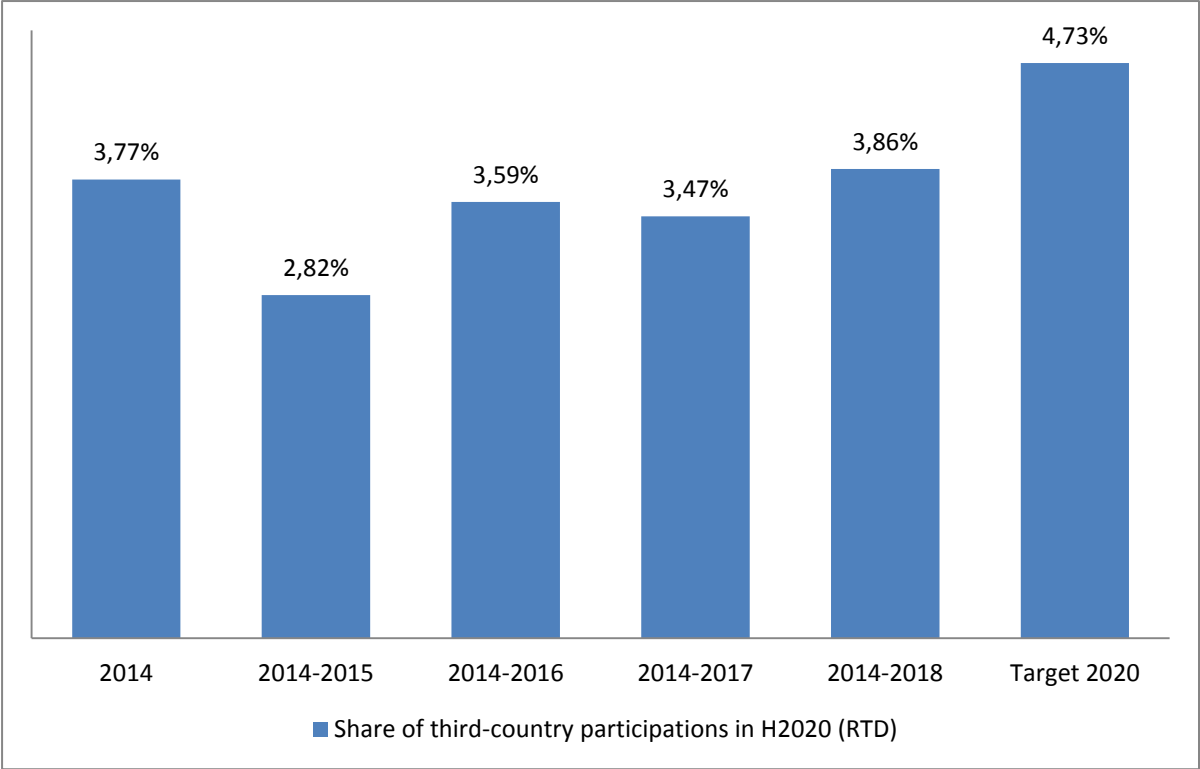
The target for expenditure on sustainable development has already been met and exceeded. Investment for climate action has not yet reached its target, despite a considerable increase compared to FP7. Attaining the target will remain a challenge: For this is reason, particular attention and budget have been devoted to climate action in the Work Programme 2018-2020.

⁶ Source: CORDA. Cut-off date: 7 January 2019. Year: year of the call deadline
 Universe: All the Horizon 2020 projects with a signed grant agreement

The figures shown are not totally reliable as some projects have not been assessed for their contribution to climate mitigation and sustainability, or this assessment has not been captured in IT systems. In addition, while for many calls the link to climate and sustainability is clear and can be assessed at call level, for “bottom up” programmes (such as the European Research Council) each project has to be assessed individually. In order to address this problem, the services of DG RTD made regular audits of the data and have made manual corrections for missing values. This work will continue.

Nevertheless, DG RTD considers that, overall, the figures are sufficiently accurate for policy purposes, whilst accepting that there will always be an element of estimation.

Figure 4: KPI 4 The share of third-country participations in Horizon 2020 (DG RTD)*⁷



The share of third-country participations is an indicator of international participation in the programme.

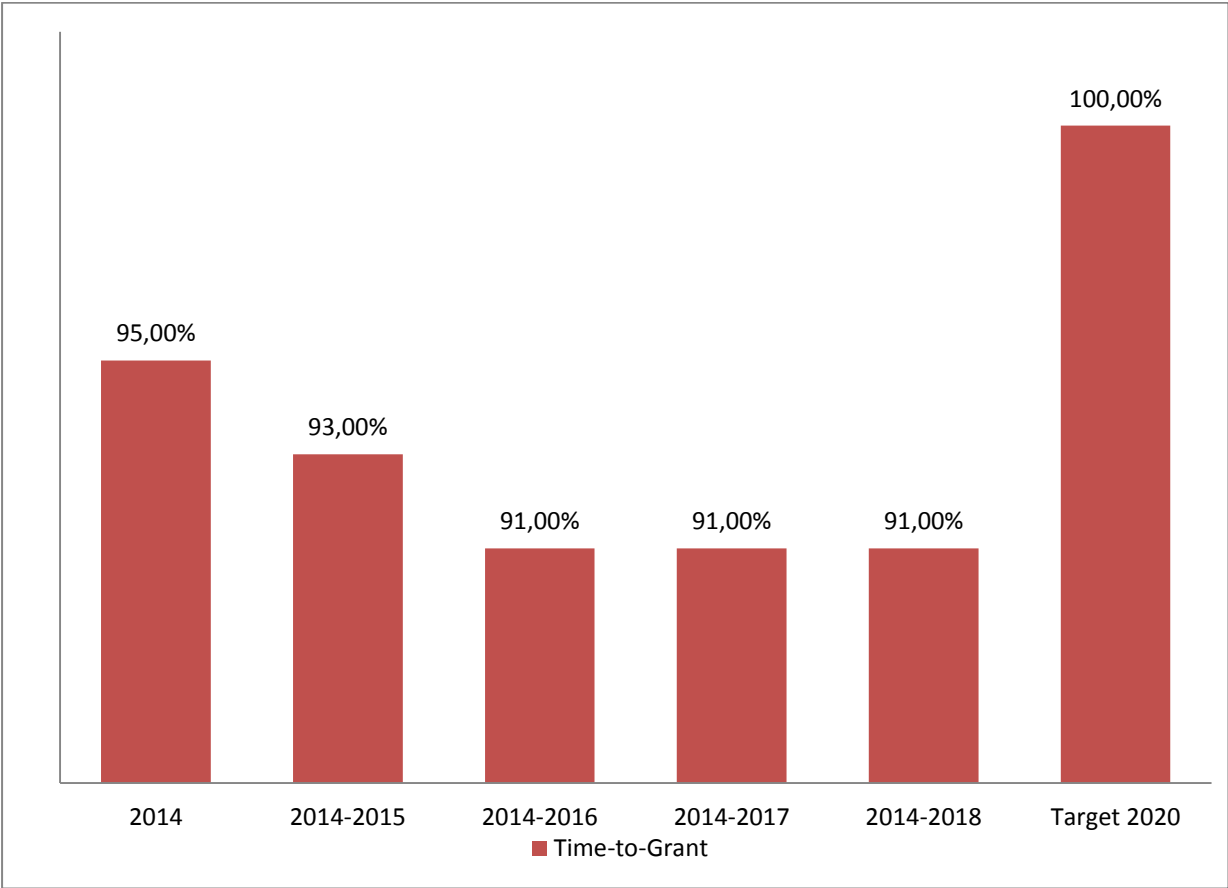
During the period 2014-2018, out of a cumulative 16 270 participations in signed grants in the parts of Horizon 2020 managed by DG RTD, 628 (3.86%) were from third countries.

The participation of third-country beneficiaries has decreased compared to FP7, mainly due the change in eligibility conditions for funding of participants from Brazil, Russia, India, China, and Mexico. Participants from these countries were funded in FP7, but not in Horizon 2020.

In order to encourage more participation from third-countries, DG RTD introduced the International Cooperation Flagships under Work programme 2018-2020. These are topics of wide scale and scope and are specifically devoted to international cooperation.

⁷*Source: CORDA

Figure 5: KPI 5 Share of grants signed with a time-to-grant within 245 days*⁸



DG RTD signed 91% of its own grants in time (in no more than 245 days) and with an average Time-to-Grant of 214 days. This represents a huge improvement on the DG’s performance under FP7 of 354 days on average. Across the research family, 96.4% of contracts are signed within the time-to-grant target. DG RTD is slightly below the average because it is responsible for the research infrastructure programme, which is considerably more complex than other parts of the programme. For standard collaborative grants, DG RTD is close to a 100% respect of the target.

Efforts will be continued during the remaining years of the programme to get even closer to the Horizon 2020 target. These efforts will focus notably on shortening the ‘Time-to-Signature’ (the phase following the informing of successful applicants).

c) Key conclusions on Financial management and Internal control (executive summary of section 2.1)

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

⁸ *Source: CORDA

ethical standards.

The Commission has adopted a set of Internal Control Principles, based on international good practice, aimed at ensuring the achievement of policy and operational objectives. The financial regulation requires that the organisational structure and the internal control systems used for the implementation of the budget are set up in accordance with these Principles. DG RTD has assessed the internal control systems during the reporting year and has concluded that the internal control Principles are implemented and function as intended. Please refer to AAR section 2.1.3 for further details.

In addition, DG RTD has systematically examined the available control results and indicators, including those aimed at supervising 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 Section 2.1.4 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 FP7 and the Coal and Steel research funding programmes.

d) Provision of information to the Commissioner(s)

The main elements of this report and assurance declaration, including the reservation(s) envisaged, have been brought to the attention of Commissioner C. Moedas, responsible for Research, Science and Innovation, during the regular meetings throughout the year between the DG and the Commissioner on management matters.

1. KEY RESULTS AND PROGRESS TOWARDS THE ACHIEVEMENT OF GENERAL AND SPECIFIC OBJECTIVES OF THE DG

1. A New Boost for Jobs, Growth and Investment

In 2018, DG RTD has continued to monitor the Member States R&I investment towards the achievement of the Europe 2020 Innovation Union target of 3% of EU GDP invested in R&D (combined public and private investment: 1% public; 2% private investment) by 2020.

Eurostat released the latest data on R&D expenditure in November 2018 and it confirmed that the EU R&D expenditure (as % of GDP) was 2.07% in 2017 (latest data). The EU is a long way from the overall 3% of Gross Domestic Product Research and Development investment target, and it is clear that this target will not be achieved by 2020. This is disappointing and damages the international competitiveness of the European Union. However, DG RTD is continuing to work on several fronts to close the gap to the target or to mitigate the effects of the gap.

1.1.: To strengthen Europe's R&I systems and achieve the European Research Area through working with Member States

Public R&I Investment – a catalyst for economic growth

Evidence based policy analysis and development, both at European and Member State level, were supported by a set of economic analysis activities. For example:

The DG RTD biennial flagship publication, "Science, Research and Innovation Performance of the EU, 2018"⁹ was published, followed by the first European Commission Innovation related Communication in the past four years: "**A Renewed Agenda for Research and Innovation**"⁹. This Communication, produced for an informal leaders' meeting in Sofia in May 2018, details a series of concrete actions aimed at ensuring essential public investment and stimulating private investment, making regulatory frameworks fit for innovation, making Europe a frontrunner in market-creating innovation, setting EU-wide research and innovation missions, supporting rapid dissemination of innovation and uptake throughout the Union, and investing in skills at all levels and empowering European universities to become more entrepreneurial and interdisciplinary.

A joint paper with DG ECFIN and Imperial College London on "Complementarities in capital formation and production across EU member states: tangible and intangible assets " was published, and five expert papers were commissioned and produced.

A policy paper in conjunction with the EIB on "Innovation Investment in Central, Eastern and South-Eastern Europe", highlighting the importance of a transition to an innovation-led new growth model for the region were published in December. New editions of the European Innovation Scoreboard and the EU Industrial R&D Investment Scoreboard were also launched. Finally, a contribution to the EIB flagship publication Investment Report on "Complementarity between intangible assets" was also produced.

⁹ COM(2018) 306 final, 15.5.2018

Finally, the existing partnership with OECD was further strengthened through joint work in the areas of micro-econometric evidence of productivity and business dynamism patterns, the relationship between breakthrough innovation and entrepreneurship and public science, and the further analysis of the policy mix to support private R&D. In addition, the second European Commission (RTD)-OECD joint survey on science, technology and innovation policies took place, accompanied by a new and interactive database and analysis tools at the service of policy-makers at national and EU level.

- *Synergies with the Structural and Other Funds and Policies*

DG RTD seeks to promote investment in R&I through other funds beyond Horizon 2020 and to embed R&I Policy considerations in other EU Policy areas.

Work continued in the context of the MFF regulation, ensuring concrete provisions on synergies with ESIF and other funds. The main purpose of the exercise is to open up all possibilities for synergies by eliminating possible bottlenecks and by aligning and making rules compatible. The text of the Commission proposals are clear but with still some remaining room of manoeuvre to improve the concrete operational implementation. It should now be possible ensure exemption from the application of State Aid rules to the Seal of Excellence and co-funding (i.e.: when public sources - including ESIF - are used to replace or complement Horizon 2020 funding for Horizon selected proposals).

DG RTD continues to encourage national authorities to participate in the Seal of Excellence scheme. At the same time, it is continuing to look for solutions to ongoing issues, including in the legislative proposal for Horizon Europe.

Horizon 2020 Policy Support Facility

Through its Horizon 2020 **Policy Support Facility (PSF)**, DG RTD provides services to Member States and countries associated to Horizon 2020 in their efforts to design, implement and evaluate reforms to their national research and innovation systems.

These services can take the form of Peer Reviews, Specific Support or Mutual Learning Exercises. The Strategic Plan foresaw 10 PSF actions per year but, due to the high interest from Member States and countries associated to Horizon 2020, 14 actions were planned in 2018.

Final reports were published of: three PSF specific support activities to Romania, Latvia and Georgia, and four PSF mutual learning exercises on "Open Science - Altmetrics and Rewards", "Evaluation of Business R&D schemes (second cycle)", "National Practices in Widening Participation and Strengthening Synergies" and "Innovation-related procurement". Several additional PSF activities were launched throughout 2018: two specific support activities to Tunisia and Montenegro, two Peer Reviews of Malta and Estonia, and one MLE on "Research Integrity". Preparatory work has taken place to launch a Peer Review of Denmark, a MLE on "National Strategies and roadmaps for international cooperation in R&I and three specific support activities to countries to Cyprus, Armenia and Latvia.

Furthermore, the Policy Support Facility Mutual Learning Exercises (MLE) on synergies and widening were published in December 2018.

European Semester

The European Semester enables the EU member countries to coordinate their economic policies throughout the year and address the economic challenges facing the EU. The main goals of the European Semester are: ensuring sound public finances (avoiding

excessive government debt), preventing excessive macroeconomic imbalances in the EU, supporting, structural reforms, to create more jobs and growth and boosting investment.

Each year, the Commission undertakes a detailed analysis of each country's plans for budget, macroeconomic and structural reforms. It then provides EU governments with country-specific recommendations for the next 12-18 months. It also monitors EU countries' efforts towards the "Europe 2020" targets.

DG RTD's contributions to the 2018 **European Semester** cycle, notably through the Country Reports and Country Specific Recommendations, were continued. Reinforced dialogue with the Member States took place with a view to maximising the ownership of the process by the Member States.

The Commission released the country reports on 7 March 2018. The Council adopted 13 CSRs (Belgium, Czechia, Germany, Estonia, Spain, France, Ireland, Italy, Lithuania, the Netherlands, Poland, Slovakia and Portugal) addressing R&I issues.¹⁰

European Research Area

Activities underpinning the achievement of the **European Research Area** included the preparation of the 2018 ERA Progress Report¹¹ summarizing the state of the ERA and the progress of its implementation over the period 2016-2018. This is an obligation for the Commission to inform the Council and the European Parliament of the ERA progress.

It summarizes the state of the ERA and the progress of ERA implementation over the period 2016-2018 according to six defined priorities. Progress is assessed through the ERA Monitoring Mechanism, a set of 24 core indicators – including eight headline indicators – jointly defined by Member States, research stakeholders and the Commission.

The report is accompanied by 34 Country Profiles with a more detailed analysis for each Member State and some Associated Countries. Based on the overall evolution of the eight headline indicators, ERA implementation continues to progress but at a slower pace than in the 2014-2016 period. Moreover, important disparities between countries remain and are sometimes increasing. These trends call for a renewed commitment to further strengthening shared efforts, at all levels, towards reforming national research and innovation systems and realising a well-functioning ERA.

DG RTD actively supported the preparation of the Council conclusions on ERA Governance of 30 November 2018, providing policy guidance on the future of ERA. In particular, the conclusions 'invite the Commission, to publish by mid-2020 a new ERA Communication for the period beyond 2020'.



¹⁰ https://ec.europa.eu/info/publications/2018-european-semester-country-reports_en

¹¹ Not yet published at the time of the closing of this document

The **European Strategy Forum on Research Infrastructures (ESFRI)** adopted on 28 June 2018 an updated Strategy Report and Roadmap.

It identifies eight leading projects from previous Roadmaps, which, after ten years of incubation, have reached the operational phase, or are well advanced in their construction, and deserved the ESFRI Landmark status. Six new projects were also selected for their strategic potential for strengthening the European Research Area. The Roadmap was presented to the public on 11 September 2018 in a dedicated event under the Austrian Presidency.

The Roadmap was welcomed in the Competitiveness Council conclusions on the 'Governance of the European Research Area' of 30 November 2018, in which ESFRI was invited to conduct the next update of the Roadmap in 2021.

In 2018, three **European Research Infrastructures Consortia (ERICs)** have been established by Commission Implementing Decisions:

- EMBRC – European Marine Biological Resource Centre (FR);
- EU-OPENSREEN – European Open Screening Platforms for Chemical Biology (DE);
- EPOS – European Plate Observing System (IT)

meaning that there are now 20 ERICs established since the creation of the ERIC Council Regulation in 2009.

The work continues with the verification of three further applications, of which the infrastructure "Euro-BioImaging (FI) - Imaging Technologies in Biological and Biomedical Sciences" is expected to be adopted in February 2019.

The 2nd report on the Implementation of the ERIC Regulation was adopted by the Commission in July 2018. The progress of the implementation of the ERIC Regulation has been welcomed in Council Conclusions under Austrian Presidency, in November 2018, which highlighted the substantial uptake of the ERIC Regulation by the Member States and the growing interest in using the ERIC legal instrument for setting up pan-European Research Infrastructures.

The **RESAVER** Pension fund (Pan-European Pension Fund for Research Professionals) has the overall aim to assist free circulation of researchers by removing pension as an obstacle to mobility. This corresponds to the strategic objectives of the Union policy as stipulated in Article 179 TFEU on the establishment of a European Research Area. RESAVER Pension Fund is the first multi-country, multi-employers pension fund that enables mobile employees of the research institutions to remain affiliated to the same supplementary pension fund (2nd pillar) when moving between different countries and changing jobs.

DG RTD has been involved in the selection of the fund managers, and provides an operating grant to provide financial support towards the functioning of the RESAVER pension fund in its core activities.

During 2018, RESAVER Pension Fund welcomed a new organisation from Austria and implementation has been started for Dutch, Italian and Belgian organisations.

Encouraging effective innovation and investment in thematic areas

- *Bioeconomy and the circular economy*

The update of the EU Bioeconomy Strategy was a Commission Work Plan deliverable and a Commission wide policy priority for 2018. The preparation of the updated Bioeconomy Communication and its Action Plan has been a collegial exercise in which DG RTD has collaborated closely with the co-leading DGs AGRI, ENV and MARE, and several bioeconomy relevant services such as DGs GROW and JRC.

This initiative focussed on tangible actions for Europe's innovative bioeconomy to deliver further on the EU's agenda for sustainable growth, to create jobs, to renew industry and to sustain the environment. It was based on the evidence of the 2017 review of the Strategy, which showed that it has substantially delivered on key actions in the Action Plan such as the successful mobilisation of R&I funding dedicated to the bioeconomy, through Horizon 2020 and private investments (e.g. BioBased Joint Undertaking). The Strategy has also led to the development of numerous national and regional Bioeconomy Strategies since 2012 in the EU and globally.

The main scope of the Communication was a new Action Plan, responding to the Paris Climate Agreement, the renewed Industrial Policy, Circular Economy and Sustainable Development Goals. 14 concrete and measurable actions have been set out, in the priority areas of the bio-based sector, the deployment of local bioeconomies, and better understanding of the ecological boundaries of the bioeconomy have been specified.

Research and innovation in the area of food, agriculture and the wider bioeconomy is a major focus of the new Horizon Europe programme and the Commission has proposed raising investment in this area to 10 billion EURO under the next programming period from 2021-2027.

DG RTD has continued to support the Standing Committee on Agricultural Research (SCAR) in its initiatives related to strategic policy advice, foresight process, and coordination of national research programmes, including mapping and prioritisation of ERA-Net Co-fund topics for the Horizon 2020 SC2 work programme (2018-2020).

A crosscutting call on "Competitive, Low-Carbon and Circular Industries" for the Horizon 2020 Work Programme 2020, as a major bridge towards Horizon Europe has also been prepared. This crosscutting call addresses the main challenges of the Circular Economy, focusing particularly on industrial processes and circular value chains for materials (including through the design and production and recycling of goods). It gathers 10 topics (5 NMBP, 2 SC3 and 2 SC5), to the value of about EUR 200 million.

- *Industrial Research and Innovation Infrastructures*

Following the publication in 2017 of the Staff Working Document on Long-term sustainability of Research Infrastructures, the year 2018 focused on identifying, together with Member States and stakeholders, the priority actions and starting their implementation.

The conclusions of the Bulgarian Presidency Flagship Conference on Research Infrastructures "Research Infrastructures beyond 2020 – sustainable and effective ecosystem for science and society" on 22-23 March 2018 in Sofia led to the identification of specific recommendations in the Competitiveness Council conclusions on 'Accelerating knowledge circulation in the EU' of 29 May 2018. These conclusions invited the Member States to align better the decision making process for setting-up and participating in pan European Research Infrastructures, and to develop a common approach for monitoring their performance. The European Strategy Forum for Research Infrastructures (ESFRI) will play a leading role in implementing these recommendations.



- *Batteries*

President Juncker, in his State of the Union speech, declared that 'batteries embody our ambition to help our industries remain or become world leaders in innovation, digitisation and decarbonisation'

A strategic 'Battery Action Plan' was adopted on 17 May 2018 as part of the 3rd Mobility Package. A report on the Battery Action Plan will be adopted by the Commission in March-April 2019 together with the State of the Energy Union Report.

As part of this action plan, RTD initiated the crosscutting call 'Building a Low-Carbon, Climate Resilient Future: Next-Generation Batteries' (H2020-LC-BAT-2019-2020). The call brings together a total EU budget of EUR 251 million (including 100 million from Third Country credits) from the NMBP, energy, transport and Future Emerging Technologies programmes. The call addresses the priorities identified in the Strategic Energy Technology (SET) Plan (in its Implementation Plan for batteries), the Strategic Transport, Research and Innovation Agenda (STRIA) SWD (including its roadmap on transport electrification), and the priorities identified in the consultation workshop organised by DG RTD with other DGs in January 2018, which gathered 250 participants.

A lack of skills and appropriate university curricula in the field of electrochemistry for next generation batteries is one of the key problems the European battery sector is currently facing. Following DG RTD's proposal (Ares (2018)643117) to include batteries in the third wave (2019-2023) of the 'Blueprint for sectorial co-operation on skills', batteries for electro-mobility are now among the new six sectors eligible for funding under Erasmus+.

- *Action Plan on Vaccination*

DG RTD was a major contributor to the Communication, Staff Working Document and the proposal for a Council Recommendation on strengthening the EU cooperation on vaccine-preventable diseases, which were launched in April 2018. This new initiative proposes a set of actions to improve vaccine coverage in Europe and to reinforce EU cooperation on vaccine-preventable diseases. Research and innovation is a significant component of this policy. The development of new, or the strengthening of existing, partnerships and technological platforms, and studies on social and behavioural science to tackle low vaccine uptake, are among the proposed actions to advance vaccines R&D. The Council Recommendation was adopted in December 2018.

1.2: To establish the right framework conditions to capitalise on the results of European research and innovation by involving all actors in the innovation process ("Open Innovation")

Boosting investment and excellence in innovation

- *European Innovation Council*

The **European Innovation Council (EIC) pilot**¹² was launched with the adoption of the new Horizon 2020 Work Programme for 2018-2020. The EIC will allow for more investment in true breakthrough market—creating innovation, the type of innovation with the highest potential for new job creation and growth acceleration.

The EIC pilot aims to support top-class innovators, start-ups, small companies and researchers with ideas that are radically different from existing products, services or business models, are highly risky and have the potential to scale up internationally. The pilot phase offers in a single place:

- EUR 2.7 billion in funding for the period 2018-2020 (financed through existing budgets)
- Opportunities for networking, mentoring and coaching
- Strategic advice to upgrade the innovation ecosystem in Europe

Moreover, the pilot brings together several innovation support schemes such as the SME Instrument, the Fast Track to Innovation (FTI), Future and Emerging Technologies (FET) Open, and Horizon Prizes; and will test 'Blended finance', i.e. the combination of grant support with equity and/or loan guarantees.

It introduces a number of reforms, notably a fully 'bottom up' approach with no predefined topics, face-to-face interviews for the most promising proposals in the SME instrument phase 2 and the appointment of new high level expert evaluators with a strong innovation profile.

An independent High Level expert group of innovators has assisted the European Commission by helping to co-design the shape of a full-fledged EIC and producing a full set of recommendations in a report published on 24 January 2018 entitled '**Europe is back: Accelerating breakthrough innovation**¹³'.



The pilot phase of the European Innovation Council under Horizon 2020 has been enhanced by integrating a new equity support component for breakthrough, market creating, SMEs and management with a more flexible pro-active approach.

The Commission proposal for Horizon Europe includes a fully-fledged European Innovation Council.

The first phase of the EIC pilot has already supported a significant number of innovators: as of 20 December 2018, a total of 1 276 projects with EUR 731.15 million EU funding.

¹² <https://ec.europa.eu/research/eic/index.cfm>

¹³ https://ec.europa.eu/info/sites/info/files/eic_hlg_bz_web.pdf

- *European Funds of Funds*

The funds-of-funds selected in 2017 under the Pan-European Venture Capital Funds-of-Funds (FoF) Programme have been negotiating the terms of their agreement with EIF in 2018. Agreements with two funds-of-funds are already signed and the Funds of Funds are raising capital. Once their roundtable is closed, they will start investing.

Identifying regulatory obstacles to investment in innovation

In 2018, DG RTD made progress in applying the **Innovation Principle** in practice. In particular, the RTD Innovation Principle task force worked on strengthening EU Cooperation on health technology assessments, minimum quality requirements for reused water, reduction of the impact of certain plastic products on the environment, and the 3rd mobility package. Additionally, the Innovation Principle was included in policy Communications on Artificial Intelligence, **Renewed Agenda for R&I**, and the Single Market as an element helping to design future-proof rules.

The first **Innovation Deal** pilot initiative on sustainable wastewater treatment combining anaerobic membrane technology and water reuse has been completed. The report of this innovation deal identified a regulatory barrier to the application of the anaerobic membrane technology (AnMBR), but also concluded that the removal of this barrier would require a more substantial review of the whole policy related to nutrients management in agriculture and protection of water from excess nutrients. The information gathered through the Innovation Deal will be an important contribution to the ongoing evaluation of legislation (Urban Waste Water Treatment Directive and Water Framework Directive) and planned fitness check of the Nitrates Directives. The findings of the Innovation Deal point to inefficiencies in the current policy framework and call for a smarter and more effective policy.

Work on the second Innovation Deal "From E-mobility to recycling: the virtuous loop of electric vehicle" is underway

1.3: To ensure an effective and efficient implementation of Horizon 2020 and other RTD programmes and maximise synergies

Horizon 2020

DG RTD continued its implementation of Horizon 2020 in 2018, with 206 grants signed for a total of EUR1.23 billion. Across the whole of Horizon 2020, implemented mainly by the Executive Agencies and Joint Undertakings under the supervision of the Commission, 5 350 projects were signed in 2018 for a total of EUR 9.41 billion. The monitoring report 'In Full Swing – Three Years On' published in early January 2018¹⁴ provides a comprehensive statistical overview of Horizon 2020 participation patterns, complementing the new Dashboard.

RTD also laid the groundwork for more effective and concrete synergies under the next MFF, by drafting the relevant legal provisions in the Horizon Europe Regulation and the pioneering Annex in the impact assessment that covered synergies with other EU programmes post-2020.

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https://ec.europa.eu/programmes/horizon2020/sites/horizon2020/files/h2020_threeyearson_a4_horizontal_2018_web.pdf

DG RTD has started exploring ways of simplifying funding rules under the new MFF, notably through 'lump sum funding'. This would allow for payment based on the achievement of agreed targets, rather than based on eligible costs, and has the potential to simplify administrative procedures for participants and lower the error rate. The method has been tested in pilot calls in 2018 and testing will continue in 2019.

The continuation of this testing was one of the recommendations included in the European Court of Auditor's Special report 28/2018 "The majority of simplification measures brought into Horizon 2020 have made life easier for beneficiaries, but opportunities to improve still exist"

The report concludes that the administrative burden on those applying for and managing research grants under the EU's Horizon 2020 programme has been reduced and that most of the simplification measures introduced by the European Commission have been effective, although there is still room for improvement.

The auditors made several recommendations relating to

- better communication with applicants and beneficiaries;
- intensifying testing of lump sums;
- exploring the possibility of making greater use of two-stage proposal evaluations;
- re-examining remuneration conditions for expert evaluators;
- increasing recognition of the Seal of Excellence;
- ensuring stability of the rules and guidance for participants;
- improving the quality of outsourced audits;
- further simplifying tools and guidance for SMEs.

All were accepted by the Commission. However, overall, the report does show that Horizon 2020 is considerably simpler and more open than FP7, thus achieving two important objectives of the programme. This is also borne out by the level of SME and newcomer participation (see Executive Summary under KPIs – figures 1 and 2), which exceed the targets, and were a considerable increase on FP7.

Euratom

As the Euratom Treaty only allows for a 5-year research programme, the Commission tabled a proposal for a Euratom Programme for 2019-2020 to bring the Euratom Programme in line with the MFF. The proposal, which has the same objectives and activities as its predecessor, was unanimously adopted by the Council.

DG RTD led the preparation of the proposal for a new Euratom Research and Training Programme for 2021-2025. The preparatory work included contribution to the Horizon Europe impact assessment and a public consultation.

The programme has been simplified (for example, through a reduction in the number of objectives from 14 to four) and synergies with Horizon Europe will be better exploited (e.g. in health research and the Marie Skłodowska-Curie actions).

Research for Coal and Steel (RFCS)

During 2018, the Research for Coal and Steel (RFCS) adopted the revision of the RFCS legal base (2003/76/EC) – Council Decision (EU) 2018/599 on the 16th of April 2018. This authorises the Commission to re-use the de-commitments made by the Commission since the beginning of the RFCS, thus allowing additional budgetary resources for upcoming RFCS calls for proposals (EUR 40 million per year until 2020).

21 grant agreements were signed in 2018. The revision of the RFCS legal base allowed for an additional 10 grant agreements by the end of 2018.

With input from the RFCS activities, DG RTD contributed to the launching of the *Coal Regions in transition* Working Groups, where DG RTD co-chairs with DG ENER the Working Group 2 on Eco-innovation and advanced coal technologies.

A new Framework Programme for Research and Innovation – **Horizon Europe**



One of the key deliverables in 2018 was the policy package for the future Framework Programme for Research and Innovation – **Horizon Europe**.

The European Parliament's ITRE committee, in its recommendations on Horizon Europe, highlighted that the 'EU has the potential to become a world-leading global centre for research and science; believes, furthermore, that in order to promote growth, jobs and innovation to this end, FP9 has to become a top priority for Europe'

DG RTD was the lead DG responsible for steering the complete pack of Horizon Europe proposals to a Commission decision on 7 June 2018, in line with the planned deliverables and target.

This effort entailed extensive coordination among 20 DGs, at working level and with senior management, including close liaison with the central services of the Commission.

The impact assessment for Horizon Europe is the first analytical justification for the R&I Framework Programme designed with a clear intervention logic, using a highly collaborative approach to drafting the document across the Commission services and extensively used in the inter-institutional negotiations.

The approach for indicators with impact pathways is a key novelty to ensure that evidence to determine the Programme impact will be gathered effectively. Moreover, this impact assessment triangulates macroeconomic models for R&I at EU level for the first

time and contains significant work on synergies between Horizon Europe and other Multiannual Financial Programmes.

Following the final adoption of Horizon Europe, a clear internal governance structure for the implementation of the programme has been established. Political guidance comes from the Project Team of Commissioners for Jobs growth, innovation and competitiveness. This guidance will be translated into operational plans for work programmes and calls for proposals through the guidance of a DG-level Strategic Research and Innovation Groups, and director-level groups for strategy and for the component parts of the new programme. These groups met a number of times in 2018, with a view to charting the next steps for programme implementation. The launch of the strategic planning process will be in 2019.

In the context of Horizon Europe, there have been continued discussions on the establishment of a **European Innovation Council (EIC)**. These discussions will continue in 2019 and DG RTD will seek to establish the EIC as a true “one-stop shop” for innovation funding in Europe; bringing together existing instruments (e.g. the SME Instrument, inducement prizes, FET-Open and Fast Track to Innovation) and funding breakthrough, market-creating innovations from any technology or sector.

The proposal, and its implementation, takes full account of the recommendations of the European Court of Auditors in its report on Horizon 2020 simplification (see above). The Horizon Europe legislation includes a range of measures to ensure better synergies between programmes, including the Seal of Excellence, and allows for the use of lump sums and other simplified cost options.

As recommended, the Commission will ensure stability of rules and guidance for participants – it has committed to make changes only where there would be a real added-value for beneficiaries. However, the preparations for the new programme include intensifying the testing of lump sums, re-examining the remuneration conditions for expert evaluators and further simplifying tools and more tailored guidance for SMEs – both for the EIC and in other parts of the programme.

Finally, making greater use of two-stage proposal evaluations is already underway, as is work to improve the quality of outsourced audits. A comprehensive communication plan will be established before the start of the programme.

Contribution to the e-governance and e-procurement of new generation programmes

Beyond the Research and Innovation Framework Programme, DG RTD will contribute to the areas of e-governance and e-procurement for the new generation programmes to come under the new Multi-Annual Financial Framework.

In 2018, the Common Support Centre (CSC) for Horizon 2020, an integral part of DG RTD, will be leading the Commission's efforts to establish corporate-wide e-grant and e-procurement procedures and Informatics tools.

The key deliverable in 2018 will be the 'Funding and Tenders' portal that brings together all the Commission's grant and procurement opportunities. The Portal will host, amongst other services and components, the Organisation Register supporting the corporate validation services entrusted by the Commission to the Research Executive Agency (REA).

2. A Connected Digital Single Market

2.1: To increase impact and excellent science through openness ("Open Science")

Open Science Cloud

Following the preparation of the Implementation Roadmap for the European Open Science Cloud ("EOSC") and the Council Conclusions 9029/18, DG RTD launched the European Open Science Cloud in November 2018 at an event in collaboration with the Austrian Presidency.

The Executive Board for EOSC was set up at the end of 2018 and will start its work in 2019. The EOSC Governance board is set up as a working group under the strategic configuration of the programme committee of Horizon 2020. It will start its work in 2019.



Open Access and Open Data

DG RTD has further developed, monitored and implemented Open Access and Open Data policies in 2018. Open Access will be streamlined and stepped up in Horizon Europe with further obligations to make research publications and data openly available.

Further to the copyright modernisation package adopted in September 2016, which aimed at ensuring that consumers and creators can make the most of the digital world, DG RTD, along with DG CNECT, has been closely involved in trilogue negotiations with a view to sustaining the Commission's initial proposal, focusing on three main objectives:

1. More cross-border access for citizens to copyright-protected content online.
2. Wider opportunities to use copyrighted material for education, research, cultural heritage and disability (through so-called "exceptions").
3. Clearer rules of the game for a functioning copyright marketplace, which would stimulate the creation of high-quality content.

As part of the European Commission's Data Package presented in April 2018, DG RTD led the revision of the Recommendation on access to and preservation of scientific information (also publishing the 2018 report on its implementation) and contributed to the revised Directive on public sector information. The scope of the latter has been broadened to include publicly funded research data.

Research Integrity

The public needs full trust in science, and this can only be achieved if the highest levels of research ethics and integrity are guaranteed. Research integrity goes hand in hand with the Open Science agenda to ensure open access to scientific publications and data.

As noted in the ['European Code of Conduct for Research integrity'](#), good research practices are based on the fundamental principles of research integrity: reliability, honesty, respect, accountability. In 2018, DG RTD has continued to promote this code of conduct by monitoring that it is adhered to within Horizon 2020 projects; by funding of specific research in this area; and by fostering cooperation between Member States and third countries.

Supporting the Commission with high quality, timely and independent scientific advice for its policy-making activities Scientific Advice Mechanism (SAM)

The purpose of **the Scientific Advice Mechanism (SAM)** is to provide high-quality, independent scientific advice to the College of European Commissioners. Advice can be provided on any specific policy issue. In this way, SAM contributes directly to Better Regulation and potentially to a wide range of other Commission policies.

The core of SAM is:

1. the SAM High Level Group (HLG) of Scientific Advisors;
2. the Scientific Advice to Policy by European Academies (SAPEA) consortium;
3. the secretariat, located in DG RTD and to which JRC staff are seconded.

In 2018, and as planned, the Scientific Advisors provided their fourth and fifth scientific opinions: Novel Carbon Capture and Utilisation Technologies (May 2018) and Authorisation Processes of Plant Protection Products in Europe (June 2018) to Commissioners Cañete and Andriukaitis respectively. In addition, the Advisors' first and second Statements were published: A Scientific Perspective on Micro-plastic Pollution and its Impacts (July 2018); and A Scientific Perspective on the Regulatory Status of Products Derived from Gene Editing and the Implications for the GMO Directive (November 2018).

On the European Group on Ethics (EGE) in Science and New Technologies: SAM delivered in March 2018 an 'own-initiative' statement on Artificial Intelligence, Robotics and 'Autonomous' Systems. An analysis of ethical considerations arising from the development of new technologies such as artificial intelligence. Likewise, in December 2018, the EGE published an Opinion on the Future of Europe, Future of Society, at a request from President Juncker and Commissioner Moedas, examining the issues surrounding the future of work and its societal, political and technological effects.

2.2: Embedding digital into the grand societal challenges

Following the substantial contribution by DG RTD to the Commission Communication on the State of play of the Commission's Digital Single Market strategy (COM(2017) 228 final), adopted on 10 May 2017, the **digitalization of health and care** was introduced as an important element of this mid-term review.

The Communication on "Digital Transformation of Health and Care in the Digital Single
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Market" was published on 25 April 2018. The Communication explores possibilities for collaboration during the implementation phase. This includes collaboration in the implementation of the '1 Million Genomes' declaration. Further to this initiative, the identified RTD-led flagship actions are infrastructure pilots of data sharing, integration and analytics in areas recognized as mature for implementation and with clear medical applications.

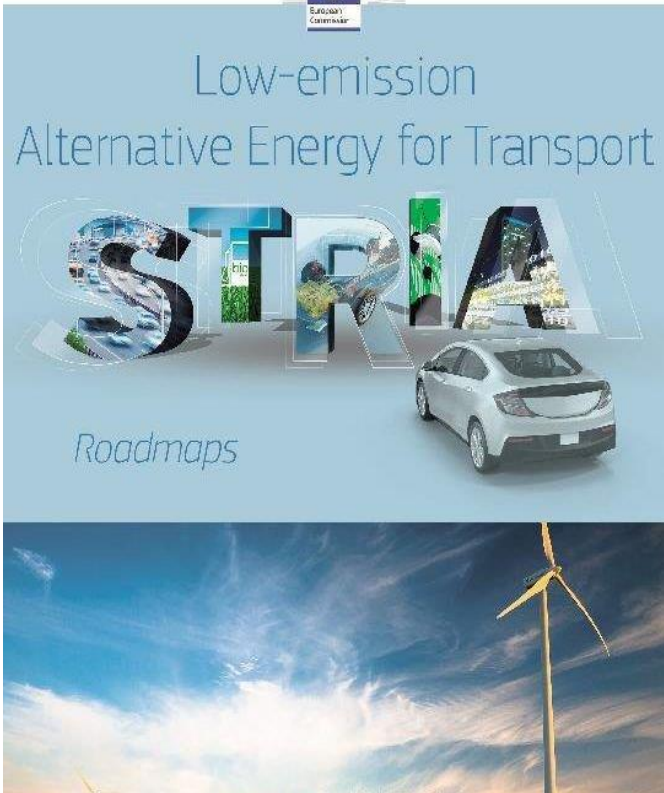
As part of the 'Europe on the move' initiative and the **Mobility Package III**, the Commission adopted a Communication on Automated Mobility COM(2018)283 on 17 May 2018. DG RTD contributed to the Research and Innovation dimension (e.g. STRIA working group on Connected and Automated Transport to update the short to long-term roadmaps by early 2019). A Forum-Group of Experts on ethics will start early 2019 to propose guidelines on connected and automated driving.

3. A Resilient Energy Union with a Forward-Looking Climate Change Policy

3.1: To implement the Research, Innovation and Competitiveness dimension of the Energy Union, together with a forward-looking climate-change policy

Strategic Energy Technology (SET) Plan and Strategic Transport Research & Innovation Agenda (STRIA)

Within the framework of the Energy Union strategy,



in particular the research, innovation and competitiveness dimension and the climate action focusing on decarbonisation of transport, DG RTD has set up the **Strategic Transport Research and Innovation Agenda (STRIA)** Governance group, bringing together Member States and key transport stakeholders (notably the Transport ETPs) which became fully operational in 2018. A meeting took place in December 2018.

The STRIA Governance group has identified the three following areas where an update of the existing roadmaps and a definition of concrete actions is needed: 1) connected and automated transport (covering road, rail and waterborne), 2) smart mobility in urban areas and 3) infrastructure.

Three Working Groups were established in 2018 with Member States representatives, transport stakeholders and experts to focus on these areas. As a first outcome, a report on Connected and Automated Transport, including an action plan, will be delivered in Q1 2019.

DG RTD is responsible for four out of the ten **SET Plan** key Actions. The first two key actions contribute to reduce the costs and to improve the performance of renewable energy technologies. The third key action is on carbon capture, storage and use, and the fourth aims to maintain high levels of safety of nuclear reactors.

In 2018, the SET Plan Steering Group endorsed a total of eight Implementation Plans (IPs). For DG RTD, it means that all the actions it is responsible for have been endorsed, with the exception of the IP on nuclear energy that has been re-scheduled for Q1.2019. By the end of 2018, for the IPs for which DG RTD is responsible, there were EUR 6.6 billion of total investments.

In the second quarter of 2018, a new SET Plan agenda for the coming five years was finalised and endorsed by the SET Plan Steering Group. Operational in nature and aiming to record the actual working methods that can facilitate the delivery of the actions described in the various IPs, this agenda aims to ensure a strong impact in accelerating clean energy innovation in Europe. Finally, the 2018 SET Plan conference took place in Vienna under the auspices of the Austrian presidency; the Commission took the opportunity to present the new SET Plan publication 'SET Plan delivering results: the Implementation Plans'.

Energy Union Integrated Strategy in Research, Innovation and Competitiveness

DG RTD continued coordinating the implementation of the 20 actions of the Communication 'Accelerating clean energy innovation', preparing the second annual progress report and the input for the 4th State of the Energy Union report to be delivered in 2019.

Furthermore, DG RTD contributed to the Commission's reflections and Communication on the future of the EU's energy and climate policy for which DG ENER and DG CLIMA were in the lead.

In the context of the follow-up and implementation of the Paris Agreement, significant progress has been achieved on the European Decarbonisation Pathway Initiative and the implementation of the European Roadmap for Climate Services.

DG RTD and JRC co-led the 'innovation, technology and infrastructure' building block during the preparatory phase of the Commission Communication.

Mission Innovation (MI)

DG RTD led the Commission's strong leadership role in Mission Innovation (MI) as Chair of the Steering Committee until June 2018. This meant extensive engagement in the MI Secretariat, across the MI Sub Groups and most of the eight Innovation Challenges.

A preparatory meeting in Ottawa (January 2018) was instrumental in leading to a very successful third Mission Innovation Ministerial meeting (MI-3) in Malmö on 23 May where the Commission was represented by Vice President Šefčovič and Commissioner Moedas.

At the meeting, it was announced that the commitment to double government investment in clean energy innovation over five years is on track. Austria was admitted as a new member and other countries showed interest in joining (e.g. Morocco and South Africa).

MI is also helping Public-Private cooperation to increase. An action was proposed by the Commission at MI-3 for piloting a new public-private co-investment tool to reduce risk for private investment and improve effectiveness of available public funding. Industry leaders supported a political declaration endorsed by the European Battery Alliance on the role of innovation to develop sustainable battery value chains.

Around 40 new joint funding projects amongst members and other international co-operation projects that would not have happened without MI, and a new Hydrogen Innovation Challenge (EC co-leading) was announced. Innovative breakthroughs and

individuals were celebrated through initiatives such as MI 2020 Solutions, which highlights over 50 breakthroughs emerging from MI members' investments, and the MI Champions programme, which recognises exceptional clean energy researchers and innovators.

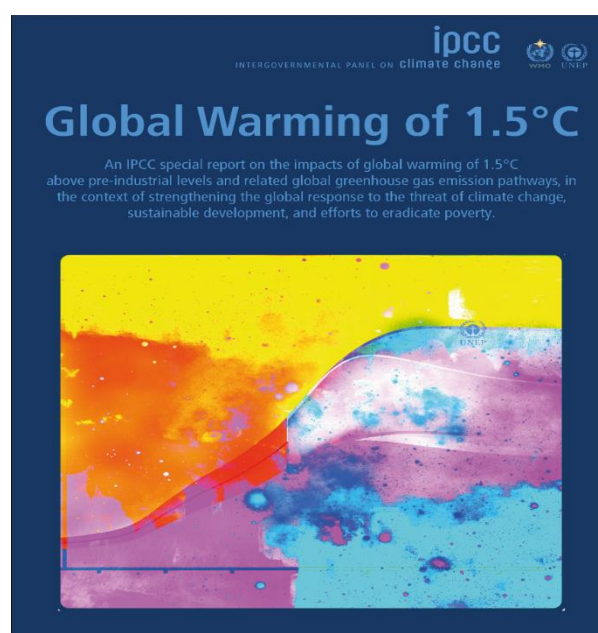
Private investors from the Breakthrough Energy Coalition (BEC), spearheaded by Bill Gates, signed a Memorandum of Understanding with the Commission in October on co-investing in innovative European companies developing and bringing radically new clean energy technologies to the market. This follows the announcement by BEC at the One Planet summit in December 2017 that they would collaborate with five MI members (the Commission, France, the UK, Canada and Mexico).

Enhanced cooperation was announced with both the International Energy Agency (IEA) and the International Renewable Energy (IRENA) to improve the tracking of clean energy innovation progress.

Intergovernmental Panel on Climate Change (IPCC)

DG RTD coordinated and submitted to the IPCC the EU position regarding the Special Report on 1.5°C, requested by the Paris Agreement. It led the EU delegation to the negotiation session (48th session of IPCC), where the report was adopted on the 8th of October 2018 following tough and lengthy negotiations.

The High Level Panel on European decarbonisation pathways finalised its report and presented it to Commissioner Moedas on the 28 November 2018. The report outlines possible R&I strategies to meet the challenges of defining cost-effective decarbonisation pathways.



Sustainable Europe

DG RTD contributed to Annexes II & III of the sixth Reflection Paper on "a Sustainable Europe by 2030"¹⁵.

Annex II is the set of factsheets detailing the state of play, policy highlights, and examples of successes for each of the 17 SDGs. Annex III is the stocktaking of achievements and policy highlights in line with the priorities of President Juncker.

¹⁵ COM(2019)22 of 30 January 2019

4. A Stronger Global Actor

4.1: To translate Europe's strengths in science and technology into a leading global voice ("Open to the World")



2018 saw the launch of **PRIMA** (Partnership for Research and Innovation in the Mediterranean Area) which will develop solutions for a more sustainable management of water and agro-food systems in the Mediterranean area. The main objective of the ten-year initiative, which is partly funded by Horizon 2020, is to devise new R&I approaches to improve water availability and sustainable agriculture production in a region heavily affected by climate change, urbanisation and population growth.

The Delegation Agreement, by which the Commission will delegate the funds' management powers to the PRIMA Foundation, was signed at the beginning of the 2018. PRIMA started its activities by launching the first call for proposals in February 2018.

In addition, negotiations for the participation of Lebanon and Morocco were concluded and these agreements were signed in February and April 2018. The signature of these international agreements for PRIMA makes it the first public-public partnership to enable participation of non-associated third countries on an equal footing with Member States and Associated Countries. Negotiations for the signature of the required Implementing Arrangements with competent authorities of Algeria, Egypt, Jordan, Lebanon and Morocco were undertaken, of which two were signed in 2018 (Algeria and Jordan).

DG RTD continued its regular dialogue in the field of research and innovation with Turkey and Russia as part of Science Diplomacy efforts. In both cases, tangible progress was noted, e.g. with Turkey in the area of Open Data and gender mainstreaming, with Russia the advanced process for renewing the S&T Agreement for another period of 5 years. DG RTD also worked towards opening up cooperation with Iran on selected thematic areas. In Africa, DG RTD is contributing to the implementation of the new 'Africa - Europe Alliance for Sustainable Investment and Jobs'.

The European Commission, Finland and Germany co-hosted the **2nd Arctic Science Ministerial (ASM 2)** on 25-26 October 2018 in Berlin. The aims of this 2nd ministerial meeting were to promote the results of the deliverables agreed at the 1st Arctic Science Ministerial, to increase capacity to respond to major societal challenges in the Arctic and to encourage further scientific cooperation among a large number of countries and representatives of indigenous peoples.

As mentioned under point 3.1, DG RTD plays an important and strong leadership role in **Mission Innovation** and was the Chair of the Steering Committee until June 2018. This meant deep engagement in the MI Secretariat, across the MI Sub Groups and most of the eight Innovation Challenges.

DG RTD took over the lead on the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), with DG ENV now as co-lead. In its new role and status of an enhanced observer, it has participated for the first time in the 6th IPBES Plenary in March 2018 leading the EU delegation.

DG RTD was actively involved in the negotiation and adoption of the regional assessment on Europe and Central Asia, the Assessment on Land Degradation and Restoration, the budget 2018-19 and in the strategic programming discussions.

2. ORGANISATIONAL MANAGEMENT AND INTERNAL CONTROL

This section explains *how* the DG delivered the achievements described in the previous section. It is divided into three subsections.

A first subsection (DG RTD and the Research and Innovation Family) explains the role DG RTD plays as the head of the Research and Innovation Family and the achievements related to this role.

A second subsection reports the control results and all other relevant information that support management's assurance on the achievement of the financial management and internal control objectives¹⁶. It includes any additional information necessary to establish that the available evidence is reliable, complete and comprehensive; appropriately covering all activities, programmes and management modes relevant to the DG.

The third subsection deals with the other components of organisational management: human resources, better regulation principles, information management and external communication.

Annex 2 contains the performance tables summarising the state of play of the output indicators planned in the Annual Management Plan 2018.

DG RTD and the Research and Innovation Family

The control framework presented in this report should be seen in the overall context of the responsibilities of DG RTD in implementing Horizon 2020 and finalising the implementation of FP7. DG RTD's responsibilities have increased as the budget for research and innovation has grown from FP7 to Horizon 2020, prompting the move to new management structures.

Management modes for the programmes' implementation

The responsibility to implement the Research FPs is shared among different Directorates-General. In order to focus on core institutional tasks, these Directorates-General have delegated parts of the programme implementation to Executive Agencies, Joint Undertakings and public-public partnerships with the Member States (so-called Article 185 bodies).

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

- coordination and coherence in the setting up of the research agenda to be supported under the FPs (in particular strategic programming and work programmes);
- focus on core activities, i.e. policy-making, for the Directorates-General by delegating grant management tasks to the Executive Agencies and other "external

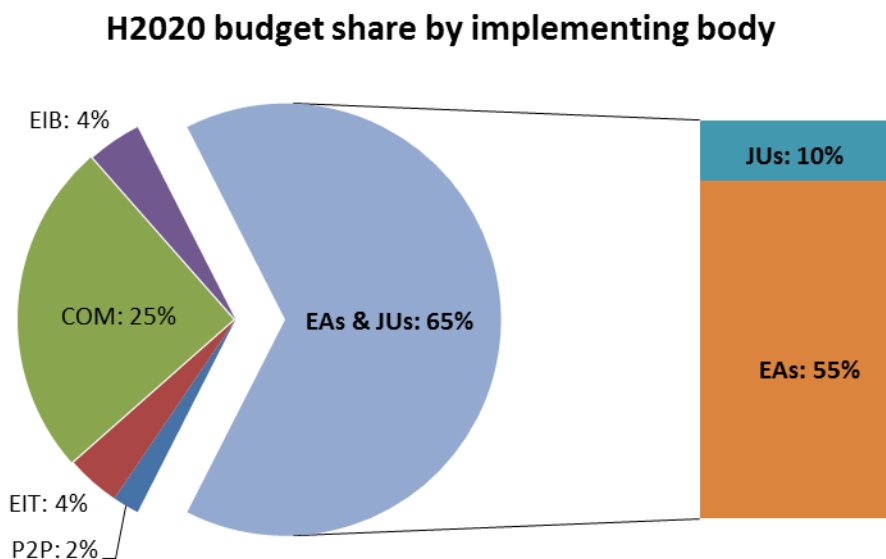
¹⁶ Art 36.2 FR: a) effectiveness, efficiency and economy of operations; b) reliability of reporting; c) safeguarding of assets and information; d) prevention, detection, correction and follow-up of fraud and irregularities; and e) adequate management of risks relating to the legality and regularity of underlying transactions

bodies";

- coherent implementation of the grant management process across all bodies involved in Horizon 2020 grant management.

In its 2011 Communication on the 2014-2020 MFF, the Commission announced a target of at least 66% for the share of the Horizon 2020 budget to be managed externally, and this could reach 75% over the lifetime of Horizon 2020.

Figure 6 Horizon 2020 budget share by implementing body



DG RTD coordinates the Research and Innovation Family

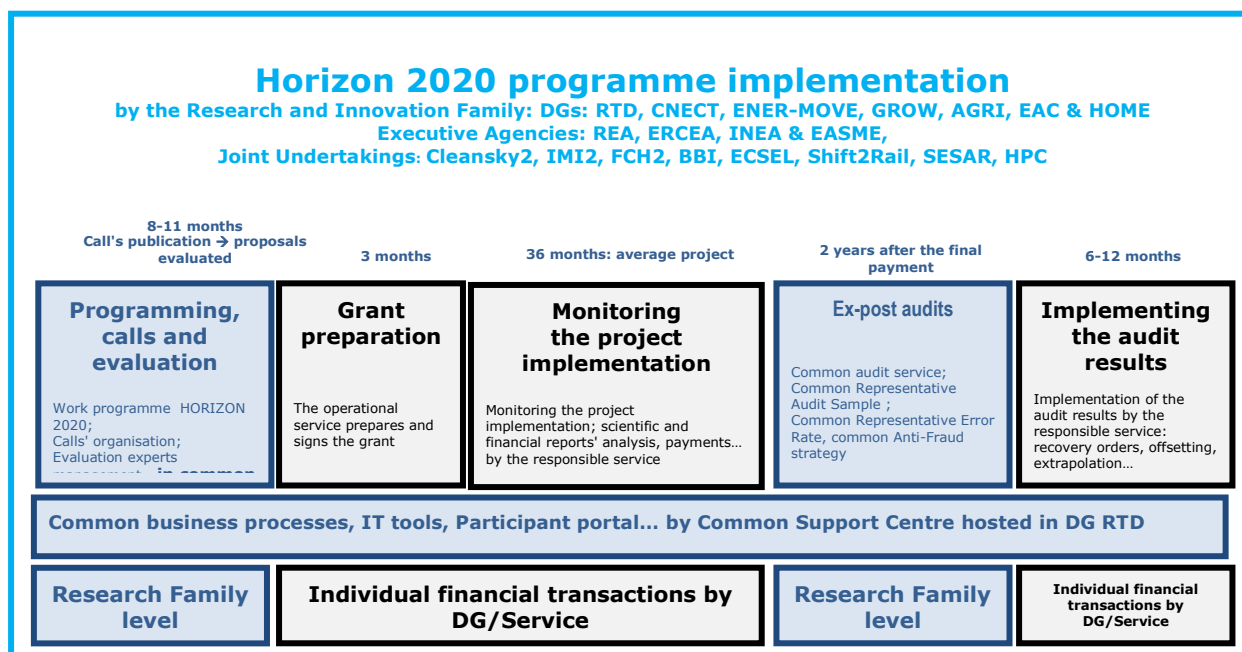
Given the multitude of implementing bodies, effective coordination within the Research and Innovation Family is essential. DG RTD, as the lead DG of the Family, invests considerable resources in this coordination.

Figure 7 summarises the current organisation of Horizon 2020 implementation¹⁷. It differentiates 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* (DGs and other services, taken individually – with grey shadow).

DG RTD has the overall coordination responsibility in the management of the whole of Horizon 2020, even for those parts that are not in its own budget appropriations and not included in the assurance given at the end of this report.

¹⁷ Exception made of JRC, which implements direct research activity under the programme.

Figure 7 Horizon 2020 organisational set up



The Common Support Centre

The implementation of FP7 through different Directorates-General and other actors led to some divergent practices across different parts of the programme. For a consistent and uniform treatment of all beneficiaries and the coherent implementation of Horizon 2020, the Commission developed a single set of simplified rules for participation and dissemination and created a Common Support Centre (CSC).

The CSC provides common services in legal support, ex-post audit, IT systems and operations, business processes, programme information and data to all Research and Innovation DGs, the Executive Agencies and the Joint Undertakings implementing Horizon 2020. It helps to coordinate and deliver the programme across eight Commission Directorates-General, four Executive Agencies, and eight Joint Undertakings¹⁸, through:

- streamlined, harmonised and rationalised business processes;
- training and improved documentation linked to the programme and project implementation;
- 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;
- the consolidation and dissemination of results and data generated by projects managed by different actors.

The CSC interim review to address the quality of services and assess if the needs of the Research and Innovation Family are met was completed in 2018.

¹⁸ The operating rules of the CSC were adopted by Commission Decision C(2014)2656, these include information on the CSC governance, the responsibilities of the various parties involved, the missions and tasks of each service as well as staff and budgetary issues: 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 study found that the CSC, despite operating in a complex environment, successfully achieved its main objectives of simplifying and harmonising the implementation of Horizon 2020.

Two major actions were completed in 2018, i.e. an improved CSC governance empowering the technical groups, and a more efficient way to handle legal questions. Few actions remain for 2019, in particular the debate on the future of the CSC.

The European Court of Auditors published in 2018 Special report 28/2018: the majority of simplification measures brought into Horizon 2020 have made life easier for beneficiaries, but opportunities to improve still exist¹⁹ (see paragraph 2.1.2 on Court of Auditors). This report shows the improvements that have been made in the management of Horizon 2020, but also the additional efforts now needed for the future.

2.1 Financial management and internal control

This section reports the control results and other relevant elements that support management's assurance. It is structured into (2.1.1) Control results, (2.1.2) Audit observations and recommendations, (2.1.3) Assessment of the effectiveness of the internal control system, and resulting in (2.1.4) Conclusions as regards assurance (2.1.5) Declaration of assurance accompanied by the reservations.

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 Director in charge of Internal Control and Risk Management for DG RTD, including the results of internal control monitoring at Directorate-General level;
- The reports on recorded exceptions, noncompliance events and any cases of confirmation of instructions (Art 93.2 FR);

¹⁹ Special Report 28/2018 <https://www.eca.europa.eu/en/Pages/DocItem.aspx?did=47542>

- the observations and recommendations reported by the Internal Audit Service (IAS);
- the observations and recommendations reported by the ECA.

These reports result from a systematic analysis of the available evidence. 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.

DG RTD's overall responsibilities for the budget "Research and Innovation"

DG RTD negotiates the Title 08 "Research and Innovation" of the budget of the European Commission and coordinates and monitors its implementation, *in fine* entrusted to the whole Research and Innovation Family. DGs and Executive Agencies receive delegation directly from the College, Joint undertakings and other bodies receive their budget from DG RTD. The Title 08 contains expenditure related to:

- Administrative charges dedicated to Research and Innovation;
- Research and Innovation FPs²⁰;
- Euratom Research and Training Programme;
- Research Fund for Coal and Steel.

Amongst these items, the Framework Programmes represent the most important part, in quantitative terms. This explains why this report mainly focuses on this part of the budget.

Budget implemented by DG RTD in 2018

Table 1 gives an overview of the payments authorized by DG RTD in 2018 under different programmes (legal base) and management modes (direct/indirect).

Table 1 Payments authorized in 2018 per programmes/management modes

Credit type	Authorized payments in DG RTD in 2018 (M€) (Cross-subdelegations given included, received excluded)									
	ADMIN				OPERATIONAL				Grand Total	%
Legal base	H-2020	RCFS	FP7	Total	FP7	H2020	RCFS	Total		
Management mode / implementing body										
Total Direct	153,87	0,03	0,10	154,01	198,67	1.361,73	44,09	1.604,48	1.758,49	55,95%
RTD	35,83	0,03	0,10	35,96	198,67	1.361,73	44,09	1.604,48	1.640,45	52,19%
Executive Agencies	118,04			118,04				0,00	118,04	3,76%
Total Indirect	21,55			21,55	118,86	1.244,07		1.362,93	1.384,49	44,05%
Art 185 bodies	7,80				12,99	170,24		183,22	183,22	5,83%
EIB/EIF						472,91		472,91	472,91	15,05%
Joint Undertakings	13,75				104,46	600,25		704,71	704,71	22,42%
Other DG's					1,41	0,68		2,09	2,09	0,07%
Grand Total	175,42	0,03	0,10	175,56	317,53	2.605,80	44,09	2.967,42	3.142,98	100,00%
%	5,58%	0,00%	0,00%	5,59%	10,10%	82,91%	1,40%	94,41%	100,00%	

In 2018, DG RTD managed directly 56% (against 58% in 2017) of its budget expressed in terms of payments. 44% of the payments went to other entrusted bodies, to be finally implemented by them.

Table 2 below gives another overview of the implemented budget, following the different

²⁰ Nota bene: The current *Horizon 2020* FP is not exclusively funded by the budget line 08 of DG RTD. Other Directorates-General are also contributing to *Horizon 2020* FP.

control systems under which the payments were authorized. The controls applied for payments are different for commercial invoices (procurement), reimbursements of cost claims (grants), reimbursement of the cost of experts or payments of the amounts entrusted to other implementing bodies.

Table 2 Payments authorized in DG RTD by control system

Credit type	ADMIN	OPERATIONAL	ALL	%
Controle system	Amount (M€)	Amount (M€)	Total Amount (M€)	
Administrative	1,54	0,00	1,54	0,05%
Experts contracts		4,22	4,22	0,13%
Financial instruments		472,91	472,91	15,05%
Grants		1.577,38	1.577,38	50,19%
Other		2,33	2,33	0,07%
Prizes		3,29	3,29	0,10%
Procurement	34,42	17,27	51,69	1,64%
Subsidies entrusted entities	21,55	887,94	909,49	28,94%
Executives agencies	118,04		118,04	3,76%
Cross-subdelegations		2,09	2,09	0,07%
Grand Total (€)	175,55	2.967,42	3.142,98	100,00%
%	5,59%	94,41%	100,00%	

These figures confirm that, although it is decreasing in importance, the main method of implementing the budget administered by DG RTD in 2018 is still direct grant management (Grants), with 50% (against 56 % in 2017).

47.7% (against 41.65% in 2017) was entrusted to other entities outside the Commission, mostly to implement parts of the Framework Programmes under *indirect grant management, the executive agencies and financial instruments* control systems.

Directly managed *administrative, experts, procurement and prizes (+ other)* related payments amount to a total of 2 % of the expenditure.

0.07% of the 2018 payments have been authorized under cross-subdelegations by other Commission DGs. This part is considered as implemented in direct grant management by other DGs.

As a consequence, this report focuses on (direct and indirect) grant management and presents the financial instruments (covering 98% of the 2018 payments) but does not detail the other control systems.

Assurance on this expenditure is provided by DG RTD directly or through its supervisory arrangements on the variety of delegated bodies that implement a part of the budget on its behalf.

Grant management control system

In order to achieve both operational (research and innovation-related) and financial objectives, DG RTD has established a control framework to mitigate the inherent risks at the different stages of the direct grant management process and the indirect grant management²¹.

This control framework must, however, be cost-effective and not cause excessive administrative burden for 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 on-the-spot after costs have been incurred and declared.

The control system for Horizon 2020 has improved the overall efficiency and coherence of the FP's implementation: the CSC develops, for Horizon 2020, corporate processes and tools. This leads to a streamlined control environment with embedded automatic controls whenever possible.

In 2016, DG RTD adopted its Horizon 2020 Control strategy²², which is considered as a reference document for the other implementing bodies. As part of the overall common control approach, the Common Horizon 2020 Ex-post Audit Strategy was also adopted in 2016²³. The standard ex-ante control function in the IT system was available in 2017. In particular, the risk management module has been enhanced, and the support for the assessment of reported costs was automated.

Financial instruments control system

DG RTD has delegated the implementation of its financial instruments to two international bodies: the EIB and the EIF.

As delegated bodies, EIB and EIF have a responsibility for how they carry out their tasks. However, RTD, in its role as delegating body and AOD, has a responsibility to supervise these bodies' implementation of the funds they receive. Therefore, RTD has established a supervision strategy for these instruments. This strategy aims to ensure that the financial as well as the research-related objectives are achieved.

The general strategy chosen is supervision based on the establishment of clear rules; the examination of reports and the approval of key documents, but with a hands-off approach to detailed management issues, leaving the EIB and EIF reasonable freedom to implement the programmes. Nevertheless, in the event that seriously adverse information about the non-achievement of a key control objective should come to DG RTD's knowledge, the delegating acts give the Commission the right to intervene more extensively in the operations of the EIB and EIF.

Budget cross-subdelegated/co-delegated to other services

As in previous years, DG RTD has delegated a number of activities to different services within the Commission.

²¹ For further details of the control systems, see Annex 5.

²² Ares(2016)268114 - 19/01/2016

²³ Ares(2016)981660 - 25/02/2016

In 2018, DG RTD cross-subdelegated EUR 2 million of its payment appropriations (operational credits) to other DGs.

Being a Commission service itself, the AOD of services receiving delegation 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 provided no indication of any particularly unfavourable observation with regard to the regularity and legality of the transactions concerned²⁴.

2.1.1 Control results

This section reports and assesses the elements identified by management that support the assurance on the achievement of the internal control objectives²⁵. The DG's assurance building and materiality criteria are outlined in the AAR Annex 4. 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 relevant control systems.

The new 2018 Financial Regulation introduced additional reporting requirements in the Annual Activity Report, which are presented hereafter²⁶.

- Case of 'confirmation of instructions' (new FR art 92.3)

No case was reported.

- Cases of financing not linked to costs (new FR art 125.3)

The Horizon 2020 General Model Grant Agreement (MGA), the ERC MGA, SME Instrument Phase II MGA, Eranet Cofund MGA, PCP/PPI MGA and European Joint Programme Co-fund MGA use a combination of actual costs, unit costs and flat rate (a combination of Article 125.1(b), (c) and (e) FR)

In addition to actual costs, the General MGA provides by default for:

- **Flat-rate for indirect costs:** 25% of direct costs (Article 5.2(a) of the MGA, Article 29 RfP);

- Unit costs.

- Personnel costs of SME owners and natural persons not-receiving a salary (Article 5.2(a) Commission Decision C(2013)8197);
- Personnel costs calculated in accordance with the beneficiary's usual cost accounting practice: s Average personnel costs (Article 5.2(a) MGA, Article 33 H2020 RfP);

²⁴ The amounts subdelegated to other authorizing officers by DG RTD in order to implement FP7 projects will be included in the scope of DG RTD reservation.

²⁵ 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 multi-annual character of programmes as well as the nature of the payments (FR Art 32).

²⁶ In addition a Financial Framework Partnerships >4 years (new FR art 130.4) is listed in annex 3

- Costs of internally invoiced goods and services calculated in accordance with the beneficiary's usual accounting practices (Article 5.2(d) MGA).

- Unit costs where a specific provision has to be included:

- Energy efficiency measures in buildings (Article 5.2(f) MGA, Commission Decision C(2013)8196);
- Access costs for providing trans-national access to research infrastructure (Article 5.2(f) MGA, Commission Decision C(2014)8199);
- Clinical studies (Article 5.2(f) MGA, Commission Decision C(2014)1393);
- Eranet Cofund MGA has a unit cost for coordination costs for general activities (Article 5.2(f), Commission Decision C(2013)8200);
- European Joint Programme (EJP) CoFund MGA has specific unit costs for mobility of personnel, for costs for fellowships for researchers and for access costs for research infrastructure (Article 5.2(f), Commission Decision C(2013)8201).

- Cases of flat rates >7% for indirect costs (new FR art 181.6)

According to Horizon 2020 Rules for Participation, indirect eligible costs of Horizon 2020 grants shall be determined by applying a flat rate of 25% of the total direct eligible costs. It is not a Commission decision, but the basic act that derogates from the Financial Regulation in this case. This applies to all Horizon 2020 grants, although in some cases the 25 % could be directly embedded within a unit cost (e.g. unit cost for clinical studies). In certain cases, the indirect costs are instead comprised within a larger unit costs or lump sum (e.g. SME instrument Phase 1 or the unit costs for Institutional cost under Marie Skłodowska- Curie actions). In such situations, the percentage of indirect costs cannot be determined separately.

- Derogations from the principle of non-retroactivity pursuant to Article 193 of the Financial Regulation

20 grant agreements signed in 2018 derogate from the principle of non-retroactivity pursuant to Article 193 of the Financial Regulation. However, in such cases, costs incurred prior to the date of submission of the grant application were not eligible.

a. Effectiveness

Legality and regularity of transactions

DG RTD has set up internal control processes aimed at ensuring the adequate management of the risks relating to the legality and regularity of the underlying transactions, taking into account the multi-annual character of programmes and the nature of the payments concerned.

Under point 2.1 of this report it was explained that DG RTD's budget is implemented under two main management modes, namely *direct and indirect grant management*. Innovfin financial instruments represent the second most important control system, and the remainder account for less than 2% altogether.

Consequently, this section discusses the controls and their results for the main expenditure items. For the other expenditure items, if no other indication is given, the estimated level of legality and regularity is to be found in the conclusion of the section entitled "overall assessment of the legality and regularity of operations".

Control results for grant management (direct and indirect)

This section covers all expenditure implemented under direct or indirect grant management, the cross-subdelegations included²⁷, with the exception of the expenditure managed by the Public-Public Partnerships and Joint Undertakings, discussed under a different heading.

For the Research and Innovation Framework Programmes, the main legality and regularity indicator is the error rate detected by ex-post audits. Due to 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 FP, once the ex-post control strategy has been fully implemented and systematic errors have been detected and corrected.

The general control objective for the Research and Innovation services, as stated in Annex 4 to this report, is to ensure that for the Seventh Framework Programme (and the Research Fund for Coal and Steel in DG RTD) the residual error rate, i.e. the level of errors which remain undetected and uncorrected, does not exceed 2% by the end of the FP's management cycle. For Horizon 2020, the final control objective is to obtain a residual error rate as close as possible to 2%, without necessarily expecting it to be under 2%.

The question of being on track towards this objective is (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.

Control results for FP7 and Horizon 2020

Ex-post audit methodology (FP7 and Horizon 2020)

The Common Representative Sample (CRS) provides an estimate, via a representative sample of cost claims across the Research and Innovation Family, of the **overall level of error** in the Research Framework Programmes, across all services involved in its management. All of these grants follow the same homogeneous overall control system set out in this report.

The CRS 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, by, for instance, targeting the larger beneficiaries and through the identification of possibly fraudulent operators. These audits are also referred to as 'corrective' audits.

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 they are audits on a representative sample of beneficiaries or audits implemented for other reasons (large beneficiaries, preventive audits, risk factors, etc.). Its value is cumulative and can be calculated for a specific implementing body or for the whole Research and Innovation Family.

Representative Error Rate for the Framework Programme: this is the error rate derived solely from the results of the CRS, extrapolated to the overall population and calculated for each FP as a whole. This error rate provides an estimate of the

²⁷ For the 2017 reporting year, the cross-delegated AORs have signalled no serious control issues.

level of error in the given Framework Programme at the time of the audits, but does not factor in the follow-up and corrections/recoveries undertaken by Commission services after the audit, nor does it provide information on the net final financial impact of errors.

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:

1. all errors detected will be corrected;
2. all non-audited expenditure of audited beneficiaries is clean from systematic material errors so that the residual error rate in this expenditure can be estimated to be equal to the non-systematic part of the representative error rate (for expenditure subject to extension of audit findings this is only assumed when the respective extension procedures have been closed).

The residual error rate develops over time and depends on the assumptions set out above. 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 audit strategy, in dealing with errors over a multi-annual basis. However, it remains an estimate as long as not all cost claims have been received and not all cases of extension of audit findings have been fully implemented.

Results of the ex-post audits for FP7

The audit work for FP7 was almost completed in 2018. The last Common Representative Audit Sample was launched in 2016. By the end of 2018, just three audits of the Common Representative Audit Sample remained open.

Audit coverage of FP7

Research and Innovation Family

The Research and Innovation Family as a whole has 4 520 audits results, covering 64.7% of FP7 expenditure, completed by the end of 2018, exceeding the original target by 11%.

The percentage of FP7 expenditure covered by the audits (64.7%) refers to the value of the participations of the audited beneficiaries. It includes both the fully audited participations (8.5%), also referred to as the 'direct' coverage, and the non-audited participations which nevertheless, after the full treatment of audit results, are clean from systematic errors (56.2 %), also referred to as the 'indirect' coverage.

DG Research and Innovation alone had 2 043 FP7 audit results, covering 62.62% of FP7 expenditure, completed by the end of 2018, exceeding its target by 10%. Once the FP7 audits still open are closed (33 audit results), the original target for FP7 audits will have been exceeded by 12%.

The percentage of FP7 expenditure covered by the audits (62.62%) refers to the value of the participations of the audited beneficiaries, split by 9.47 % direct coverage and 53.16% indirect coverage.

Error rates

The error rates resulting from FP7 audit work are:

Overall Detected Error Rate: based on 2 043 audit results of audited participations, this error rate amounts to 5.14 % for RTD²⁸.

Common Representative Error Rate: based on 477 costs statements for which the audit is completed (98 % out of a sample of 486); this error rate is **5.26%**.

Residual Error Rate: at this point in time, this error rate amounts to 3.36 % for RTD.

Conclusion on the ex-post audits for FP7

The audit strategy for FP7 has been fully implemented. The Common Representative Error Rate for FP7, calculated on a multi-annual basis, is a little over 5%. The Residual Error Rate is 3.36% for RTD.

Since only three CRS audits remain open, it can be assumed that the final Residual Error Rate will be around 3.3%.

These results are in line with the conclusions expressed in AARs over the years.

These amounts do not necessarily mean that there is a loss to the Community budget. Many of the projects spend more than the capped budget, and so the real loss to the Community budget will be lower than when estimating the financial impact by using the error rates above.

The reservation in the declaration of assurance for the FP7 expenditure is addressed in Section 2.1.5.

DG Research and Innovation made continuous efforts to mitigate the risk of error in FP7 expenditure, including:

- a number of simplifications (for example those contained in the Commission Decision of 2011) and modifications to the Model Grant Agreement;
- a major communication campaign targeting beneficiaries and their auditors;
- continuous review of ex-ante control procedures, often based on the results of audits by the Commission's auditors as well as those of the European Court of Auditors;
- 2 043 ex-post audits, together with the recovery of overpayments and the extrapolation of systemic errors to unaudited cost claims of the same beneficiaries in terms.

However, it is clear that the 2% residual error target for FP7 will not be attained. Nevertheless, the lessons learned from FP7 audits have been used in the development of Horizon 2020 programme's general framework.

Results of the ex-post audits and expectations for Horizon 2020

At this stage of the programme lifecycle, cost claims totalling EUR 9 billion of requested funding has been received by the services by the end of 2018. The first Horizon 2020 audits were launched in the middle of 2016 and further audits were launched in 2017 and 2018. Two Common Representative Samples (CRS), Common Risk Samples and

²⁸ This is lower than the representative rate as it includes a number of preventive audits carried out at the beginning of FP7

Additional Samples²⁹ have been selected. In total, by December 2018, 2,383 participations had been selected for audit, covering all the services signing grants in Horizon 2020.

In total, the audit of 1 155 participations was finalised by 31/12/2018 (763 in 2018). This includes 164 out of 303 participations selected in the first 2 CRS. The error rate at 31/12/2018 is:

Overall Detected Error Rate based on 1 155 participations: 1.62 %

The Detected Error Rate ³⁰

Based on 164 out of 303 participations selected in the first and second CRS is 2.43%. However, if the draft audit reports is taken into account, then the expected representative error rate for the full sample will be around 3.32%.

Residual Error Rate for the Research and Innovation Family: 2.22% (2.24% for RTD) expected to rise to around 2.45% (2.48% for RTD) when taking into account the draft audit reports.

Comments on the control results

As was the case last year, the error rates set out above **should be treated with care**. The two first CRS are not yet complete, and thus, the error rate is not yet fully representative of the expenditure that it covered. Moreover, the first CRS was taken at an early stage of the programme in order to provide an initial indication of the error rate and, also, to help assess whether the simplifications introduced in Horizon 2020 had been effective. The nature of expenditure in the first years of the programme may not be totally representative of the expenditure across the whole period. As the programme is multi-annual, so the error rates, and especially the residual error rate, must be considered over time. In particular, the cleaning effect of audits will tend to increase the difference between the representative/detected error rate and the residual error rate, with the latter finishing at a lower rate.

There is, nevertheless, evidence that the simplifications introduced in Horizon 2020, as well as the increased experience of major beneficiaries, are reducing the number and level of errors made by beneficiaries. However, beneficiaries still make a number of errors, sometimes because of a lack of understanding of the rules, sometimes because of a non-respect of the rules.

To improve clarity of the rules and compliance with them DG RTD has already taken the following actions:

- The Model Grant Agreement, and its accompanying annotations, have been adjusted to introduce simplifications or clarifications on different points. The results of the first audits were considered in a working group bringing together auditors from the Commission and the Court of Auditors to see where additional simplifications and clarifications may be needed³¹.

²⁹ This sampling accommodates special needs of certain stakeholders with regard to audit coverage and selection method. In addition, top ups, which are participations of selected beneficiaries which are added to the selected participations, are included in the total participations selected.

³⁰ This error rate is not named at this stage common representative error rate as the audits of the first CRS are not yet all finalised.

³¹ This meeting took place on 14 March 2018.

- Considerable efforts have been made to ensure clear communication of the rules and guidance to participants and their auditors. In 2018, the Common Support Centre participated in 15 events organised by the NCPs of members States and associated members with a total of 1 819 participants.
- Lump sum funding has already been used for the SME stage 1 calls grants. Trials of lump sum funding for collaborative projects began in 2018 to evaluate whether this form of entitlement funding, which would avoid errors of legality and regularity, is appropriate to achieving all the objectives of research policy. These trials will continue in 2019, and include the extension of lump sum funding to the ERCEA Proof of Concept grants.

The Financial Statement accompanying the Commission's proposal to the legislative authority for the Horizon 2020 regulation states: *"The Commission considers therefore that, for research spending under Horizon 2020, a risk of error, on an annual basis, within **a range between 2-5 % is a realistic objective**, taking into account the costs of controls, the simplification measures proposed to reduce the complexity of rules and the related inherent risk associated to the reimbursement of costs of the research project. The ultimate aim for the **residual level of error** at the closure of the programmes after the financial impact of all audits, correction and recovery measures will have been taken into account, is to **achieve a level as close as possible to 2 %**."*

The first audit results suggest that the detected (and, in future, representative) error rate will remain within the established range. Together with the experience in FP7, they also suggest that the objective for the residual error rate will be respected.

In conclusion, DG RTD still considers that the error rate will fall within the range established in the Financial Statement, and therefore does not consider that a reserve is needed for Horizon 2020 expenditure.

Control results for Research Fund for Coal and Steel

The RFCS 2008 legal base has been revised by Council Decision (EU) 2017/955 on 29 May 2017. This revision aligns the RFCS with Horizon 2020 rules. Most of the beneficiaries participate in FP7/Horizon 2020 projects. The number of projects is small compared to the FPs: a total of 419 for the period 2009-2018.

Control strategy

The control strategy is based on ex-ante controls, including Certificates on Financial Statements, and ex-post audits at a rhythm of 5 audits per year. In addition, the programme benefits from the results of the control strategy of the FP. The sample aims to have maximum coverage and to avoid repeated audits on the same beneficiary within a 5-year period. The audit intensity is higher than in the FP.

Due to the low number of projects, the audit sample is not designed to produce a result that is statistically representative of the population. Nonetheless, the coverage means that the errors detected give a reasonable estimate of the overall error rate.

Corrections are implemented following the audit results, and systematic errors are corrected by extrapolation.

Control results

Over the years 51 Research Fund for Coal and Steel audits (153 participations) have been closed by the end of 2018, of which 6 audits (18 participations) in 2018.

The total audited amount by end 2018 (EC level) is EUR 45 311 958 (accepted by FO), covering 9.6% of the total amount of cost statements received until end 2017 (EUR 470 330 532)

As a result of all audits completed so far, the overall detected error rate is 4.44% (end 2018).

Recoveries and corrections including extrapolations that have followed will lead to a lower residual error rate, estimated at around 3.22%.

Conclusions

The reservation in the declaration of assurance for the *Research Fund for Coal and Steel* expenditure is addressed in Section 2.1.5.

In order to be close to the current FP's rules and to allow for simplification aimed at to reducing the error rates and administrative expenditure, a new Horizon 2020 inspired model grant agreement³² is used for all grants signed after 1 January 2016. The financial management for RFCS is integrated within a unit that handles the FP. This allows the promotion of best practices and the review of the ex-ante controls. In line with the audit strategy reviewed for Horizon 2020, the FP common audit service is providing advice on adjusting the RFCS audit strategy.

Control results for Joint undertakings, Public-Public Partnerships and the Executive Agencies

Control results for Joint Undertakings

The Joint Undertakings BBI, IMI2, FCH2, Clean Sky2 implement parts of FP7 and Horizon 2020, under the supervision of DG RTD.

In 2018, they received from DG RTD payments for operational and running costs for a total amount of EUR 718.5 million. Further details can be found in the Annex 6 of this report.

Supervision arrangements

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 AAR;
- the Joint Undertaking's Director signs a declaration of assurance in line with the one used in the Commission;
- the Joint Undertaking is required to inform the Commission without delay of any significant developments in the areas of risk management, control and audit;
- for FP7, 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;

³² C(2015) 5757 final COMMISSION DECISION of 26.8.2015 on the multi-beneficiary model grant agreement for the Research Programme of the Research Fund for Coal and Steel.

- for Horizon 2020, the Joint Undertakings are fully integrated into the Research and Innovation Family, adopting (sometimes progressively) the IT tools and business processes of the Family, and with audits undertaken by the Common Audit Service;
- DG RTD may request any additional information deemed necessary and has the right to audit the Joint Undertakings' operations;
- the Commission's IAS may carry out audits in the Joint Undertakings, and DG RTD will receive the reports for action if necessary;
- the ECA 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.

Control results

For Horizon 2020, the JUs are fully integrated in the Common Support Service structures, and apply the same audit strategy as the Commission services. Neither the draft AARs, nor the regular supervision of these bodies, raised particular issues that need to be included in this report.

In addition, the Court of Auditors gave a clear opinion on the 2017 accounts of all the JUs under DG RTD's supervision, with a residual error rate below 2%. The draft AARs of the JUs have been reviewed by DG RTD and show residual error rates of less than 2%.

Nevertheless, a point of attention was reported by a DG RTD Director report in charge of the supervision of BBI JU:

As a reaction to the low financial contribution by a private member of the BBI JU (BIC's) towards the operational costs of the BBI JU, the Commission has proportionally reduced the planned European Union's contribution to the BBI JU operational costs in 2020 by EUR 140 million.

In addition, DG RTD identified one issue during the year in relation to BBI and FCH. In these two JUs the private members (the Bio Based Industries Consortium for BBI and Hydrogen Europe and Hydrogen Europe Research for FCH2) contribute half of the administrative costs of the JUs. DG RTD noted that a part of these administrative costs was funded by obliging participants in consortia in projects to make a contribution of 4% of the amount of the contribution. Whilst it does not wish to enter into the details of the consortium agreement (which is an agreement between partners governed under private law), DG RTD insisted that these contributions may not be considered as eligible costs, and that they shall not be deducted from payments from the JU.

Control results for Public-Public Partnerships (Article 185 bodies)

Article 185 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 FP, as far as they have a sufficient EU added value. They are used to enhance the complementarity and synergy between the FP and the activities carried out under intergovernmental structures. The Article 185 bodies supported in 2018 are the following:

- EUROSTARS2 (Research for the benefit of SMEs)
- European Metrology Programme (EMRP)
- European Metrology Programme for Innovation and Research (EMPIR – successor to EMRP)
- European and Developing Countries Clinical Trial Partnership (EDCTP2)
- BONUS
- PRIMA

In 2018, DG RTD paid a total of EUR 191 million to Article 185 initiatives. Details on the legal bases and the amounts entrusted can be found in Annex 6 of this report.

Monitoring arrangements

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.

Control results

Based on the established reporting, in 2018 DG RTD did not identify any particular issues that needing to be addressed in this report.

Control results for Executive agencies

In 2018, DG RTD was the lead DG for the Executive Agencies REA and ERCEA. In Horizon 2020 some parts of the programme are 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.

DG RTD paid to the REA and the ERCEA a total amount of EUR 118 million of administrative subsidies.

Supervision arrangements

The appropriate monitoring and supervision of the EAs' activities are mainly achieved by means of participation of the parent DG(s) in the Steering Committee of the EAs. The Executive Agency's Director ensures that the members and observers of the Steering Committee receive all relevant information and reliable control results needed for the appropriate fulfilment of their mandates. DG RTD is the lead parent department for two EAs, the ERCEA and the REA. The Director General of DG RTD, who has chaired the Steering Committee for the ERCEA, also took on this responsibility for the REA in 2018. For the other two EAs (INEA and EASME) for which DG RTD is not the lead parent

department, the Director responsible for the operational area concerned represents the DG.

The annual planning and reporting cycle forms the basis of the monitoring and supervision of the Executive Agencies' activities by the Steering Committee. In particular, the Annual Work Programme contains an obligation of assessment of risks and risk exposure, and provides a number of key performance indicators. These constitute the benchmark against which the performance of the EAs is monitored through its interim reporting and AAR. It is complemented by other relevant sources of information such as the reports from the Discharge Authority, ECA, IAS and OLAF.

The Executive Agencies are fully integrated into the services provided by the Common Support Centre. Moreover, part of the management staff of these Executive Agencies is staff from DG RTD on secondment.

Control results

The supervision of the Executive Agencies continued throughout 2018. The preparation of the AARs of these Executive Agencies was coordinated and reviewed by DG RTD and the Steering Committees of the Agencies. No unexpected issues arose that need to be raised in this report. The reserves of the REA on a part of its FP7 expenditure mirror what is already reflected in this report and are well known to DG RTD.

DG RTD has taken note of the critical risk identified by the INEA related to the WiFi4EU initiative in 2017 and 2018. However, this risk does not impact upon any activities linked to DG RTD.

DG RTD also took notice of the findings of a report of the Internal Audit Service on another Executive Agency (not related to research) which made a number of comments related to grant management operations. It concluded that these findings did not impact on the research area, because of the more developed and integrated IT tools available and because of some specific elements in the Horizon 2020 legal base. Nevertheless, together with the other services concerned (central and operational services) it is examining how the supervision of the EAs can be made more effective and efficient in the future.

Control results for Financial instruments implemented by EIB/EIF

As mentioned under 2.1., DG RTD has entrusted 15.05% of its 2018 budget to EIB/EIF for *Innovfin*. *Innovfin* aims to support research and innovation through financial instruments. DG RTD has a duty to ensure proper supervision of the budget used, in accordance with the Financial Regulation and other legal acts and in line with the general principle of Sound Financial Management.

The amount transferred to EIB/EIF during 2018 is EUR 472.9 million.

To help ensure that the achievement of operational objectives is based on Sound Financial Management, the principles and details of the supervision of the budget entrusted to the EIB and EIF, and the internal control steps that apply to *Innovfin* have been established in 2015.

It includes a supervision strategy and procedure as well as the key documents relevant to *Innovfin*. It is supplemented by the control strategy that EIB is required to present to the Commission according to the Delegation Agreement. The EIB supervision strategy and control procedure was approved by the Director-General in early 2016.

In accordance with the Delegation Agreement, both entrusted entities (EIB and EIF) submit to the Commission for each financial instrument:

- a management declaration of assurance annexed to the financial statements in the form defined in the Financial and Administrative Framework Agreement;
- a summary report on audits and controls carried out in the period in question, including an analysis of the nature and extent of errors and identified weaknesses in systems if any, and any corrective actions taken or planned;
- an independent audit opinion on the management declaration and the summary report on audits and controls.

The annual reports for 2018 of the financial instruments Innovfin are currently under analysis. So far, there are no particular issues that would need to be addressed in this report.

Conclusion

From monitoring 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.

The estimated overall amount at risk at closure

In the context of the protection of the EU budget, at the Commission's corporate level, the DGs' estimated overall amounts at risk and their estimated future corrections are consolidated.

For DG RTD, the estimated overall amount at risk at payment³³ for the 2018 payments made is in the range of EUR 97.6 -101.1 million. This is the AOD's best, conservative estimation of the amount of relevant expenditure³⁴ during the year (overall EUR 3 142 million) not in conformity with the applicable contractual and regulatory provisions at the time the payment is made.

This expenditure will be subsequently subject to ex-post controls and a sizeable proportion of the underlying error will be detected and corrected in successive years. The conservatively estimated future corrections³⁵ for 2018 expenditure are EUR 28.4 million. This is the amount of errors that the DG conservatively estimates to identify and correct from controls that it will implement in successive years.

The difference between these two amounts leads to the estimated overall amount at risk at closure for the 2018 expenditure of EUR 69.1 - 72.7million, 2.21% - 2.33 % of total expenditure).

³³ In order to calculate the weighted average error rate (AER) for the total *relevant expenditure* in the reporting year, the *detected* or estimated error rates have been used.

³⁴ "*relevant expenditure*" during the year See note 4 to the table below

³⁵ Based on the impact of the implementation of conclusions ex-post controls and extrapolation of audit results to non-audited contracts.

Table 3 - Estimated overall amount at risk at closure

DG RTD	Payments made	Prefinancing paid (1)	Prefinancing cleared (2)	Relevant expenditure	Minimum Detected/estimated Error Rate	Maximum Detected/estimated Error Rate	Minimum Estimated overall amount at risk at payment	Maximum Estimated overall amount at risk at payment	Average Recoveries and Corrections	Estimated future corrections	Minimum Estimated overall amount at risk at closure	Maximum Estimated overall amount at risk at closure
Relevant portfolio segment	in 2018(€)	in 2018(€)	in 2018(€)	in 2018(€)	(weighted AER; %)	(weighted AER; %)	in 2018(€)	in 2018(€)	(adjusted ARC; %)	in 2018(€)	in 2018(€)	in 2018(€)
	1	2	3	4=1-2+3	5a	5b	6a=4*5a	6b=4*5b	7	8=4*7	9a=6a-8	9b=6b-8
Administrative exp.												
Administrative												
H2020	1.505.202,21	-		1.505.202,21	0,50%	0,50%	7.526,01	7.526,01			7.526,01	7.526,01
RFCS	34.577,01			34.577,01	0,50%	0,50%	172,89	172,89			172,89	172,89
Procurement												
H2020	34.320.141,79		65.999,76	34.386.141,55	0,50%	0,50%	171.930,71	171.930,71			171.930,71	171.930,71
RFCS					0,50%	0,50%	-					
Previous FPs	102.737,83			102.737,83	0,50%	0,50%	513,69	513,69			513,69	513,69
Subsidies entrusted entities												
H2020	118.042.957,40	118.042.957,40		-	0,50%	0,50%	-					
Operational exp.												
Cross-subdelegations												
FP7	1.414.534,94			1.414.534,94	5,26%	5,26%	74.404,54	74.404,54	1,90%	26.876,16	47.528,37	47.528,37
H2020	678.619,95			678.619,95	3,32%	3,32%	22.530,18	22.530,18	0,84%	5.700,41	16.829,77	16.829,77
Experts contracts												
H2020	3.973.958,41			3.973.958,41	0,50%	0,50%	19.869,79	19.869,79			19.869,79	19.869,79
FP7					0,50%	0,50%	-					
RFCS	245.302,49			245.302,49	0,50%	0,50%	1.226,51	1.226,51			1.226,51	1.226,51
Financial instruments												
H2020	472.910.337,21	-		472.910.337,21	0,00%	0,50%	-	2.364.551,69			-	2.364.551,69
Grants												
FP7	197.220.899,21		488.999.340,81	686.220.240,02	5,26%	5,26%	36.095.184,63	36.095.184,63	1,90%	13.038.184,56	23.057.000,06	23.057.000,06
H2020	1.336.311.446,93	676.165.517,62	437.150.115,96	1.097.296.045,27	3,32%	3,32%	36.430.228,70	36.430.228,70	0,84%	9.217.286,78	27.212.941,92	27.212.941,92
Previous FPs			1.270.547,16	1.270.547,16	0,50%	0,50%	6.352,74	6.352,74			6.352,74	6.352,74
RFCS	43.843.340,23	16.596.555,44	42.642.360,89	69.889.145,68	4,44%	4,44%	3.103.078,07	3.103.078,07	1,22%	852.647,58	2.250.430,49	2.250.430,49
Other												
FP7					0,50%	0,50%	-	-				
H2020	2.334.557,96			2.334.557,96	0,50%	0,50%	11.672,79	11.672,79			11.672,79	11.672,79
Prizes												
H2020	3.287.500,00			3.287.500,00	0,50%	0,50%	16.437,50	16.437,50			16.437,50	16.437,50
Procurement												
FP7	1.447.100,00			1.447.100,00	0,50%	0,50%	7.235,50	7.235,50			7.235,50	7.235,50
H2020	15.819.714,29			15.819.714,29	0,50%	0,50%	79.098,57	79.098,57			79.098,57	79.098,57
Previous FPs					0,50%	0,50%	-					
RFCS					0,50%	0,50%	-					
Subsidies entrusted entities												
FP7	117.447.487,35			117.447.487,35	1,00%	2,00%	1.174.474,87	2.348.949,75			1.174.474,87	2.348.949,75
H2020	792.038.891,42	178.035.081,04		614.003.810,38	3,32%	3,32%	20.384.926,50	20.384.926,50	0,87%	5.341.833,15	15.043.093,35	15.043.093,35
Grand Total	3.142.979.306,63	988.840.111,50	970.128.364,58	3.124.267.559,71	3,12%	3,24%	97.606.864,19	101.145.890,75	0,91%	28.482.528,64	69.124.335,55	72.663.362,11
Share of the minimum/maximum amount at risk at closure of the total relevant expenditure:											2,21%	2,33%
Segment affected by a reservation (see paragraph 2.1.5)												

Footnotes related to table 3

- (1) Payments made or equivalent, such as after the expenditure is registered in the Commission's accounting system, after the expenditure is accepted or after the pre-financing is cleared. In any case, this means after the preventive (ex-ante) control measures have already been implemented earlier in the cycle. In all cases of Co-Delegations (Internal Rules Article 3), the "payments made" are covered by the Delegated DGs. In the case of Cross-SubDelegations (Internal Rules Article 12), they remain with the Delegating DGs.
- (2) New pre-financing actually paid by out the department itself during the financial year (i.e. excluding any pre-financing received as transfer from another department). The "Pre-financing" is covered as in the context of note 2.5.1 to the Commission (provisional) annual accounts (i.e. excluding the "Other advances to Member States" (note 2.5.2) which is covered on a pure payment-made basis). "Pre-financings paid/cleared" are always covered by the Delegated DGs, even in the case of Cross-SubDelegations.
- (3) Pre-financing actually having been cleared during the financial year (i.e. their 'delta' in FY 'actuals', not their 'cut-off' based estimated 'consumption').
- (4) For the purpose of equivalence with the ECA's scope of the EC funds with potential exposure to L&R errors (see the ECA's 2017 AR methodological Annex 1.1 point 15), also our concept of "relevant expenditure" includes the payments made, subtracts the new pre-financing paid out [& adds the retentions made], and adds the previous pre-financing actually cleared [& subtracts the retentions released and those (partially) withheld; and any deductions of expenditure made by MS in the annual accounts] during the FY. This is a separate and 'hybrid' concept, intentionally combining elements from the budgetary accounting and from the general ledger accounting.
- (5) In order to calculate the weighted Average Error Rate (AER) for the total relevant expenditure in the reporting year, the common representative error rate for FP7 and the family expected representative error rate for the full sample for H2020 including draft reports have been used. For types of low-risk expenditure with indications that the equivalent error rate might be close to 'zero' (e.g. administrative expenditure, operating subsidies to agencies), we use 0.5% as a conservative estimate.
- (6) The historic average of recoveries and financial corrections (ARC) received from the central services is 1.5%. However, further to 2017 ECA/IAS recommendations, RTD adjusted this value for grant management expenditure and used as best estimation:
 - *for FP7: the difference between overall representative detected error rate and the RTD residual error rate
 - *for H2020: the family expected representative error rate for the full sample including draft reports and the family residual error rate including draft audit reports.
 - *for RFCS : the difference between overall detected error rate and the residual error rate.

For other expenditures, we assumed that the ex-post future corrections would be 0%.

Table 3 above shows that 97.8% - 97.7% of the expenditure implemented in DG RTD in 2018 is considered as complying with all the legality and regularity requirements. The remaining 2.18% - 2.26 % is the part of the expenditure impacted by the risk that the underlying transactions were not compliant with the legal or contractual provisions.

Despite this overall positive position, DG RTD makes a reservation for the Research Fund for Coal and Steel and the directly managed part of FP7, because the estimated residual error rate for these items is beyond the materiality threshold applied for these programmes (2%). Further details follow under point 2.1.5 of this report.

Fraud prevention, detection and correction

DG RTD, together with the Research and Innovation Family, has developed and implemented a Common Anti-Fraud Strategy (RAFS, adopted on 18 March 2015) elaborated on the basis of the methodology provided by OLAF. This covered expenditure on FP7/Horizon 2020 grants, where the fraud risk for the DG is concentrated.

A new Commission Anti-Fraud Strategy (CAFS) was proposed by OLAF and has been the subject of an Interservice Consultation. It will be proposed for adoption by the College in due course.

DG RTD (Directorate R and the CAS) has already proposed a revised Research and Innovation Family Anti-Fraud Strategy and action plan, which has been discussed with the Family and will be adopted by the Research and Innovation Family (via the CSC Governance) in 2019. It will take full account of the Commission strategy.

In parallel, Directorate R is developing its own strategy for areas not related to Grant Management (for example financial instruments and internal fraud). This will be adopted by the Director-General of DG RTD in the next months. They are aligned with the priorities of the CAFS.

It was decided to terminate the specific training on Anti-Fraud due to the significant decrease in the number of newcomers in DG RTD. However, special workshops have been organised for Project and Financial Officers in RTD, which included a number of the areas covered by the anti-fraud training, especially the use of the Reinforced Monitoring process, EDES and the Risk Management.

Cases of irregularities and fraud amongst beneficiaries of the Framework Programme are followed up by Unit J2 Common Audit Service. Unit J2 works in close coordination with OLAF on these matters.

The number of fraud cases regarding DG RTD beneficiaries and the Framework Programmes that it manages is relatively low, but remains a sensitive area. In 2018, DG RTD transmitted 3 cases of suspicion of irregularities to OLAF; 27 further cases relevant to DG RTD were initiated by OLAF based on information received from other sources.

Other control objectives: safeguarding of assets and information, reliability of reporting

A. Safeguarding assets and information

The table 4 of the Annex 3 reports DG RTD's overall assets.

The main DG RTD assets are:

- available for sale financial assets of financial instruments which amount to EUR 2 711 million as per end of 2018;
- pre-financing paid to the research grant beneficiaries and to the different entrusted entities implementing parts of Horizon 2020 which amount to EUR 1 247 million as per

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end of 2018.

They are managed and controlled in the context of:

- management of financial instruments;
- direct grant management;
- indirect grant management;

as explained in the relevant sections above.

The intangible assets are IT software amounting to EUR 25 million at the end of 2018.

Conclusion on other control objectives

In conclusion, the regular supervision of direct/indirect grant management and financial instrument did not identify particular issues needing to be included in this report or that could have a material impact on the assurance. Overall DG RTD considers that its safeguarding of the assets is effective and appropriate.

B. Reliability of reporting and accounting

The 2017 report on the validation of Local Systems³⁶ states in its conclusion that based on the work done in 2017 and the follow-up of open recommendations, DG BUDG has not identified any weaknesses in the design or implementation of the local systems which would indicate that they do not meet the validation criteria laid down by the Accounting Officer of the Commission.

Nevertheless, without calling into question the conclusions of the individual validation reports, the attention of DG RTD is drawn to the completeness of the registration of reflows from financial instruments, and the documentation and reporting on recovery.

Although these issues are not found to have a material impact on the annual accounts, they may impact upon the accuracy of the financial and management reporting.

An action plan has been established and its implementation will continue in 2019. The system for verifying and accounting for recoveries is being improved, but as the method of calculating the corrective capacity of control has been changed this has no impact on the amount at risk.

DG RTD also implements a significant part of its budget through indirect management. It therefore relies on the reports and accounts provided by the relevant implementing bodies (as indicated in Section 2.1.1. above) and considers that overall the reporting received was reliable and adequate for drawing assurance conclusions.

b. Efficiency of the controls

Based on an assessment of the most relevant key indicators and control results, DG RTD has assessed the efficiency of the control system and reached a positive conclusion.

The following chapter gives details firstly on the efficiency related indicators.

³⁶ Ref. Ares(2018)1159401 - 01/03/2018

Efficiency of the expenditure under direct management

This section presents the main efficiency performance indicators for the activities carried out in DG RTD: grant management for FP7 and Horizon 2020 (and the Research Fund for Coal and Steel) programmes.

The report does not detail the part of the budget implemented under other control systems, as they are not significant compared to the grants.

Grant management control results for FP7 and Horizon 2020

In 2018, two FPs were implemented in DG RTD. The management of these programmes is presented by control stages, with a varying scope depending on the stage and the programme.

FP7 projects still running in 2018, for DG RTD

→ 261 grant agreements with a RAL of EUR 157.3 million

→ 323 grants were closed in 2018

FP7 represents in DG RTD, at the end of 2018, 4 740³⁷ completed and closed grant agreements out of 4 934. 194 ongoing projects and 67 closed projects with a "reste à liquider" represent a total of EUR 157.3 million still to be paid. 323 grants were closed in 2018.

Horizon 2020 represents 1 099 agreements signed in DG RTD, of which 203 were signed in 2018. The first Horizon 2020 ex-post audits results were received in 2017.

Stage one: Programming and evaluation

The first stage concerns the preparation of calls, the calls for proposals, and the evaluation of proposals.

Overall control objective

The overall control objective 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.

Scope

Being a corporate business process for the Horizon 2020 implementing bodies, this section reports data related mainly to the Research and Innovation Family. DG specific data are available for the indicator regarding the information sent to the successful projects.

Risk based key controls

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.

These are key checks to ensure the excellence of the science to be funded and the legality and regularity of operations, since a compliance deficiency in the selection

³⁷ Data from budgetary and financial monthly report December 2018

Family Picture
Horizon 2020 calls' competitiveness
Around 1 in 8 eligible proposals retained for funding

process would affect the regularity of all the ensuing grants.

A corporate approach for more efficiency

The planning of the Work Programmes and of the calls is organized in common for the Research and Innovation Family.

DG RTD coordinated the establishment of the Horizon 2020 work programme for 2018-19 and followed its implementation. For a

Family Picture
Time-to-Inform in 2018 Horizon2020
99.5% on time

better efficiency of the whole system:

- some sub-processes of this stage are entrusted to the 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.

Control results

By the end of 2018³⁸, 679 Horizon 2020 call deadlines were concluded, with 191 731 eligible proposals submitted, requesting a total EU financial contribution of EUR 290.3 billion. Of these, 23 250 proposals were retained for funding, bringing the overall success rate of eligible full proposals in the first five years to 12.1%.

A total of 21 599 grant agreements were signed by the end of December 2018, with a budget allocation of EUR 38.97 billion in EU funding.

For the concluded calls one proposal was retained for funding for, on average, about eight eligible proposals. This ratio, decreasing from 1/7 to 1/8 since 2014, demonstrates the attractiveness of the Horizon 2020 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.

The main efficiency indicator of this stage is the Time-to-Inform. For the grants that were signed in 2018, DG RTD succeeded in respecting, in 100% of 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.

Stage two: Grant preparation (contracting)

The second stage concerns the preparation and award of contracts.

Overall control objective

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.

³⁸ situation as of 06/02/2019 from Horizon 2020 dashboard

Scope

In 2018 this stage concerned Horizon 2020.

Risk based key controls

As in the first stage, the second relies on corporate business process and IT tools, with the aim of ensuring equal treatment of beneficiaries and an efficient use of the limited time dedicated to the finalization of the contracts.

In addition to the basic checks of the participants, risk based checks are undertaken in order to prevent or mitigate fraud and other risks (operational capacity, financial capacity).

A corporate approach for more efficiency

IT tools, business processes and some checks are organized at Research and Innovation Family level. The new legal entities undergo the validation process in the REA, no matter what implementing body is finalising the contract.

Control results³⁹

In RTD, 203 grant agreements were signed in 2018 for Horizon 2020.

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 brings some risks as it reduces the time available for the Commission to carry out extensive checks before signing grants.

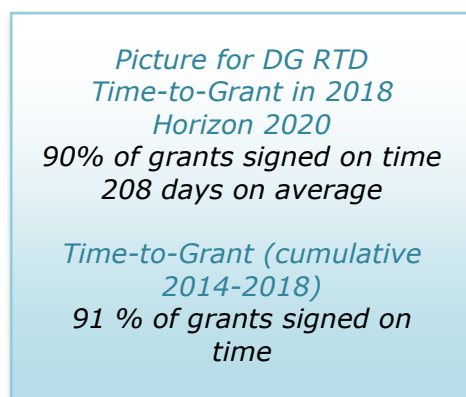
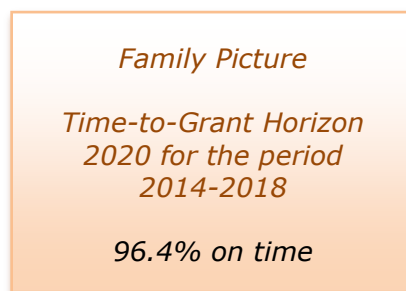
For the year 2018, the TTG was respected in 90% of cases for the Horizon 2020 target of 8 months, with an average TTG of 208 days. For the whole period 2014-2017, 91% of grants were signed within the deadline⁴⁰.

Concerning the results for the whole Research and Innovation Family, and the whole period 2014-2018, 96.4% of grants were signed within the deadline⁴¹ (98% in 2018).

Grants for Research Infrastructures are considerably more complex than the average, and these are concentrated in DG RTD. For this reason the RTD result, though still very good, is slightly lower than that for Horizon 2020 as a whole.

Stage three: Monitoring the projects' implementation

The third stage concerns the management of the project and the contract, from the



³⁹ Corda data December 2018

⁴⁰ Corda data December 2018

⁴¹ Without taking into account the grants signed by ERCEA, as the 8-month deadline is not binding in its case.

prefinancing to the final payment.

Overall control objective

The overall objective of the stage is to ensure the successful implementation of the granted projects through project monitoring and by prompt and regular payments to the beneficiaries. Regular preventive controls, such as kick-off meetings and information sessions, training, communication campaigns etc. take place in order to prevent errors or fraud in the reimbursement of the costs claimed.

Monitoring the results of the projects contributes to the overall evaluation of the programme's impact. For Horizon 2020, the Commission published the interim evaluation on 29 May 2017⁴².

Scope

In 2018, prefinancing was paid for Horizon 2020 projects, and cost claims reimbursed for FP7 and Horizon 2020 projects.

Risk based key controls

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 final cost statements established by external auditors, and the processing of transactions through Commission financial circuits.

For Horizon 2020, common ex-ante control guidance was adopted in December 2016 by the Steering Board of the Common Support Centre. This guidance, deriving from the overall control strategy for Horizon 2020, streamlines the control practices related to the treatment of the cost-claims. The guidance is linked to dedicated features in the corporate grant management IT system (Sygma), where particular attention was paid to the differentiation of the controls following the risks.

Control results

DG RTD managed 1 256 ongoing projects in 2018:

- 194 open contracts and 67 contracts closed with a "Reste à liquider" for FP7 at the end of December 2018;
- 995 open contracts for Horizon 2020 end December 2018

For the 1 568 payments made in 2018 for grants⁴³, details are in tables 5 and 6 below. The efficiency of this stage is measured by the indicator 'Time-To-Pay' (TTP), which is defined as the percentage of payments made within the binding deadlines. Regarding grants, 98 % of the payments authorized in 2018 by DG RTD were made in time (target 95%). This confirms the trend since 2013, and highlights the good performance of the payment workflows and the evolving IT environment.

⁴² For details, see part 1 of the 2017 AAR.

⁴³ Under all the programmes (HORIZON 2020, FP7, Euratom).

Table 5 Evolution of the TTP for grants in DG RTD (%)

Expenditure type	2015	2016	2017	2018
Research grants payments	95%	97.6%	98.8%	98%

Table 6 Average net and gross TTP for grants in DG RTD in 2018⁴⁴

Payment type	Payments			
	Nr	Average time (calendar days)		
		Net	Suspension	Gross
RTD - HORIZON 2020 payments	634	52.1	16.9	69
RTD - HORIZON 2020 payments PreFin	149	16.3	2.8	19.1
RTD - FP7 payments	410	60.5	68.2	128.7
RTD - Other grants - not FP7	407	43.7	134.8	178.5
Gross = Beneficiary's point of view, i.e. Net + Suspensions				

As shown in Table 6 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.

Stage four: Ex-post controls and recoveries

The fourth stage includes the ex-post audits and the recovery of any amounts found to have been paid in excess of the amount due.

This section focuses on the audit work carried out in 2018 and its follow-up actions. The results of the audits, namely the error rates, are detailed in the section dedicated to the control results in terms of *effectiveness as regards legality and regularity*.

Overall control objective

The objectives of ex-post controls are to:

- provide an estimate of the level of irregularity in the population of cost claims paid;
- the detection, correction and follow up of irregularities;
- provide detailed information on the practical application of the rules by the beneficiaries.

The correction and follow-up of irregularities detected in ex-post control results have an important '*cleaning*' effect on the budget. It is expected for FP7 that the Representative Detected Error Rate around 5% will be reduced to 3%, after the corrections are applied.

Scope

For 2018 this stage covers expenditure under FP7 and HORIZON 2020, with a small

⁴⁴ Source budgetary and financial monthly report December 2018

proportion for the Research Fund for Coal and Steel.

As mentioned at the beginning of the Chapter 2 of this report, the ex-post control stage for the research grant management is, largely, centralised in RTD, in a Common Audit Service (CAS). Therefore, the activity exposed should be read as related to the whole Research and Innovation Family.

Corporate approach for more efficiency and less burden

For FP7, in order to limit the audit burden on the beneficiaries and to ensure a consistent audit approach through the Commission services, the Common Audit Service undertook audits for the DGs that fund research grants (DG CNECT, DG ENTR (now DG GROW), DG MOVE and DG ENER)⁴⁵; when relevant, it carries out joint audits with the European Court of Auditors.

For Horizon 2020 the CAS undertakes all (representative and complementary) audits, including for the Executive Agencies and the Joint Undertakings. It is a major step forward in ensuring a harmonised approach and minimalising the audit burden on beneficiaries.

Controls and methodology

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.

In 2018, the Common Audit Service conducted audits for the Common Representative Audit Sample and others initiated on a risk based approach⁴⁶.

Controls results

Ex-post audits carried out

The overall target in the Horizon 2020 Audit Strategy for 2018 was 666 audited participations. By 31 December 2018, DG RTD closed the audits of 763 Horizon 2020 participations, meaning that the end-year results exceeded the target by 97 participations (completion rate of 115%).

In line with the multi annual Horizon 2020 Audit Strategy, the CAS selected in 2018 990 participations that will be audited in 2019.

Horizon 2020 audit coverage for the Family (cumulative figures)
Audits of 1 155 participations were closed

Based on 164 out of 303 participations for the first Common Representative and second Common Representative Sample, the Horizon 2020 detected Error Rate so far is 2.43% (adjustment in favour of the Commission). However if we take into account the draft audit reports than the expected representative error rate will be around 3.32%

With regard to the implementation of the FP7 Audit Strategy and the 2018 target of 82 audit results, 98 audit results were delivered by 31 December 2018 (119% of the annual target). The FP7 Representative Error Rate as of 31 December 2018 is 5.26%.

⁴⁵ 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.

⁴⁶ More details on the methodology can be found in the control effectiveness section (2.2.2).

Following the IAS audit on the implementation of the FP7 Audit Strategy, the CAS established an Action Plan with 29 individual actions to implement the five IAS recommendations. At the end of 2018, a number of these actions have been completed, a number are still being implemented.

Implementation of audit results

It should be noted that there will always be a time lag 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 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 a future payment, especially when projects are still ongoing. As payments are usually made at 18-24 month intervals, there will often be a considerable delay between the identification of a recovery and the actual 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.

Implementation of FP7 audit results

By the end of 2018, and in a cumulative way from the beginning of the FP7 programme, adjustments were proposed for 2 081 audited DG RTD participations. By the end of 2018 the amount to be recovered was EUR 89.9 million, of which more than EUR 58.3 million has been effectively recovered (this includes liquidated damages).

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

Cumulative	Audits		Implementation		Suspended		Adjustments Implemented	
	Number of Participations	Funding Adjustments Set by AOSDs	Number	Value	Number	Value	Number	Value
FP7	2081	89.858.098,73	220	28.572.111,41	18	1.294.098,46	1843	58.303.966,80

For 2018 alone, corrections amounting to EUR 2.4 million were implemented for FP7 (including liquidated damages). There are currently 238 FP7 cases pending implementation (including suspended ones) for a total value of EUR 29.8 million⁴⁷. The implementation rate for FP7 audit results by the end of December 2018 was 88.6%.

Implementation of extrapolation

The extrapolation process allows for the correction of systemic errors of a beneficiary detected by an audit in all its 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 should be noted that this process often takes place after the audit is closed, which means 3-4 years after the final payment of the grant.

As regards the FP7 programme, 3 932 extrapolations were implemented for 6 821 DG RTD participations with possible systemic errors. The implementation rate for extrapolation by the end of December 2018 was 57.6% for FP7. This is lower than the expected implementation rate at this stage, but is explained by an important number of new files introduced into the workflow in 2018.

⁴⁷ Source: ASUR application (extract 11/01/2018).

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

Cumulatively	Number of Contracts Analysed for	Implemented Cases					Number of cases to be Implemented
		Without Systemic Errors	With Systemic errors				
			Commission		Beneficiary		
			Number	Amount	Number	Amount	
FP7	6821	2050	1635	32.600.842,00	247	996.907,00	2889

Tables 7 and 8 together show that, to date, EUR 90.9 million has been recovered following audits of FP7.

Implementation of Horizon 2020 audit results

By the end of 2018, and in a cumulative way from the beginning of the Horizon 2020 programme, adjustments were proposed for 64 audited DG RTD participations. By the end of 2018 the amount to be recovered was EUR 0.9 million, of which EUR 0.45 million (51%) has been effectively recovered.

Table 9 Implementation of H2020 ex-post audits results in RTD (in EUR)

Cumulative	Results from External Audits		Adjustments Pending implementation		Adjustments Implemented (includes adjustments with no financial impact where the rejection of costs does not lead to an unjustified EU contribution(overspending))	
	Number of Participations	EU Contribution Adjustments	Number	Value	Number	Value
H2020	64	889.472,94	37	436.787,38	27	452.685,56

The Executives agencies and indirect grant management

The Executive Agencies

The Executive Agencies are supervised and coordinated in an efficient manner (see paragraph C on economy)

As required by the Council Regulation (EC) No 58/2003, Directorate R worked on the three-year evaluations of the two Executive Agencies for which RTD is the lead parent DG (the Research Executive Agency - REA and the European Research Council Executive Agency - ERCEA). The evaluations cover the period from mid-2015 until mid-2018 and aim at assessing the effectiveness, efficiency and coherence of the delegation of activities to the two Executive Agencies. The final reports for both evaluations will be available in the first quarter of year 2019.

The Joint undertakings and Article 185 bodies

The Joint undertakings and Article 185 bodies are supervised and coordinated in an efficient manner (see paragraph c. on economy)

The overarching conclusion of the interim evaluation of the Joint Undertakings is that whilst it is still early for most of them to demonstrate tangible project outputs, the JU-based PPPs under Horizon 2020, have demonstrated efficiency improvements in comparison to FP7.

Directorate R successfully completed in 2018 an exercise on "Lessons learned" for the Joint Undertakings, collecting and collating feedback from both Commission services and the JU Programme Offices. It resulted in a compilation of a list of points to be taken into

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consideration to improve the functioning of existing JU's and the establishment of the next generation of Partnerships under Horizon Europe.

Indirect management of the financial instruments

The financial instruments are managed in accordance with the delegation agreements concluded with the EIB and the EIF, and in an efficient manner (see paragraph C on economy)

c. Economy

Direct grant management

Following the Commission central services' guidance, the cost of the controls in direct grant management is assessed by the cost of the different control stages. The overall assessment is obtained from the ratio between all those costs and the total amount paid in the year for grants.

The corporate methodology for the estimation⁴⁸, assessment and reporting on the cost-effectiveness of controls was revisited in September 2018 and applied first time in the 2018 annual reporting.

The difference of the estimated cost of controls as compared to previous years derives from this new methodology and from the reduction of staff linked to the administrative and financial units' 2017 reorganisation. It does not reflect any substantial change in the DG's control strategy.

The costs of control for direct grant management can be divided in three main categories of costs:

- DG RTD costs,
- Common support services provided by the REA for stage 1 on evaluation/selection,
- Common support services provided by the CSC, which is hosted in DG RTD.

DG RTD costs

Table 9 Cost of control for RTD

Direct grant management in M€	Internal costs	External costs (Experts monitor)	Total costs	Total amount of payments	Overall rate (total costs/total amount paid)
Ex ante controls for grant management					
Stage 1 Evaluation /selection					
Stage 2 Grant finalization	22,53	1,90	24,43	1533,50	1,59%
Stage 3 Contract monitoring					

The costs of controls for RTD are estimated at EUR 25.03 million and are mainly internal costs (staff) and costs of experts monitoring of the implementation of actions carried out.

⁴⁸ Ares(2018)4917637

Common support services provided by REA for stage 1 Evaluation/selection

For more efficiency and cost-effectiveness of the Horizon 2020 programme, the REA manages the contracting of the evaluation experts for the whole Research and Innovation Family (except the ERCEA). The REA also pays the expert evaluators for the Family (except for the ERCEA). Both activities are linked to the first control stage.

The costs of the REA support services (costs of contracting of evaluation experts, and costs of expert evaluators) represent 0.84% of the total Horizon 2020 budget implemented in 2018 by the Research and Innovation Family (in terms of payments).

Table 10 Cost of Common support services provided by REA

Direct grant management	REA Costs (M€)			2018 Grants payments for H2020 Family less ERCEA (M€) (data from corda 22.01.2019)	Overall rate (total costs/total amount paid)
	Internal costs	External costs	Total		
Evaluation Experts costs paid by REA	8,85	47,78	56,63	6.726,0	0,84%

Common support services provided by the Common Support Centre hosted by DG RTD

The costs of common services represent 0.58% of the total Horizon 2020 implemented budget for all Research and Innovation DG's, Executive Agencies and Joint Undertakings implementing HORIZON 2020 (in terms of payments) for ex-ante checks on and for ex post audits.

Table 11 Costs of Common Support Centre

Direct grant management	Costs (M€) (data from Atlas 08.01.19 and 2018 budget execution CSC 19.01.2019)			2018 Grants payments for H2020 Family (M€) (data from corda 22.01.2019)	Overall rate (total costs/total amount paid)
	Internal costs	External costs	Total		
Common Support Center costs				Total amount	%
Ex-ante controls (mainly Common services in IT systems and operations, business processes)	8,7	28,2	36,9	8.080,0	0,46%
Ex-posts audits	7,3	2,79	10,1		0,12%
TOTAL	16,0	31,0	47,0		0,58%

According to the three tables above, the overall cost of the controls in grant management represents 3.01 % of the total implemented budget (in terms of payments) in 2018 (3.85% in 2017) and is considered cost effective.

The figures must nevertheless be read with some caution:

DG RTD Internal costs are an estimate, and may include some overstatement

Data from DG Human Resources IT tool "Activity and Task Logging for Allocated Staff" (ATLAS) were used to estimate the cost of control in grant management both for RTD and Common Support Centre.

The Full Time Equivalent (FTEs) used for the calculation were extracted from the
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IT tool Atlas on 08/01/2019 and the average FTEs costs used are the average FTEs costs communicated by DG BUDG which include building and other administrative costs and ICT costs.

We took into account activities identified by DG BUDG in its guidance⁴⁹ for the estimation of the costs of controls for RTD and the CSC (Programme management and monitoring, Financial management, Budget and accounting, General Coordination including Strategic Programming and Planning, internal control, assurance and quality management, Anti-fraud, Development and support of IT systems linked to managing funding programmes)

External costs consist of experts' costs for RTD and IT plus ex-post audit costs for the Common Support Centre.

Costs of ex-ante controls direct grant management

The full cost of activities identified by DG BUDG in its guidance have been taken into account. It has been assumed to apply to grant management. In reality, Financial Staff spend a part of their time on tasks linked to other work, for example tendering procedures and contracting for expert groups.

Cost of ex-post audits

The DG RTD costs related to the implementation of the audit results and the extrapolation have not been systematically identifiable as such: they are included in the costs of programme and financial management.

Mixing of Framework Programmes

DG RTD does not distinguish costs between HORIZON 2020 and FP7, though their control systems have differences; the value of the indicators depends strongly on the implementation stage of the programme.

The Executives agencies and indirect grant management

The Executive Agencies

In DG RTD, it is estimated that 9.4 FTE were employed in supervision and coordination activities related to agencies. This relates to a total cost of around EUR 1 million, or 0.91% of the amount of the total expenditure sub-delegated by DG RTD to them (only administrative subsidies).

It should be noted that the supervision of the Executive Agencies includes the implementation of their operational budget, which they receive directly from the College, without passing by DG RTD. The REA and the ERCEA implemented a total of EUR 2 128 million payment appropriations on the budget lines 08 (RTD)⁵⁰. The EASME and the INEA implemented in 2018 EUR 1 235 million payment appropriations on the same line.

These amounts should also be considered when it comes to the cost-effectiveness of the supervision.

The number of RTD staff employed in supervision and coordination activities related to

49 ARES(2018)4917637

⁵⁰ Not a direct part of the DG RTD budget and so not covered directly by the assurance in this report.

agencies (9.4 FTE) represents around 1% of the total staff managing RTD programmes in agencies (945 FTE). This is below the 2.4% threshold foreseen in the Communication to the Commission on the delegation of the management of the 2014-2020 programmes to Executive Agencies⁵¹.

The Joint undertakings

Total costs of supervision of the Joint Undertakings incurred in 2018 by DG RTD are estimated at EUR 1.9 million, 0.26% of the EUR 718.4 million paid to these bodies.

Article 185 bodies

The costs of their supervision are estimated at EUR 0.57 million, or 0.30% of the payments made in 2018.

Overall assessment of the cost effectiveness in executive agencies and indirect grant management

Table 12 RTD cost of supervision of EAs, JUs and Art 185 entities

Indirect Grant Management	Payments in €	FTE	Total costs in €	%/total costs
Executive Agencies	118.042.957,40	9,40	1.073.710,26	0,91%
Article 185	191.022.809,39	5,00	571.122,48	0,30%
Article 187 (JU's)	718.463.569,38	16,60	1.896.126,64	0,26%
Total	1.027.529.336,17	31,00	3.540.959,38	0,34%

Overall, it is considered that a cost-effective control system for indirect grant management has been put in place.

Indirect management of the financial instruments

DG RTD payments to EIB and EIF amount in 2018 to a total of EUR 472.91 million.

Administrative and policy-related incentive fees were deducted by the implementing institutions from the EC contribution paid: a total of EUR 14.89 million:

In 2018, EIB drew from the EU account an amount of EUR 3.57 million for administrative fees, EUR 3.23 million for policy-related incentive fees and EUR 0.42 million for treasury asset management fees and unforeseen expenditures. The cumulative amount of fees drawn by the EIB as of 31/12/2018 amounts to EUR 39.55 million.

In 2018, EIF drew from the EU SMEG account an amount of EUR 0.09 million for administrative fees and EUR 1.72 million for policy-related incentive fees. The cumulative amount of fees related to InnovFin SMEG drawn by the EIF as of 31/12/2018 amounts to EUR 47.18 million.

In 2018, EIF drew from the EU IFE account an amount of EUR 4.66 million for administrative fees and EUR 1.2 million for policy-related incentive fees. The cumulative amount of fees related to InnovFin IFE drawn by the EIF as of 31/12/2018 amounts to EUR 16.79 million.

⁵¹ SEC(2013) 493 final

The share of fees in the 2018 payments is 3.15 %. These fees were drawn from the EU account according to the Delegation agreements' terms, which were designed to allow the funds' sound management.

The amounts delegated each year, and the management and other fees payable each year, will vary. In order to have a reliable picture on the share of the management fees in the total implemented amounts, the calculation must be done at the closure of the programme.

The Designated Service has recovered, in 2018, EUR 21 million from FP7 RSFF revenues, EUR 8.9 million from InnovFin EIB revenues, EUR 3.97 million of InnovFin SMEG treasury income, EUR 0.28 million of InnovFin IFE treasury income and EUR 29.5 million from CIP GIF 1.

In addition, the supervision of these bodies was carried out in 2018 by 0.85 FTE DG RTD staff, representing a total cost of EUR 0.1 million.

As a conclusion, the financial instruments are managed in accordance with the Delegation agreements concluded with the EIB and the EIF, and in a cost-effective manner.

d. Conclusion on Cost-effectiveness of the controls

Based on the most relevant key indicators and control results, DG RTD has assessed the effectiveness, efficiency and economy of the control system and reached a positive conclusion on the cost-effectiveness of controls.

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 research and innovation 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 complies with internal control objectives. This means, in short, legal and regular transactions done in a cost-effective way. This report develops at several points how the balance between these two requirements is found.

Overall, given:

- the achievements of research and innovation policy as set out in Part 1;
- the quantitative and qualitative benefits arising from the control systems adopted (Common approach on processes and interpretation of rules thanks to the Common Support Centre, quality of proposal thanks to reviews which are performed by panels of independent external experts in the scientific field complemented by a real competition for funds, amount recovered following the implementation of audit result);
- 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;
- 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.

The same conclusion applies to the financial instruments which are managed in accordance with the Delegation agreements concluded with the EIB and the EIF, and to

the Executive Agencies, Joint Undertakings and Article 185 which are monitored in accordance to supervisions arrangement described in paragraph a. They are all monitored in a cost-effective manner.

2.1.2 Audit observations and recommendations

This section reports and assesses the observations, opinions and conclusions reported by auditors in their reports as well as the limited conclusion of the Internal Auditor on the state of control, 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.

IAS

In its contribution to the 2018 Annual Activity Report process, the IAS states: that the internal control systems in place for the audited processes are effective, except for the observations giving rise to the 'very important' recommendations as listed below. These recommendations still need to be addressed, by the submission and implementation of an agreed action plan.

Very Important recommendations in 2018⁵² that remain to be addressed:

Audit on dissemination and exploitation of Horizon 2020 results

Recommendation No 1 (very important) - Monitoring compliance with dissemination and exploitation contractual obligations and reporting requirements (CSC)

The CSC should enhance and adopt the vademecum on data and results, and collaborate with the Horizon 2020 implementing bodies to raise awareness amongst the POs on their responsibility to monitor the D&E obligations and reporting requirements. The CSC should also define an approach to follow up the exploitation activities after the end of the project and include measures encouraging the beneficiaries to continue post implementation reporting on their peer-reviewed publications and patents. In addition, it should clarify the possible actions available for breaches of D&E contractual obligations.

The final audit report was issued on 31/01/2019 and the action plan not available at the date of the IAS limited conclusion (not yet due). The Action plan is under preparation.

Audit on effectiveness and efficiency of the new early detection and exclusion system (EDES) in protecting the EU financial interests in DG BUDG (2018)

The final audit report was issued on 25/01/2019. The action plan was not available at the date of the IAS limited conclusion (not yet due) but has been prepared since then and takes into account all the points of the recommendations.

Recommendation No 1 - Guidelines and awareness raising (DG RTD):

DG RTD should further raise awareness and remind staff of their obligation to use EDES, paying particular attention to the specific requirements that apply to indirect management. In addition, DG RTD should include references to the EDES requirements in new delegation agreements with entrusted entities. In cooperation with Research Family entities, DG RTD should integrate awareness raising actions on EDES in the RAFS, in

⁵² The IAS has not issued any "critical" recommendations for DG RTD.

particular focusing on the awareness of exclusion grounds at operational level, and emphasising EDES role as a fraud-sanctioning tool.

Recommendation No 2 - Applying EDES in practice (DG RTD):

DG RTD should, whenever a potential exclusion criterion is discovered before or after the signature of a grant agreement, consider launching an EDES registration procedure. DG RTD should finalise the evaluation of OLAF cases as soon as possible and decide whether or not to launch an EDES registration procedure.

Follow up to “very important” recommendations from previous years

Two “very important” recommendations, made in 2017 and 2016, remained outstanding at the end of 2018, but both have been downgraded by the IAS in their follow-up work. The details are as follows:

IAS Audit on Horizon 2020 Project Management

Recommendation n° 1.a. (Very Important): Determining the level of monitoring for projects (CSC).

The CSC Steering Board adopted a guidance document on 18 December 2018, which met the major part of the recommendation. The remaining action is the clarification of the use of ‘technical audits’ in the various guidelines covering the business processes and audits. As the major part of the recommendation had been implemented, the IAS downgraded the recommendation from ‘Very Important’ to ‘Important’.

IAS Audit on Implementation of Ex-Post Control Strategy by the Common Audit Service (CAS)

Recommendation n°2 (Very Important): Audit planning, monitoring and reporting.

The Common Audit Service drafted a detailed audit plan for 2019, established a process to track key audit milestones against target dates, developed operational objectives for the annual audit plan and monitored the inflow of cost statements. However, there are elements of the action plan that still need implementation: (1) an enhanced tool to manage auditors’ capacity and workload; (2) a dashboard with aggregated indicators and targets on timely delivery of audits; and (3) performance indicators and targets to measure and report on strategic objectives.

The IAS downgraded the recommendation from ‘Very Important’ to ‘Important’ as the CSC had made a significant progress in its implementation, and had met the audit targets for 2018.

IAS audits in 2018

Below is the list of the audits finalised in 2018 or beginning of 2019.

Audits on RTD in 2018

Audit on Horizon 2020 Ex-Ante Controls on payments in DG RTD, completed in October 2018. There were two important recommendations addressed to DG RTD and the CSC, which are in the process of being implemented.

Consolidated Audit Report on Horizon 2020 Project Management and Ex-Ante Control Audits performed in DG RTD, DG CONNECT, REA, ERCEA, INEA and EASME, delivered on 31/01/2019 and summarising the cross-cutting observations identified in individual reports and addressing four important recommendations and one issue for consideration to the CSC.

Audit on IT Security Management for CSC Horizon 2020 Grant life cycle systems,
RTD_aar_2018_final

completed in December 2018. The conclusion was that the internal controls put in place by DG RTD, and more specifically by the CSC, are overall well designed and effectively implemented. The report contains five important recommendations, as well as four issues for consideration.

Multi DG Audit on the Dissemination and Exploitation of Horizon 2020 Results, started in May 2018. The IAS issued a Final Report in January 2019, which contains three recommendations, one very important, and two important, addressed to both the CSC and the implementing bodies.

Multi DG audits in 2018 that involved RTD

Audit on Synergies and Efficiencies Review, The IAS has not yet issued a Final Report.

Limited Review on the Reporting on the Corrective Capacity (in particular the amounts at risk at closure), started in August 2017. The Final Report is dated 19/03/2018. The one recommendation concerning DG RTD was implemented in the AAR 2017.

Audit on the effectiveness and efficiency of the new Early Detection and Exclusion System in protecting the EU financial interests, started in March 2018. The IAS issued a draft Report on 21/12/2018 and DG RTD sent comments. The Final Report was issued on 25/01/2019 and contained **two very important** recommendations.

Implementation of IAS recommendations

The table below summarises the state of implementation of IAS audits until the end of 2018⁵³. At the end of the period, DG Research and Innovation had 26 open recommendations, with 9 of them overdue. In several cases the main part of the recommendation has been implemented, more minor elements of the recommendation remain to be finalised.

⁵³ Without prejudice of the conclusions of subsequent follow-up audits by the IAS

IAS AUDIT TITLE	Number of recommendations			
	TOTAL	CLOSED	OPEN	
				of which overdue
IAS AUDIT ON THE DESIGN AND SET-UP OF THE ICS FOR H2020 IN DG RTD	8	7	1	1
IAS AUDIT ON H2020 PROJECT MANAGEMENT	5	3	2	2
IAS AUDIT ON IMPLEMENTATION OF EX-POST CONTROL STRATEGY BY CAS	5	1	4	4
IAS AUDIT ON HR MANAGEMENT BY DG RTD	3	1	2	2
IAS AUDIT ON H2020 EX-ANTE CONTROLS ON PAYMENTS IN DG RTD	2	1	1	0
LIMITED REVIEW ON THE REPORTING ON THE CORRECTIVE CAPACITY	1	1	0	0
IAS AUDIT ON IT SECURITY MANAGEMENT FOR CSC H2020 GRANT LIFE CYCLE SYSTEMS	5	0	5	0
IAS CONSOLIDATED REPORT ON H2020 PROJECT MANAGEMENT & EX-ANTE CONTROL AUDITS IN RTD, CONNECT, REA, ERCEA, INEA & EASME	4	0	4	0
IAS AUDIT ON DISSEMINATION & EXPLOITATION OF H2020 RESULTS	5	0	5	0
IAS AUDIT ON EFFECTIVENESS & EFFICIENCY OF THE NEW EDES	2	0	2	0
TOTAL IAS	40	14	26	9

16 out of 26 open recommendations, including three very important ones disclosed hereafter, are stemming from the IAS audits for which the final report was issued in either December 2018 or January 2019.

9 recommendations are overdue compared to their original target dates. The late implementation of audit recommendations is often justified either by the need for IT development or by legislative deadlines or new priorities. These are and, at present, there are no very important recommendations pending.

European Court of Auditors

Annual Report and DAS 2017

The Court's Annual Report for 2017 was published in October 2018. Chapter 5 of the Court's Annual Report deals with Research and Innovation and other internal policies.

RTD_aar_2018_final

The error rate in Research and Innovation and other Policies (4.2%) is similar to the error's rate for the year 2016 (4.1%). The Court also includes, for the fourth time, an assessment of the level of error that could have been avoided had controls by certifying auditors, the Commission services, functioned properly pointing out that should the Commission have used all the information available, the estimated error rate would have been 1.5% lower.

The Court has highlighted that the quantifiable errors concerned mainly the personnel costs and that most of them had been made by newcomers in the programme as well as by SMEs.

The Court underlined that the follow-up of the audit recommendations was better coordinated but that could be further improved.

DG RTD has analysed the results of the findings of the Court and of its own findings. Taken together with the error rates set out in this report, it considers that fundamental changes in its internal control system are not needed. However, it sees some scope for targeting – of legislative changes, controls or communication efforts – on particular segments of its population. This will take place either during the last years of Horizon 2020 or for Horizon Europe.

The Court issued two recommendations that are relevant to DG RTD. They all both been accepted and are being implemented.

Recommendation 1: as regards Horizon 2020, further clarify the rules on personnel costs, review the personnel costs methodology, and complete the list of issues in certain countries

The Commission accepts the recommendation.

The Annotated Model Grant Agreement was updated on 3 July 2018 to include additional examples and complementary details in the annotations on personnel costs. The list of issues applicable to particular countries was also updated on 28 June 2018 to include, notably, new information on taxes and contributions for France. Both documents may be subject to further updates in case that new information needs to be included or based on requests from participants.

(Recommendation 2 was not related to RTD activities)

Recommendation 3: promptly address the weaknesses identified by the IAS in the monitoring of research and innovation projects.

The Commission accepts the recommendation. The results can be seen in the IAS section above, the weaknesses identified have been addressed.

DAS 2018

The DAS 2018 started in April 2018. The work is close to its end but the results have not yet been received.

European Court of Auditors (ECA) audit on simplification in Horizon 2020

The Court published the full report on 6 November 2018: "The majority of simplification measures brought into Horizon 2020 have made life easier for beneficiaries, but opportunities to improve still exist". The Court confirms that our stakeholders are, overall, satisfied with the simplifications put in place, although some areas can be improved. This supports the line taken for Horizon Europe, which is continuity from Horizon 2020, with adjustments where necessary.

RTD is currently working on developing an action plan to address the recommendations included in ECA's special report. See part 1 of this report for further details.

Overall conclusion on audit observations and recommendations

Overall, internal and external audit work contributes significantly to the continuous improvement in DG RTD systems and operations. The IAS and the Court of Auditors' findings and recommendations are subject to a systematic follow up by the Directorate-General.

Although these audits resulted in key findings, it is noted that all very important recommendations issued by the IAS were accepted and specific action plans have been drafted or are being drafted to address the underlying issues.

Recommendations issued by the Court of Auditors were also systematically addressed. ECA analysed the 2017 RTD AAR and there was a positive conclusion.

The current residual risk from the audit recommendations remaining open in DG RTD does not impair the declaration of assurance.

2.1.3 Assessment of the effectiveness of the internal control systems

The Commission has adopted an Internal Control Framework based on international good practice, aimed at ensuring the achievement of policy and operational objectives. In addition, as regards financial management, compliance with the internal control framework 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.

The new DG RTD internal control framework, based on the recently adopted corporate framework was adopted in June 2018.

As from 2018, DG RTD has assessed the effectiveness of its internal control systems on the basis of the new framework.

The internal control assessment was performed in compliance with methodology established by DG BUDG⁵⁴.

It was based on an evaluation of monitoring indicators defined in the new RTD Internal control framework and a desk review of the analysis of information from various sources:

- the indicators set out in the Internal Control Framework of the DG;
- the Director's reports for 2018 and the 2018 risk assessment exercise at Directorate and Directorate-General level.
- The reports on recorded exceptions, non-compliance events and any cases of confirmation of instructions (Art 93.2 FR)
- the observations and recommendations reported by the Internal Audit Service (IAS) and conclusion of the Internal Auditor on the state of internal control in DG RTD;

⁵⁴ Implementation guide of the internal control framework of the Commission

- the observations and recommendations reported by the ECA ;
- the DG BUDG reports on follow-up of recommendations on the validation of Local Systems The error rates for FP7, Horizon 2020 and RFCS reported in paragraph 2.1.1.

DG RTD has assessed its internal control system during the reporting year and has concluded that it is effective and that the components and principles are present and functioning as intended.

On the principles 11 – “development of general control activities over technology”, 12 – “deployment of control activities”, 13 and 15 related to “Information and communication”, although they are present and functioning overall, DG RTD accepts that some improvements are needed, particularly following IAS audit reports (see paragraph 2.1.2 audit observations and recommendations -IAS)

In particular, compliance with contractual obligations and reporting requirements related to dissemination and exploitation (principle 15) should be reinforced. As reported in the IAS report, “the D&E activities are still in an early phase of implementation (as the majority of the expected deliverables are still not available)” and an action plan is under preparation.

2.1.4 Conclusions on the impact as regards assurance

This section reviews the assessment of the elements reported above (in Sections 2.1.1, 2.1.2 and 2.1.3), the sub-conclusions above and draws conclusions supporting the declaration of assurance and whether it should be qualified with reservations.

As regards the 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 and the underlying financial operations (legal and financial commitments);
- payments relating to administrative expenditure and procurement;
- Horizon 2020 payments for grants;
- management of the RSFF/INNOVFAN financial instruments and the underlying financial transactions with the EIB and EIF;
- payments to Joint Undertakings;
- the operating subsidy paid to the Executive Agencies.

At this stage, 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.

Based on the control results on the legality and the regularity of the underlying transactions, the following areas are subject to a reservation annexed to the declaration of assurance:

- payments in reimbursement of cost claims under FP7;
- payments in reimbursement of cost claims under RFCS.

In the light of concerns expressed in the 2015 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 therefore the residual error rates) are significantly lower than for all expenditure. Within RTD this applies to expenditure given to IMI, BBI, Cleansky and FCH. Outside DG RTD, this also applies to expenditure by the REA under the Marie Skłodowska-Curie programme, and all expenditure from the ERCEA.

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 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, 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 therefore, any reserve must cover all of this portfolio. For FP7 a residual error rate of 3.36% is above the materiality level set in the standing instructions and 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.

As stated above, DG RTD considers that its overall control strategy is appropriate as it ensures a good balance between low errors and efficient controls at a reasonable cost. 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 reasonable assurance over 96.9% of this expenditure (and 97.29% - 98.08% of its total expenditure). This gives a misleading impression about the overall standard of financial management in the DG. However, at the moment, DG RTD maintains a reserve for FP7 expenditure against cost statements in 2018.

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:

- ***Payments in reimbursement of cost claims under the Seventh Framework Programme;***
- ***Payments in reimbursement of cost claims under the Research Fund for Coal and Steel.***

2.1.5 Declaration of Assurance and reservations

DECLARATION OF ASSURANCE

I, the undersigned,

Director-General of Research and Innovation

In my capacity as authorising officer by delegation

Declare that the information contained in this report gives a true and fair view⁵⁵.

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 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 reservations should be noted:

- *Payments in reimbursement of cost claims under the Seventh Framework Programme;*
- *Payments in reimbursement of cost claims under the Research Fund for Coal and Steel.*

Brussels, the 4th April 2019

[Signed in ARES]

Jean-Eric Paquet

Director-General DG RTD

⁵⁵ True and fair in this context means a reliable, complete and correct view on the state of affairs in the DG/Executive Agency.

Reservation FP7

DG	RTD
Title of the reservation, including its scope	Reservation concerning the rate of the residual error within payments in reimbursement of cost claims in the Seventh Research Framework Programme (FP7), implemented directly by DG RTD.
Domain	Direct management grants paid by DG RTD in the 7 th FP.
Programme in which the reservation is made and total (annual) amount of this programme	08.025100; 08.035100 Payments made directly by DG RTD (including Euratom expenditure) and the cross-subdelegated budget, amounting to a total of EUR 198.6 million in 2018 .
Reason for the reservation	At the end of 2018, the 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 below 2% at the end of a reporting year within the FP's management lifecycle, a reservation would 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 (and clearings, pre-financings deduced) authorised in 2018 by RTD amounting a total of EUR 687.6 million. Based on the results of audits, it is estimated that the Residual Error Rate is 3.36% . The estimated impact in 2018 is EUR 23.1 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 : <ul style="list-style-type: none"> - 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 possibility to simplify the FP7 rules has been exhausted. The programme is now in its final stage of implementation: the total amount paid per year will be decreasing, and therefore the financial impact too. Audits may continue at a low level in case of the identification of potential irregularities in projects. However, no further actions are programmed.

Reservation Research Fund for Coal and Steel

DG	RTD
Title of the reservation, including its scope	Reservation concerning the rate of the residual error within payments in reimbursement of cost claims in the Research Fund for Coal and Steel (RFCS), implemented directly by DG RTD.
Domain	Direct management grants paid by DG RTD in the C&S RF.
Programme in which the reservation is made and total (annual) amount of this programme	08.050100 and 08.050200 Payments made by DG RTD: 2018 EUR 43.8 million
Reason for the reservation	At the end of 2018, the estimated 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 below 2% at the end of a reporting year within the programme's management lifecycle, a reservation would 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 C&S payments based on cost statements (and clearings, pre-financings deduced) authorised in 2018 by RTD amounting a total of EUR 69.89 million. It is estimated that the Residual Error Rate is 3.22% . The estimated impact in 2018 is EUR 2.25 million
Impact on the assurance	Legality and regularity of the affected transactions. 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 reasons for errors are : <ul style="list-style-type: none"> - 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 the Grant agreement terms were very similar but not exactly the same than for FP7 projects, errors occurred when beneficiaries applied FP7 rules for their cost claims. The different control provisions set out by the Commission services, 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	In order to be close to the current FP's rules, and allow for simplification, which intends to reduce the error rates as well as administrative expenditure, a new Horizon 2020 inspired model grant agreement is used for all grants signed after 1 January 2016. The financial management for RFCS is integrated within a unit that handles the FP, this allows the promotion of best practices and the review of the ex-ante controls.

2.2 Other organisational management dimensions

2.2.1 Human resource management

In terms of Human Resources, there were several outputs in 2018 that contributed to all aspects of the objective to deploy effectively its resources in support of the delivery of the Commission's priorities and core business. One of the main objectives was to have a competent and engaged workforce, which is driven by an effective and gender-balanced management and which can deploy its full potential within supportive working conditions.

- Organisational changes

To improve the overall efficiency and to guarantee the finalisation of FP7 legacy and part of Horizon 2020 still managed in house, seven Administrative and Financial Units were reduced to three as from January 2018.

Further to the arrival of the new Director-General in April 2018, several organisational changes were put in place aiming at mobilising more effectively resources within the Directorate-General in line with its policy objectives and to enhance interaction and cooperation between all directorates of the Directorate-General.

For a better balance of staff allocation and workload, the portfolios of competences of the three Deputy Directors-Generals were reshuffled as from 16 April 2018, so that each one of them oversees three directorates, with a mix of thematic and horizontal policy areas. The Director-General took under his direct responsibility the horizontal Directorates A and B as well as the interinstitutional activities and the Human Resources Business Correspondent (BC) in line with the strategic focus embedded in the new HR delivery model.

Furthermore, as from 1 October 2018, Directorates A and B were partially reorganised to enhance the internal coherence of activities and the effectiveness of action by reducing overlapping and putting together activities that are closely related, while aiming to reinforce the strategic/coordination role of the relevant units in these Directorates.

- R&Innovate process

With a view of transforming DG RTD into a modern and agile organisation, extensive staff consultations took place with a participatory approach in the framework of R&Innovate process launched by the Director-General in July 2018. Senior and middle managers, together with all DG RTD staff, were invited to make in depth reflections on the future of the Directorate-General, on how to make DG RTD a 21st century, innovative public administration fit for the new Research & Innovation programme "Horizon Europe" and the new European Commission.

At the end of the year the results of the consultations were analysed, disseminated to staff and translated into a variety of actions, representing the stepping-stones towards the future DG RTD. The follow up of the R&Innovate process will be the main activity in 2019 and will shape the working environment in DG RTD, with the ambition to increase staff engagement and boost innovation and co-creation. A specific consultation launched in November 2018 will bring to a new organisational structure of DG RTD, fit for a new Research & Innovation programme in a new European and global political context.

- Human Resources Planning

The annual Human Resources Planning exercise was undertaken in May-June to enhance continuously the allocation of resources in line with the Commission and DG priorities,

while taking into account the staff reduction targets established centrally for DG RTD (38 establishment plan posts and 21 contract staff). Furthermore, the results of this exercise fed the reflections on the structure and mission of DG RTD, in view of the entry into force of the new MFF and of Horizon Europe.

- Talent Management actions

With reference to the middle management appointments, the 2017-2019 target for first female appointments in DG RTD as defined in the Commission decision of July 2017 was increased in early 2018 from 7 to 8 new appointments. DG RTD needs to appoint 4 new female middle managers.

DG RTD continued to encourage talented female colleagues to express their interest in increasing their range of responsibilities and to apply for middle management posts. To this end, 4 female colleagues from DG RTD participated in the corporate pilot programme "Female Management Talent Development Programme" that started at the end of January 2018 to accompany talented female colleagues from across the Commission to move further towards a Management path.

Additionally, as part of the corporate Talent Management Strategy, 2 staff members from DG RTD participated in the pilot Junior Professionals Programme (JPP) launched by DG HR in the summer. This programme aims at better retaining and developing junior staff into EU civil service.

DG RTD aims to go beyond the actions developed at corporate level and has considered further areas for talent development/management. In such context, a number of actions/initiatives were launched (a call for expression of interest to be back-up of DG/DDG assistants, a revised selection procedure for Senior Experts and Senior Assistants, a job-shadowing scheme between DG RTD and the ERCEA to improve the collaborative culture among RTD staff and the ERCEA)

- Communication on HR matters to staff

All relevant HR matters were communicated to staff via a variety of means, such as regular HR news in the internal newsletter RTD Insights, the creation of web pages for topics specific to DG RTD (e.g. R&Innovate) and discussion forums (e.g. new R&Innovate RTD Community).

2.2.2 Better regulation (only for DGs managing regulatory acquis)

Not applicable

2.2.3 Information management aspects

In 2018, DG RTD launched 'e-Office' initiative, focusing on replacing the paper workflows with the e-signatory - the Ares electronic signature. To this effect, the DMOs provided guidance and information for the staff on a dedicated collaboration site, organised hands-on training sessions and gave presentations for units and directorates upon demand.

Several coaching sessions were given to individuals or small groups throughout the year on electronic filing and the filing system of certain units were reviewed to ensure proper archiving and the preservation of digital documents.

Archiving: The immediate necessity to implement the massive elimination of 5th Research Framework Programme physical files in the possession of the Central Archives took precedence over the processing of the physical files of the 6th Research Framework Programme.

2.2.4 External communication activities

The adoption in June of the Commission's proposals for the financial instruments under the next MFF marked the beginning of the communication campaign to promote the most ambitious Research and Innovation Framework Programme to date. Infographics in support of the Commission's May Communication 'A renewed agenda for Research and Innovation: Europe's chance to shape the future' – a key background document in support of the **Horizon Europe** narrative – were promoted via social media. The explanatory animated video aimed at a broad audience summarising the main features of Horizon Europe proposal has to date been viewed 35 000 times.

The numerous high-level conferences that took place during the course of 2018 provided a diverse range of communication opportunities. The video produced and initially shown at the '**Horizon 2020 Conference of the European Year of Cultural Heritage**' showcased the critical impact of EU funded R&I in this area; it has been viewed 25 500 times. Media monitoring of the announcement of the winner of the iCapital Prize at the awards ceremony at November's Web Summit indicated that over 50 traditional media outlets reported on the event and the social media reach (visibility) was around 10 million.

The key outreach event of 2018 was the '**EU Research and Innovation in our daily life**' conference, which took place at the European Parliament in November. This high-level conference was a joint Parliament – Commission event timed to raise the profile of the impact of the EU initiatives on the citizen in the context of the forthcoming Parliamentary elections. Over twenty projects were presented. The video produced for the conference, looking back at achievements over the past thirty years, has been viewed more than 55 000 times and overall the event gathered over 55 million social media impressions in the period to year end.

In terms of ongoing outreach activities, **Horizon Magazine** – the online news channel for EU funded R&I activities published under the editorial control of DG RTD – has expanded its reach via strategic partnerships. The top three most popular articles have been read over 150 000 times. In addition to this, collaboration with Euronews to produce the Futuris broadcast programmes has been strengthened, and edited clips are now regularly disseminated via DG RTD social media accounts.

In collaboration with DG COMM, material relating to flagship EU funded R&I projects features prominently in the Commission's three corporate communication campaigns: #InvestEU (in the context of the Investment Plan), #EUandMe (in the context of sustainable technology) and #EUProtects. The third campaign was launched by DG COMM in the course of 2018 and already includes **factsheets on how EU funded R&I is combatting the Ebola virus and the development of artificial heart valves**. Moreover, DG RTD contributed actively to the development led by DG COMM and BUDG of a set of common communication and visibility requirements in the future contractual templates under direct/indirect management of the EU budget.

2.2.5 Examples of specific efforts to improve economy and efficiency of financial and non-financial activities

Simplification is a continuous endeavour.

A key achievement this year was the pilot for lump sum funding to test this simplified form of funding for large, multi-beneficiary actions, in view of the possibility of using lump sum funding more extensively under Horizon Europe. Although the experience from the pilot is limited, feedback from the evaluations indicates that the pilot is working well, with no particular issues to report.

The first pilot comprised topics in the NMBP and Health calls, now extended to the S2R JU and the ERC Proof of Concept scheme. The CSC provided the implementation framework, including a dedicated lump sum MGA, explanations in the updated AGA and legal advice.

In addition, new workflows have been introduced for the audits, grants and experts applications: the audit announcement, in-house and outsourced audits, audit extension, the project finalisation, the participants' validation workflow, the project termination and the project monitoring by external experts.

The new Funding and Tenders Portal was launched. It replaces the successful Horizon 2020 Participant Portal. It is a true one-stop shop for all grants and procurement opportunities offered by the Commission, including Horizon 2020 and the future Horizon Europe.

As part of R&Innovate process, DG RTD led an administrative simplification process by reviewing the procedures for Inter-service Consultation, Public procurement and Experts. In addition, the e-office was introduced as from the 1st October with the abolishment of all paper workflows (with the exception of certain specific circumstances).

In January 2018, the reorganisation of the 7 Administrative and Financial Units (UAF) came into effect and the 7 UAF were reduced to 3. This reorganisation aimed to improve overall efficiency and to guarantee the finalisation of FP7 legacy and part of Horizon 2020 still managed in house.