2015

Annual Activity Report

- main text -

JOINT RESEARCH CENTRE

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INTRODUCTION

The DG in brief

The Joint Research Centre (JRC) is the European Commission's in-house science service and the only Commission service in charge of direct research. "The JRC's mission is to provide EU policies with independent, evidence-based scientific and technical support throughout the whole policy cycle. Working in close cooperation with policy Directorates-General, the JRC addresses key societal challenges while stimulating innovation through developing new methods, tools and standards, and sharing its know-how with the Member States (MSs), the scientific community and international partners. Key policy areas include: environment and climate change; energy and transport; agriculture and food security; health and consumer protection; information society and digital agenda; safety and security, including nuclear; all supported through a cross-cutting and multi-disciplinary approach".[1]

As the European Commission's in-house science service, the JRC is a trusted partner of the European Institutions, governments of the Member States, the scientific community and an evolving network of international organisations.

The JRC's portfolio of activities is fully in line with the political guidelines of the President, Horizon 2020/Euratom Research and Training Programme and the Europe 2020 Strategy, and JRC supports the initiatives of the other European Commission Directorates General (DGs) with whom it collaborates closely in virtually all key policy areas. Moreover, the JRC continues to deliver on its existing longer term obligations (i.e. as specified in existing EU legislation and contracts).

The JRC is a geographically spread organisation with seven scientific institutes, two horizontal directorates with corporate responsibilities, and a third directorate responsible for the management of the Ispra site. These are located in six distinct sites in five different countries. Given the geographic dispersal of the JRC and the technical nature of its work, the JRC policy is to place local decision-making responsibility with the operational services. Therefore JRC scientific unit heads are nominated as sub-delegated authorising officers for the budget lines specifically related to their research projects.

Unlike other Directorates General of the Commission, the JRC manages scientific infrastructures and nuclear facilities.

The year in brief

2015 was a year of both consolidation and change. The JRC streamlined and adapted its activities according to the mission of the new Commission, in particular the Agenda for Jobs, Growth, Fairness and Democratic Change and it has ambitious projects in most of the priority areas.

The Commission has changed a great deal in recent years. It is more focused on a smaller number of priorities, among them the Energy Union and the Digital Single Market. The new role played by the Vice Presidents has helped to strengthen this focus, and has also marked a shift towards more integrated policy making. Commissioners in project teams are working more closely together, cutting across policy silos. Moreover, policy makers are faced with an increasing amount of information, including scientific; hence, the Commission´s emphasis on knowledge management. These trends were

[1] The JRC mission is displayed on the JRC website: http://ec.europa.eu/dgs/jrc/index.cfm

driving forces for reviewing the long-term strategy of the JRC. Director-General Vladimír Šucha launched an internal participatory process to develop a comprehensive long-term strategy for the development of the JRC for the coming 15 years. At his request, the JRC Board of Governors set up an ad hoc group to contribute to the process. It is expected that the implementation of the new strategy will begin in the first half of 2016. Some elements of this strategy, such as the assessment framework for the identification of priorities, have already been tested successfully for the 2016-2017 work programme.

The discussions along the strategy process also lead to identifying areas where pilot knowledge and competence centres were set up, which are good examples of how the JRC can contribute to overcoming silo mentality and to improving the quality of regulatory measures and other policy actions. Taking into account the expertise and strong capabilities of the JRC in the fields of disaster risk management and regional smart specialisation, the JRC launched two pilot knowledge centres in these areas representing a real step to better support policy making by providing easily accessible relevant scientific evidence. The knowledge and competence centres are a good example of the JRC's ability to quickly respond to new challenges and demand by implementing new concepts in a pragmatic way.

Conducting an independent assessment of the rationale and achievements of the JRC's activities is a formal obligation following the completion of each Framework Programme for research, technology and innovation, which are the main sources of funding for the JRC's work. On this occasion, the Framework Programme 7 ex-post evaluation was conducted by a panel of 12 independent external experts under the chairmanship of Professor Patrick Cunningham of Ireland's Trinity College in Dublin, who held the position of Chief Scientific Adviser to the Irish Government from 2007 to 2012.

The panel made a very positive conclusion about the effectiveness of the JRC as the Commission's science service in support of the European Atomic Energy Community (Euratom) and EU policies. Furthermore, the panel concluded that the JRC has a respectable scientific performance with a high standard when it comes to the scientific quality and impact of its publications. The experts based these conclusions on their direct observations and judgements of the JRC's work, complemented by related studies, analyses and surveys, which showed the quality of its science and the effectiveness of the scientific support provided by the JRC.

The panel also acknowledged the JRC's continuous evolution, which has developed from an organisation purely orientated towards nuclear research, when it was set up more than 50 years ago, into an organisation with a broad scientific policy-support mission, keeping up with the enlargement and the needs of the EU.

Besides this positive assessment, the experts also provided recommendations and suggestions for the further development of the JRC under the current Framework Programme, Horizon 2020, which runs until 2020. One of these, namely to develop a long term strategy for the development of the JRC was already on the way, when the report came out.

The JRC has gratefully received the panel's positive assessment and has started working on the full implementation of the useful recommendations presented in the report.

The JRC-EPSC (European Political Strategy Centre) annual conference "Building a Resilient Europe in a Globalised World" (Brussels, 30 September 2015) saw important discussion on different aspects of resilience between experts, representatives of the European Institutions and Member States, stakeholders from industry as well as academia. Resilience – understood as the capacity to withstand, adapt and recover from crises and shocks – emerged as a concept bridging different policy areas: Economy, environment, crisis management, geopolitics, financial services, digital, food, health and many others. An important role of science in the process of building a stable, competitive and prosperous Europe was confirmed. Several high-level participants, from the Commission, EP and the Council Presidency confirmed that anticipation, interaction and a

multidisciplinary approach are the vital ingredients of resilience. Resilience requires multi-faceted strategies at all levels allowing entities to bounce back rapidly after adverse events and to tackle root causes rather than deal with consequences.

The importance of science in improving the culture of evidence-informed policy-making was also stressed at the first 'Science meets Parliaments' event. This occasion brought together scientists and members of the European and national parliaments, and established the basis for greater and continued cooperation between scientists and policy-makers. Several umbrella scientific organisations also participated, including the European Academies Science Advisory Council (EASAC), the Conference of European Schools for Advanced Engineering, Education and Research (CESAER), the European Council of Academies of Applied Sciences, Technologies and Engineering (Euro-CASE), All European Academies (ALLEA), the Leibnitz Association and the United Nations Educational, Scientific and Cultural Organization (UNESCO). The event was organised by the JRC and the European Parliament's Science and Technology Options Assessment (STOA) panel and builds on successful experiences from similar events organised in several Member States, such as Germany, France and the United Kingdom. It is planned to become an annual event.

A strong relationship between the JRC and the Member States is still a high priority for the organisation. 2015 saw many events across Europe where DG JRC played an important and helpful role. Whether through participation in macro-regional cooperation or in smart regional specialisation, the JRC has always contributed considerably to the success of these policies. The JRC also successfully managed the scientific coordination of EU participation at Expo 2015 in Milan.

As of September 2015, the JRC opened its doors to Brazilian scientists for a period of up to two years within the framework of the Brazilian Mobility Programme 'Science Without Borders'. Science and technology are core elements of EU-Brazil relations, and the arrival of the Brazilian scientists confirms the JRC's engagement towards reinforcing scientific collaboration.

EXECUTIVE SUMMARY

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

A. Policy highlights of the year (exec. summary of section 1)

The present Annual Activity Report describes activities of the JRC throughout 2015, their EU added value, their performance levels, their impacts as well as their internal control, financial and legal aspects.

In line with the stipulations of specific objective 17 of Horizon 2020 the JRC provides customer-driven scientific and technical support to Union policies, while flexibly responding to new policy demands.

Moreover, in line with the stipulations of the Euratom Research and Training Programme (specific objectives 9-13) the JRC's objectives are to improve nuclear safety, security and radiation protection and to contribute to the long-term decarbonisation of the energy system in a safe, efficient and secure way.

DG JRC has updated its mission in line with the renewed emphasis on its horizontal character, as reflected in the mission letter from President Juncker to Commissioner Navracsics inviting him "to progressively develop its role as a service supporting all Commission services with its knowledge and its expertise". The new mission is part of the long-term comprehensive strategy for the development of DG JRC which has been prepared during 2015.

Hence, the orientations of JRC support reflect the recent repositioning of JRC activities around the Commission's policy priorities. With its strong support to most Commission priorities as expressed in the Commission's Work Programme (CWP) 2015 and some 1600 policy support deliverables, the JRC has made an important contribution to the progress of the union's policy agenda, by helping Commission services to set their policy making on a robust scientific evidence base.

In view of JRC's mandate to support all Commission DG's, some highlights of support are across the various policy areas are indicated below. They reflect the demand for this support by Commission services and the respective resource levels needed for their achievement.

In the area of *Jobs, Growth and Investment* the JRC continued its work on the circular economy, and carried out a series of research activities on aspects of economic policy, regional competitiveness and employability criteria. Amongst others, the JRC explored the link between exports and jobs, analysed the impact of investments at country and local level, and looked at healthcare as a precondition for a productive and active population.

Regarding support to the area *A Resilient Energy Union* the JRC inaugurated a new state-of-the-art laboratory dedicated to electric vehicles and smart grid interoperability. Amongst others, the smart specialisation platform on energy has been developed to support EU regions in fostering innovative low-carbon solutions. Moreover, JRC work has focused on the security of gas supply, photovoltaics and the urban application of smart grids.

Regarding the area a *Forward-looking climate change policy,* JRC studies have provided,

among others, new data on global emissions and sources of urban pollution, projections of future emissions and their impact and guidance on how to report on greenhouse gas (GHG) emissions from land use, land-use change and forestry.

Through its research activities in the area of *A connected Digital Single Market*, the JRC analysed amongst others the online services market, used behavioural sciences to improve online privacy, and carried out experiments to convert the radio spectrum into a resource for broadband mobile access. The JRC's research also showed that SMEs made the best use of European funding for ICT research.

The JRC provided solid scientific support for Commission initiatives in the area of *A deeper and fairer Economic and Monetary Union* and a better understanding of the impact of fiscal measures on economic and societal outcomes. The JRC also contributed to the social impact assessment of the third Greek stability programme and contributed to developing the methodologies to estimate MSs' structural deficits within the EU's economic governance framework.

In the area of *A deeper and fairer internal market with a strengthened industrial base* JRC supported drafting regulations for the new on-road tests for cars. Moreover, and amongst others, JRC analysed the competitiveness of the EU's oil-refining sector and testing the precision of Galileo signal receivers; contributed to the ongoing revision of nanomaterial definition and strengthened the industrial base with two new state-of-the-art technologies stemming from nuclear research.

Regarding *An area of justice and fundamental rights based on mutual trust*, the JRC's scientific work has amongst others analysed available technology for automatic fingerprint identification that could be used at borders to reinforce security in the Schengen area; developed a new method of verifying vessel positions that would help fight maritime crime; proposed new approaches for a quicker recognition of new drugs; contributed to new legislation that will facilitate fraud investigations linked to international trade; studied how children interact with digital technologies.

As regards the area *A stronger global actor*, amongst others the JRC created a new online knowledge centre to help EU countries and beyond to better manage disaster risk; with its early-warning and monitoring systems, it supported the EU's response to several disasters as well as its efforts to achieve the new Sustainable Development Goals agreed at UN level. The JRC's expertise in nuclear safety and security also contributes to enhancing the Union's role in this area

With the positive trends of its official Horizon 2020/Euratom Research and Training Programme indicators, see also section "B – Key Performance Indicators" below, the JRC has continued its positive development and made a significant contribution to the overall progress of Horizon 2020/Euratom Research and Training Programme, the two programmes which are the cornerstone of European research policy.

Conducting an independent assessment of the rationale and achievements of the JRC's activities is a formal obligation following the completion of each Framework Programme for research, technology and innovation. On this occasion, the Framework Programme 7 ex-post evaluation was conducted by a panel of 12 independent external experts under the chairmanship of Professor Patrick Cunningham of Ireland's Trinity College in Dublin, who held the position of Chief Scientific Adviser to the Irish Government from 2007 to 2012.

In his foreword, the chairman emphasised the main outcome: the panel's positive conclusion on the effectiveness of the JRC as the Commission's science service in support of the European Atomic Energy Community (Euratom) and EU policies. Furthermore, the panel concluded that the JRC has a respectable scientific performance with a high standard when it comes to the scientific quality and impact of its publications. The experts based these conclusions on their direct observations and judgements of the JRC's work, complemented by related studies, analyses and surveys, which showed the quality

of its science and the effectiveness of the scientific support provided by the JRC.

The panel also acknowledges the JRC's continuous evolution, which has developed from an organisation purely orientated towards nuclear research, when it was set up more than 50 years ago, into an organisation with a broad scientific policy-support mission, keeping up with the enlargement and the needs of the EU.

Besides this positive assessment, the experts also provided recommendations and suggestions for the further development of the JRC under the current Framework Programme, Horizon 2020, which runs until 2020.

In their recommendations, the panel flags two issues which would mean a transformative change of the JRC, as the experts believe that it may well have reached an important point in its evolution. Thus, they have come up with strategic recommendations which, in their view, would allow the JRC to operate even more effectively.

First, they mention the need for the JRC to establish a long-term strategy before the mid-term evaluation of the Horizon 2020 Framework Programme, to be concluded in 2017. Secondly, the experts point out that as the JRC further develops its function as the Commission's scientific service, there is a need to address its interaction with the scientific community in the Member States.

The JRC has gratefully received the panel's positive assessment and has started working on the full implementation of the useful recommendations presented in the report.

2015 was the second year of implementation of the JRC Work Programme (WP) structure of finer granularity allowing for more flexibility in responding to Commission needs. Moreover, the WP has been described in the by now standard and more compact format via the Key Orientations (KOs) concept. The KOs group WP activities and have been produced in consultation throughout the year with the Commission. Finally, the JRC WP was adopted after an inter-service consultation and a decision by the College. The KOs proved also a good concept for communicating about the JRC WP and allowed the smooth integration of the new requests by partner DGs into the JRC WP in the course of 2015. It is this close interaction with the policy DGs, which has helped the JRC to adapt its orientations of support so flexibly and quickly across changing framework programmes for research and changing Commission policy priorities.

The priorities and the new working methods of the Commission aiming at more cooperation, breaking silos, etc. are an opportunity for the JRC to look into its operations and how it should develop to meet the new challenges and priorities. This provided a strong stimulus for the implementation of an inclusive and comprehensive process for a JRC strategy throughout 2015. The conclusions and recommendations of the above mentioned FP7-ex-post evaluation fed directly into the strategy process.

The administrative support activities of the JRC are on course to meet their multiannual specific objectives and have achieved the annual performance indicators or outputs and milestones in the reporting year.

The following are some examples of main achievements (for more details the reader is referred to part 1.4 of this report).

In the human resources area, a new CAST Research for Contract Agents Function Group IV has been successfully implemented and, based on this JRC pilot, a similar permanent CAST scheme is being prepared at Commission level. Moreover in order to enhance knowledge sharing across JRC sites and organisational boundaries, the corporate intranet was migrated to the Connected@JRC collaborative platform.

With respect to procurement management, the JRC's Public Procurement Management Tool (PPMT) was further improved with new functionalities facilitating the monitoring and review of procurement procedures and rolled out to OIB and made available for testing to

a number of other DGs.

Concerning Information and Communication Technology (ICT), the main components of JRC corporate IT infrastructure (server virtualization, storage and backup systems) were completely migrated from the existing server rooms to the new corporate JRC Datacentre which mimics the current EC wide datacentre rationalisation exercise.

The major infrastructures delivered as scheduled in 2015 on the Ispra site have been the Interoperability Laboratories VeLA8 and VeLA9 together with the Smart Grid laboratories, in the frame of the cooperation program between the JRC and the US Department of Energy.

B. Key Performance Indicators (5 KPIs)

The JRC system of core indicators

The JRC plans, monitors[2] and evaluates its scientific policy support process as well as its strategic and horizontal support functions on the basis of a set of core indicators, reflecting impacts, productivity and efficiency, and using the balanced scorecard concept along the three perspectives 'Outputs and Impacts', 'Organisational Efficiency' and 'Working Environment'.

The core indicators are related to general objectives, specific objectives and specific horizontal objectives of the Management Plan (MP). Based on a bi-monthly JRC dashboard monitoring system (*Tableau de Bord*) the JRC set of core indicators serves for checking if the organisation stays on course with respect to its priorities and in particular the implementation of its MP targets. The JRC core indicators of the MP 2015 are summarised in the "JRC core indicators" table (see Table 13-1 in Annex 13), and their evolution is discussed in more detail under the respective general and/or specific objectives.

Many of the core indicators can be decomposed and aggregated in many different ways, to according e.g. work programme structure, or according to JRC institutes.

The 5 selected key performance indicators in the SPP context

In the context of the Commission's SPP reporting and in line with the standing instructions for the Annual Activity Report, the JRC has selected five indicators - hereafter to be referred to as **SPP key performance indicators**, **SPP KPI,** (see Figures B-1 to B-5 below) from the larger set of JRC core and auxiliary indicators, which cover both the non-nuclear and nuclear direct actions of the JRC, as well as aspects of internal control:

SPP KPI Nr 1 "Policy-support impact": This indicator is based on JRC's annual internal peer-review 'Productivity and Impact Evaluation (PRIME). Based on a comprehensive set of criteria, this indicator counts the cases where JRC work sublimated at the level of policy making, i.e. cases where JRC policy support becomes part or even the basis of European policy making and implementation. In other words, it assesses the impact of JRC's policy support work[3].

[2] Both short and long term.

[3] The term impact refers to counts of tangible instances of utility or added value of JRC's policy support work for a policy DG. The quantitative values are elaborated in the Performance and Impact Evaluation (PRIME), JRC's annual internal evaluation exercise based on a set of impact categories ('Anticipation, conception, adoption of EU policy', 'Implementation, monitoring, evaluation of EU policy', 'Ad-hoc support (including crisis management)', 'EU and global standardisation and international harmonisation', 'Support to specific countries/regions and international bodies'. The tangibility of the occurrence of an added value is gauged

With some 370[4] policy impacts this indicator shows a positive trend and might gradually approach a plateau (see Fig. B-1 below). Qualitative and illustrative examples of the policy support and the resulting impacts are given in Part 1 of this document. The target has been established on the basis of time series analysis and estimating the likely impacts of resource reductions on the JRC. The JRC is closely monitoring this indicator and its target, also in view of the resource reductions facing the organisation in the coming years.

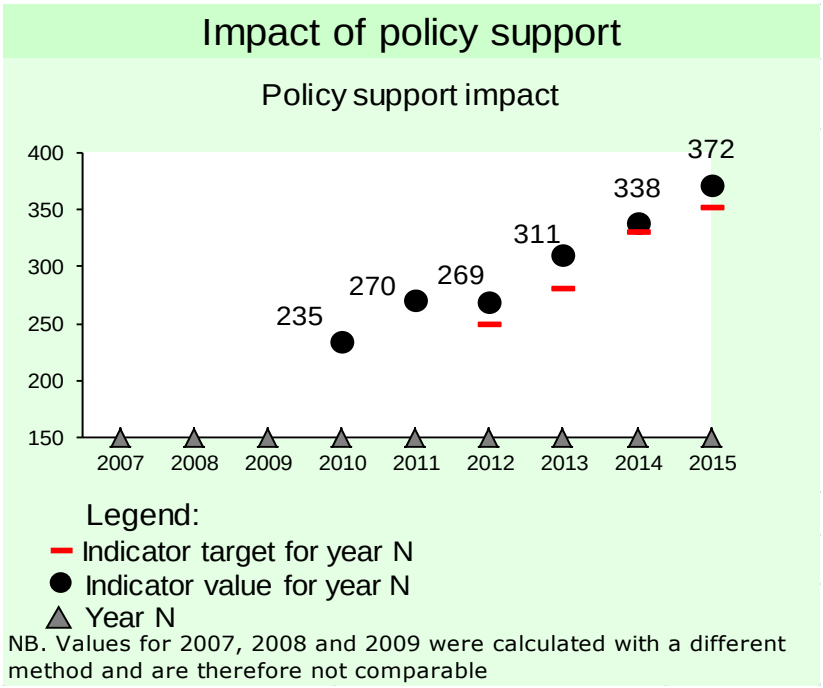


Figure B-1: Time series of the indicator "Policy support impact". The indicator has been selected from Perspective 1 'Outputs and Impacts' of JRC's set of core indicators

SPP KPI Nr 2 "Peer-reviewed publications listed in SCI-e and SSCI[5]". This indicator monitors the JRC's scientific productivity. It reflects the degree to which JRC publishes (often jointly with external scientists) the results of its research in articles of peer-reviewed scientific journals.

Since many years, this indicator has shown a slight upward trend, followed by stability with indicator values fluctuating around 600 peer-reviewed scientific articles per year. The 720 articles published in 2014 were followed by 699 articles in 2015. This might indicate an overall upward trend since 2007, which remains to be confirmed in the future. The JRC is closely monitoring this indicator and its target, also in view of the resource reductions facing the organisation in the coming years.

The indicator can be broken down into two sub-populations: one sub-population covers

against a set of detailed criteria.

[4] The indicator value presented here corresponds to the results of the Performance and Impact Evaluation (PRIME) carried out in February/March 2016, and assessing the policy impact scientific policy support produced in 2015. Impacts can be accessed in the JRC Scientific Knowledge Portal: http://skp.jrc.cec.eu.int/skp.

[5] Scientific article contributions to periodicals or conference proceedings published as journals, the titles of which are listed in the Thomson-Reuters Science Citation Index Expanded (SCI-e) and/or Social Science Citation Index (SSCI)

the indicator "Number of peer-reviewed publications in high impact journals"[6] (related to the JRC non-nuclear direct actions); another sub-population represents the indicator "Number of peer-reviewed publications"[7] (related to the JRC nuclear direct actions).

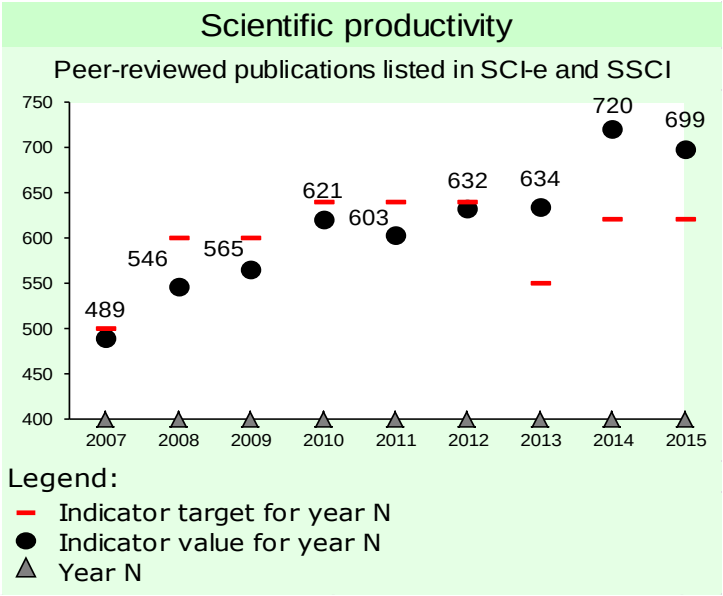


Figure B-2: Time series of the indicator "Peer-reviewed publications listed in SCI-e and SSCI". The indicator has been selected from Perspective 1 'Outputs and Impacts' of JRC's set of core indicators

The indicator SPP KPI Nr 1 "Policy-support impact" and the two scientific productivity indicators, representing two of the possible breakdowns[8] of the SPP KPI Nr 2 "Peer-reviewed publications listed in SCI-e and SSCI", are used in the Programme Statements at Programme level, i.e. Horizon 2020/Euratom Research & Training Programme, respectively, as well as throughout the JRC Management Plans, Annual Activity Reports and various evaluation reports. They have been designed in such a way that they can be broken down and aggregated in various ways (e.g. by JRC organisational entity, by Juncker priority, H2020 specific objective, by JRC strategic priorities. etc).

SPP KPI Nr 3 "International collaborations": The indicator 'International collaborations' measures the proportion of peer-reviewed scientific articles jointly produced with scientists from non-EU countries. With 24%, this indicator shows a slight upward trend in the multi-annual perspective.

[6] Name of the indicator used in the legal basis: Council Decision 74/2013 relating to Horizon 2020 and covering the JRC non-nuclear direct actions.

[7] Name of the indicator used in the legal basis: Council regulation 1314/2013 and covering the JRC nuclear direct actions under the Euratom Programme for Research and Training

[8] These two indicators are calculated using the same parameters (same journal lists, same publication period, same Pubsy registration period). The distinction nuclear versus non-nuclear publications is made using the metadata of the JRC internal organisational entities (projects) that have authored the concerned publications, ie. nuclear projects versus non-nuclear projects.

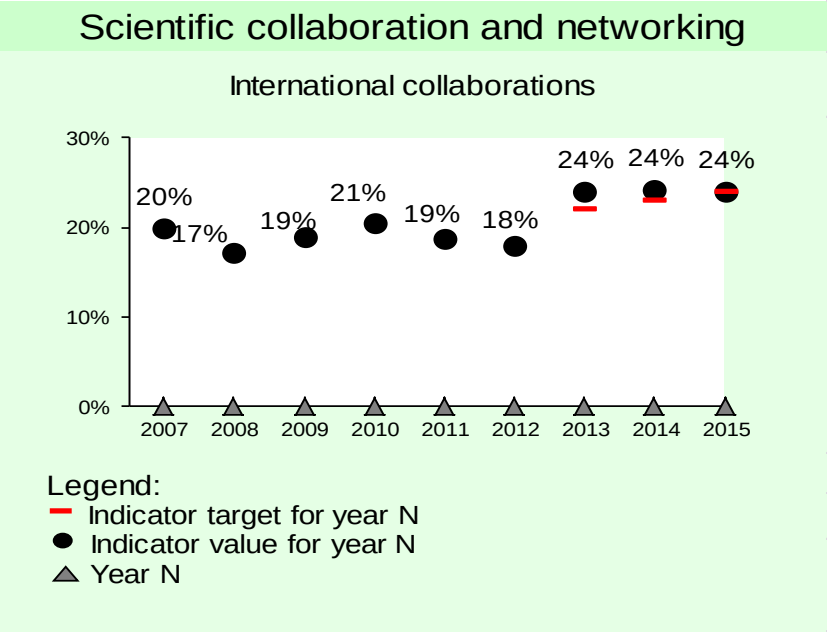


Figure B-3: Time series of the indicator "International collaborations". The indicator has been selected from Perspective 1 'Outputs and Impacts' of JRC's set of core indicators

SPP KPI Nr 4 "Contractual income[9] (% of institutional budget)": JRC activities financed outside the institutional budget and covering administrative arrangements with partner DGs, indirect actions from the framework programme for research and work for third parties continued their positive trend in 2015, notwithstanding resource restrictions both within the JRC and among the JRC's principal partner DGs.

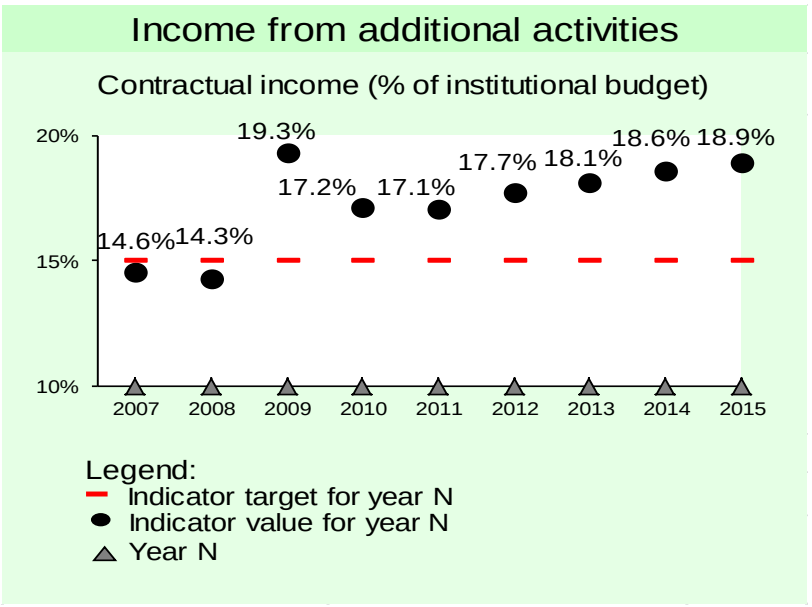


Figure B-4: Time series of the indicator "Cashed competitive income (% of institutional budget)". The indicator has been selected from Perspective 1 'Outputs and Impacts' of JRC's set of core indicators

[9] The name of the indicator was changed from 'Cashed competitive income' into 'contractual income'. All related definitions and time series remain unaffected by this change.

SPP KPI Nr 5 "Implementation of Internal Control Standards in the JRC": The fifth SPP key performance indicator is linked to the achievement of the internal control objective and it has been measured as from 2013.

Contrary to the previous four SPP KPI's, this indicator is not part of the JRC set of core indicators. The indicator was phased-in in 2013 and has been tested during the last three years. After its successful testing, the indicator will be integrated into the set of JRC core indicators.

The indicator's numerical value represents the weighted average of the results of a survey that was carried out in the reporting to assess the staff perception of the degree of implementation of the Internal Control Standards in the JRC and to appraise if the internal control systems are effective.

In 2015, the indicator's value was 3.5, which is slightly higher than the target of 3.4. In addition, there is a 9% improvement for this indicator when compared to the 3.2 achieved in the last two years. This improvement evidences an increase in staff perception of the degree of implementation of the internal control standards in the JRC. The average score as well as the breakdown of the results for each question of the survey is given in Figure B-5 below.

Based on the survey results as well as on the analysis and the overall conclusion reported in Part 2 of this report, there is reasonable assurance that, overall, the JRC has suitable internal controls in place and working as intended; risks are being appropriately monitored and mitigated; and necessary improvements and reinforcements are being implemented.

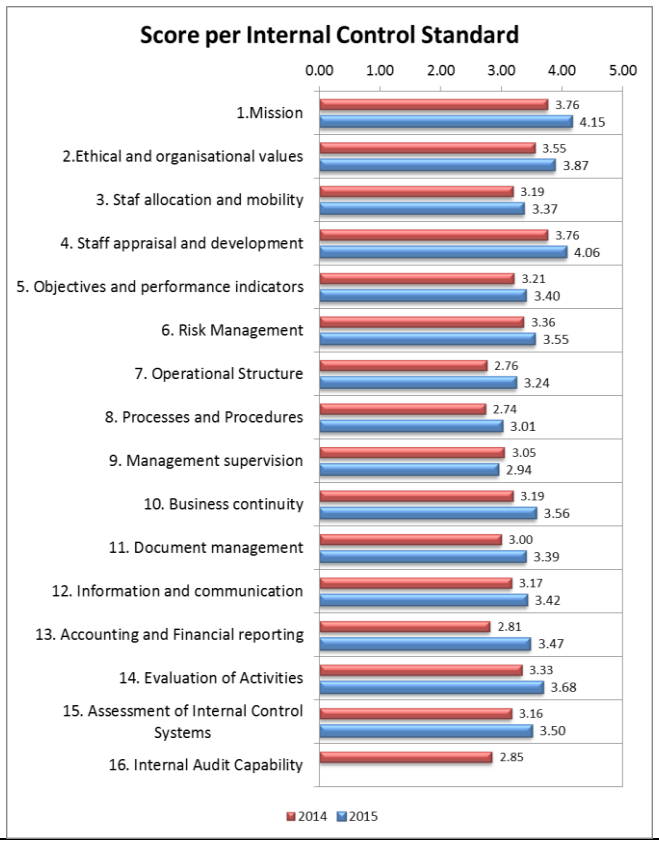
Implementation of Internal Control Standards in the JRC Definition: Average of scores (range between 1 ("Fully Disagree") and 5 ("Fully Agree")), obtained from the annual survey carried out to assess the staff perception of the degree of implementation of the Internal Control Standards in the JRC and to appraise if the internal control systems are effective. Source: JRC internal indicator	**Results** **<u>Average score 2015: 3.5</u> (Target for 2015: 3.4)** **Average score 2014: 3.2** 

Figure B-5: Average score as well as breakdown of the SPP KPI Nr 5 "Implementation of Internal Control Standards in the JRC". This indicator has been selected from Specific Objective 14

Conclusion:

- KPIs 1-4 show positive evolutions or stability at high, above target levels. Being representative of JRC's outputs and impacts, they provide assurance of the overall progress of the JRC as a scientific policy support organisation.
- KPI 5 on internal control provides assurance of the high level of awareness of the internal control standards.

C. Key conclusions on Management and Internal control (executive summary of section 2)

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

The Commission has adopted a set of internal control principles, based on international good practice, aimed to ensure 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 standards and having due regard to the risks associated with the environment in which it operates. The JRC 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 2.3 for further details.

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

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

D. Information to the Commissioner

The main elements of this report and assurance declaration, been brought to the attention of the European Commissioner for Education and Culture, Youth and Sports, Tibor Navracsics, who is also responsible for the JRC.

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

1.1 Intervention logic

A logic model[10], illustrating the relation between societal needs, the JRC legal basis as well as its resources, activities, outputs and impacts is depicted in Figure 1.1-1, below.

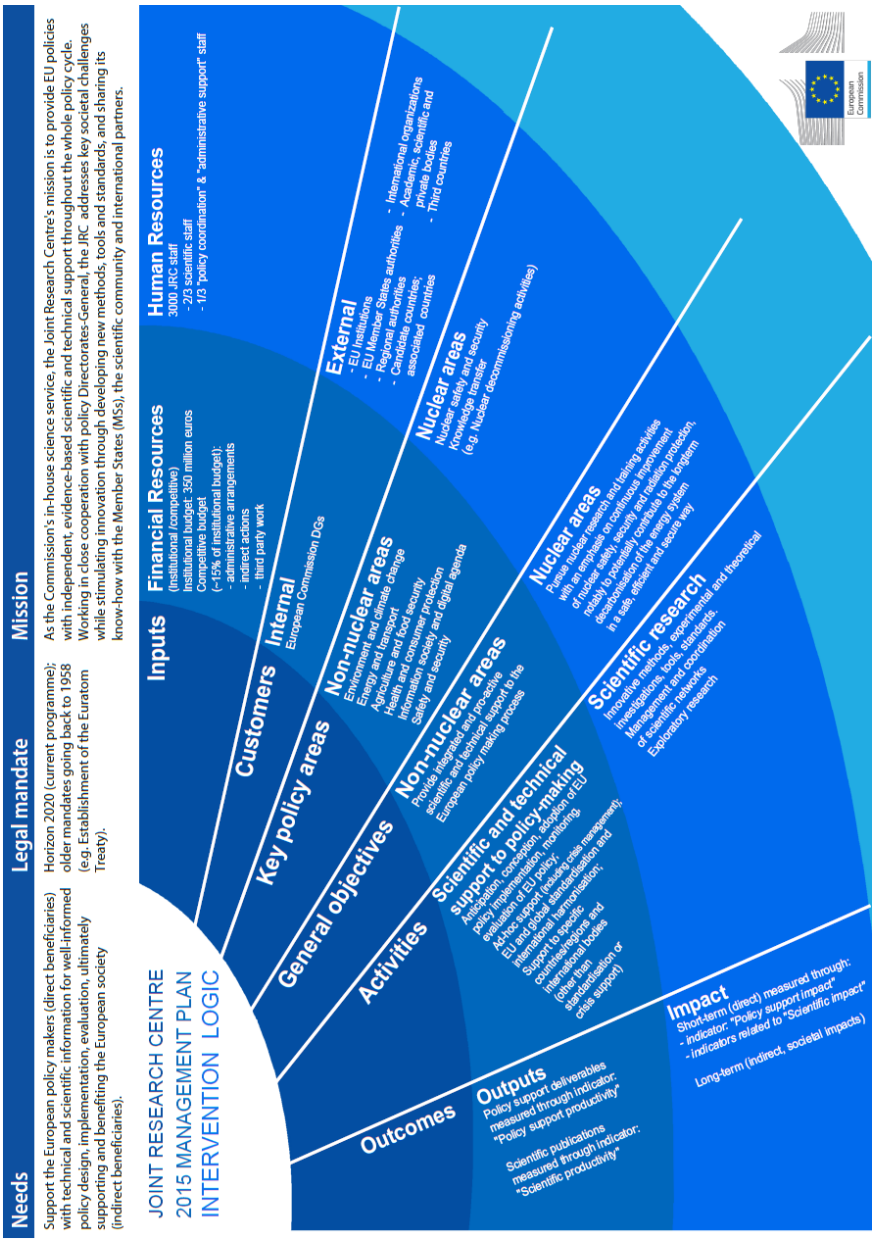


Figure 1.1-1. JRC logic model

[10] Terminology of the standing instructions for the production of the Management Plans.

1.2 General objectives of the policy

The JRC has two General Objectives:

1. General Objective 1: "Provide integrated and pro-active scientific and technical support to the European policy making process", and
2. General Objective 2: "Improve nuclear safety, security and radiation protection, and to contribute to the long-term decarbonisation of the energy system in a safe, efficient and secure way"

The General objectives are further broken down into specific objectives according to the priority areas of the Commission (see tables including indicators and further information below). The specific objectives are further broken down into Key Orientations (KOs) representing the JRC's Work Programme.

Note: the impact indicators 2 and 3 in the General Objectives 1 and 2 display the same values. This is because, contrary to most other JRC core indicators, these cannot be easily split thematically. For example a press article may refer to the JRC as an organisation but not necessarily to a detailed thematic content. The same applies to web-visits. Users may refer to general content on the global JRC website, not pursuing a deeper thematic search.

Finally, although theoretically possible, the value for impact indicator 4 is not split either in order to better illustrate whether the important 15% target is met.

<table>
<tr><td colspan="4">General objective 1: Provide integrated and pro-active scientific and technical support to the European policy making process</td><td>☒programme-based (Horizon 2020)
ABB 10 02</td></tr>
<tr><td colspan="5">Impact indicator 1: Policy support impact[11]
Definition: Number of occurrences of tangible specific impacts on European policies resulting from technical and scientific policy support provided by the Joint Research Centre
Source of data: Periodic Action Review (PAR), as of 2015 JRC Productivity and Impact Evaluation (PRIME)</td></tr>
<tr><td rowspan="2">Baseline (2013)</td><td rowspan="2">Value 2015</td><td colspan="2">Milestone</td><td>Target</td></tr>
<tr><td colspan="2">2017</td><td>2020
(end of H2020)</td></tr>
<tr><td>248</td><td>305</td><td colspan="2">220 ± 10</td><td>230[11] ± 15</td></tr>
<tr><td colspan="5">Planned evaluations: JRC Productivity and Impact Evaluation (PRIME) and Horizon 2020 mid-term evaluation.</td></tr>
<tr><td colspan="5">Impact indicator 2: Public visibility - Press coverage
Definition: Number of coverage pieces in top tier media
Source of data: JRC internal indicator</td></tr>
<tr><td rowspan="2">Baseline (30.11.2014)</td><td rowspan="2">Value 2015</td><td colspan="2">Milestone</td><td>Target</td></tr>
<tr><td colspan="2">2017</td><td>2020
(end of H2020)</td></tr>
<tr><td>131</td><td>142[12]</td><td colspan="2">140 ± 10</td><td>150 ± 10</td></tr>
</table>

[11] Milestone and long term target for this indicator were elaborated at the beginning of Horizon 2020 and reflect two opposing trends: a slightly upward and fluctuating evolution regarding in the total number of policy impacts identified on the one hand and a continuous predictable downward trend in resources.

[12] This is the indicator value is related to all JRC activities, with no distinction nuclear/non-nuclear

Planned evaluations: n.a.

Impact indicator 3: Public visibility – Visits to the JRC website

Definition indicator 3a: Number of page views on the JRC website

Definition indicator 3b: Number of visits to the JRC website

Source of data: JRC internal indicator

Baseline (30.11.2014)	Value 2015	Milestone 2015	Target 2020 (end of H2020)
Indicator 3a: 3.0 million Indicator 3b: 757 900	3a. 7.7 million 3b. 2.8 million	2.5 million 1.0 million	New website and statistical tool. Long-term target yet to be defined

Planned evaluations: n.a.

Impact indicator 4: Contractual income - Annual cashed income from activities outside Institutional budget (% of the Institutional budget)

Source: JRC internal indicator

Baseline (2013)	Value 2015	Milestone 2017	Target 2020
18%	18.9%[12]	(EC+Euratom) 15%	15%

Main outputs of General Objective 1 in 2015:

JRC publications can be consulted in the JRC Scientific Knowledge Portal http://skp.jrc.cec.eu.int/skp and in the publications repository http://publications.jrc.ec.europa.eu/repository

General objective 2: Improve nuclear safety, security and radiation protection, and to contribute to the long-term decarbonisation of the energy system in a safe, efficient and secure way

☒programme-based (EURATOM)

ABB 10 03

Impact indicator 1: Policy support impact

Definition: Number of occurrences of tangible specific impacts on European policies resulting from technical and scientific policy support provided by the Joint Research Centre

Source of data: Periodic Action Review (PAR), as of 2015 JRC Productivity and Impact Evaluation (PRIME)

Baseline (2013)	Value 2015	Milestone 2015	Target 2018 (end of Euratom)
63	67	61 ± 3	61[13] ± 5

Planned evaluations: JRC Productivity and Impact Evaluation (PRIME) and Horizon 2020 mid-term evaluation.

Impact indicator 2: Public visibility - Press coverage

Definition: Number of coverage pieces in top tier media

Source of data: JRC internal indicator

Baseline (30.11.2014)	Value 2015	Milestone 2017	Target 2020 (end of H2020)
131	142[12]	140 ± 10	150 ± 10

[13] For the definition of milestone and target please refer to footnote 11.

Planned evaluations: n.a.

Impact indicator 3: Public visibility – Visits to the JRC website

Definition indicator 3a: Number of page views on the JRC website

Definition indicator 3b: Number of visits to the JRC website

Source of data: JRC internal indicator

Baseline (30.11.2014)	Value 2015	Milestone 2015	Target 2020 (end of H2020)
Indicator 3a: 3.0 million Indicator 3b: 757 900	3a. 7.7 million 3b. 2.8 million	2.5 million 1.0 million	New website and statistical tool. Long-term target yet to be defined

Planned evaluations: n.a.

Impact indicator 4: Contractual income - Annual cashed income from activities outside Institutional budget (% of the Institutional budget)

Source: JRC internal indicator

Baseline (2013)	Value 2015	Milestone 2017	Target 2020
18%	18.9%[9]	(EC+Euratom) 15%	15%

Main outputs of General Objective 2 in 2015:

JRC publications can be consulted in the JRC Scientific Knowledge Portal http://skp.jrc.cec.eu.int/skp and in the publications repository http://publications.jrc.ec.europa.eu/repository

1.3 Specific objectives for operational ABB activities

Specific objectives and the JRC Work Programme: The JRC Work Programme 2015[14] implementing the relevant specific objectives of Horizon 2020/Euratom contains some 800 projects.

The JRC monitors continuously and throughout the year the production of deliverables. In 2015, some 1600 policy related outputs have been produced. Overall objectives were achieved.

With a total of 699 scientific articles published in peer-reviewed high-impact journals this indicator of scientific excellence has continued the positive trend and exceeded the target.

Finally, with some 370 policy support impacts, this impact indicator confirms its positive trend and exceeded its 2015 and long-term targets. This is a very positive result since the overall positive trend reflects amongst other a higher efficiency of translating scientific results and information in tangible added value and hence impact for the European policy makers.

The positive trend for all three indicators demands reconsidering JRC's milestones and long-term targets in the light of reduced resources in the future for the Management Plan 2016.

Content-wise, in line with the Management Plan 2015, the JRC has further refocused its scientific policy support on the ten priorities of the European Commission plus one priority of cross-cutting nature.

[14] As part of the rolling two-year JRC Work programme 2015-16

Since the large number of JRC outputs cannot be presented in the present report, a selection of highlights of policy support outputs and achievements related to specific objectives 1a to 1e, 2a to 2e and 3 of the JRC Management Plan 2015 is described below in section 1.4 below.

Table 1.3-1 shows the correspondence among general objectives, specific objectives and the policy areas to which they respond as well as the JRC key orientations of the detailed JRC Work Programme 2015 covered. The detailed description of all JRC outputs in 2015 can be found in the JRC repository PUBSY.

External Factors: The impact of the JRC's scientific policy support work can be shown at numerous levels. The most immediate impacts are at the level of European policy makers. It is at that level, where the most direct effects beyond JRC's control, i.e. external factors can be found. If for any reason, the JRC's support is not taken into account, then despite the research done, no impacts will occur, no utility will result, and hence this will not contribute to the policy impact indicator.

Such cases occur occasionally, and are generally beyond the JRC's control.

The JRC's contribution to policy making and its wider societal impact might be affected by changes in the external environment, i.e. unexpected changes in the political and social context.

The achievement of the JRC's main organisational objectives depends strongly on detecting and/or anticipating such external factors.

JRC MP Specific Objectives (SO)		
SO	**Definition**	**ABB lines**
Operational ABB activities		
Work Programme related Specific Objectives		
1.1	To provide customer-driven scientific and technical support to Union policies, while flexibly responding to new policy demands related to the JRC WP Key Orientations	Direct actions of JRC in support of Union policies (non-nuclear)
1.2		
1.3		
1.4		
1.5		
1.6		
1.7		
1.8		
1.9		
1.10		
1.11		
2.1	To improve nuclear safety including fuel and reactor safety, waste management and decommissioning and emergency preparedness	Direct actions of JRC in support of the Euratom programme
2.2	To improve nuclear security including: nuclear safeguards, non-proliferation, combating illicit trafficking and nuclear forensics	
2.3	To raise excellence in the nuclear science base for standardisation	
2.4	To foster knowledge management, education and training	
2.5	To support the policy of the Union on nuclear safety and security and the related evolving Union legislation	
3	Maintain scientific excellence in JRC core competences	Direct actions of JRC in support of Union policies and the Euratom programme
Other Specific Objectives		
4	Implement the Decommissioning and Waste Management Programme	Historical liabilities resulting from nuclear activities carried out by the JRC pursuant to the Euratom Treaty
5	Support DG ENER in the preparation of the Euratom presentation with respect to the obligations under the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	
6	6a: Provision of services and work on behalf of outside bodies	Competitice Enlargement and Integration activities
	6b: Scientific and technical support to Union policies on a competitive basis	
	6c: Operation of the high-flux reactor (HFR)	

Horizontal activities		
Policy strategy and coordination		Administrative and operational support for the JRC
7	Coordinate the planning, reporting, monitoring and evaluation of the JRC	
8	Develop and implement strategy, processes and infrastructure for JRC knowledge management and dissemination	
9	Coordinate international, inter-institutional and stakeholders relations	
10	Technical and administrative coordination of the JRC Euratom Steering Committee (JEST). Monitoring and reporting of the implementation of JESC decisions and actions.	
Management of the JRC		
11	To develop and coordinate core organisational functions, processes and systems, and to align them with the JRC's management objectives to improve operational efficiency of JRC administrative and support services, while reducing costs and risks, and to drive service excellence	
12	Recruit, train, assess, motivate and retain highly qualified staff so that effective and efficient operation of the DG as well as promotion of equal opportunities within the DG are ensured	
13	Plan, perform, monitor and report on the spending of financial resources so that sound financial management is ensured throughout the DG's activities	
14	Implement, maintain and report on an effective and reliable internal control system, so that reasonable assurance can be given that resources assigned are used according to the principles of sound financial management; that risk of errors in operations is minimised and that the control procedures put in place give the necessary guarantees concerning the legality and the regularity of the underlying transactions. Assess the compliance, efficiency and effectiveness of the control system through internal audit and by carrying out an assessment of the costs and benefits of controls. Ensure that controls in place adequately cover the risk of fraud and preventive measures are in place in line with the JRC Anti-Fraud strategy	
15	Define, plan, set up, maintain and develop high quality Information and Communication Technology (ICT) infrastructures, tools and services so that the staff is adequately supported in their operation	
16	Infrastructure development: Develop and implement a detailed plan for the evolution of JRC infrastructures (physical infrastructure, laboratory facilities, information technology (IT) infrastructure)	
Examples of specific efforts to improve economy and efficiency of financial and non-financial activities		
17	Devise and implement the JRC scientific strategy	
18	Close the loop of planning, execution, monitoring and evaluation	
19	Implement the JRC HR strategy	

Table 1.3-1. Guide to Specific Objectives of the JRC Management Plan 2015

1.3.1 ABB Activity "Direct actions of the Joint Research Centre (JRC) in support of Union policies"

Relevant general objective: Provide integrated and pro-active scientific and technical support to the European policy making process (GO 1)

Specific objectives 1.1 – 1.11 (contributing to H2020 Specific Objective 17): ☒programme-based: Horizon 2020

"To provide customer-driven scientific and technical support to Union policies, while flexibly responding to new policy demands related to the JRC Work Programme Key Orientations 1 to 11".

Result indicator 1:

Policy support impact - Number of occurrences of tangible specific impacts on European policies resulting from technical and scientific policy support provided by the Joint Research Centre

Source of data: Periodic Action Review (PAR), as of 2015 JRC Productivity and Impact Evaluation (PRIME)

Baseline 2013	Value 2015	**Milestone** 2017	**Target** 2020 (end of H2020)
248	305	220 ± 10	230 ± 15

Result indicator 2:

Number of peer-reviewed publications in high impact journals (sub-population of SPP KPI 2) - Scientific article contributions to periodicals or conference proceedings published as journals, the titles of which are listed in the Thomson-Reuters Science Citation Index Expanded (SCI-e) and/or Social Science Citation Index (SSCI)

Source of data: Periodic Action Review (PAR), as of 2015 JRC Productivity and Impact Evaluation (PRIME)

Baseline 2013	Value 2015	**Milestone** 2017	**Target** 2020 (end of H2020)
453	518	470 ± 15	480 ± 20
Main outputs in 2015:			
The JRC Work Programme lists several hundreds of planned outputs. The list and their nature and context can be found at the following internal Commission link: http://apps.jrc.cec.eu.int/jpbma			

1.3.2 ABB activity "Direct actions of the Joint Research Centre (JRC) in support of the Euratom Programme"

Relevant general objective: To pursue nuclear research and training activities with an emphasis on continuous improvement of nuclear safety, security and radiation protection, notably to potentially contribute to the long-term decarbonisation of the energy system in a safe, efficient and secure way**.** (GO 2)

Specific objectives (SO) 2.1-2.5:

(Contributing to EURATOM Research & Training Programme Specific Objectives 9, 10, 11, 12 and 13, respectively).

☒programme-based: EURATOM Research and Training Programme

The following specific objectives are all related to the JRC Work Programme Key Orientation 3.3: "Nuclear safety and security" and SO 2.1 and SO 2.2 also to the Key Orientation 9.1 "Global safety and security"**.**

SO 2.1: To improve nuclear safety including fuel and reactor safety, waste management and decommissioning, and emergency preparedness.

SO 2.2: To improve nuclear security including: nuclear safeguards, non-proliferation, combating illicit trafficking and nuclear forensics

SO 2.3: To raise excellence in the nuclear science base for standardisation

SO 2.4: To foster knowledge management, education and training

SO 2.5: To support the policy of the Union on nuclear safety and security and the related evolving Union legislation

Result indicator 1:

Policy support impact - Number of occurrences of tangible specific impacts on European policies resulting from technical and scientific policy support provided by the Joint Research Centre

Source of data: Periodic Action Review (PAR), as of 2015 JRC Productivity and Impact Evaluation (PRIME)

Baseline 2014		Value 2015	**Milestone** 2015	**Target** 2018 (end of H2020/Euratom)
SO 2.1	13	16	12 ± 1	12 ± 2
SO 2.2	15	22	14 ± 1	14 ± 2
SO 2.3	15	9	14 ± 1	14 ± 2
SO 2.4	13	13	12 ± 1	12 ± 2
SO 2.5	7	7	7 ± 1	7 ± 1

Result indicator 2:

Number of peer-reviewed publications (sub-population of SPP KPI 2) - Scientific article contributions to periodicals or conference proceedings published as journals, the titles of which are listed in the Thomson-Reuters Science Citation Index Expanded (SCI-e) and/or Social Science Citation Index (SSCI)

Source of data: Periodic Action Review (PAR), as of 2015 JRC Productivity and Impact Evaluation (PRIME)

Baseline average 2010-13		Value 2015	**Milestone** 2015	**Target** 2018 (end of H2020/Euratom)
SO 2.1	72 (64)	80	72 ± 4	72 ± 8
SO 2.2	16 (14)	16	16 ± 1	16 ± 2
SO 2.3	58 (52)	63	58 ± 4	56 ± 8
SO 2.4	35 (31)	7	34 ± 2	34 ± 4
SO 2.5	n.a.	15	n.a.	n.a.

Main outputs in 2015:

The JRC Work Programme lists several hundreds of planned outputs. The list and their nature and context can be found at the following internal Commission link: http://apps.jrc.cec.eu.int/jpbma

1.3.3 ABB Activity "Direct actions of the Joint Research Centre (JRC) in support of Union policies" and ABB activity "Direct actions of the Joint Research Centre (JRC) in support of the Euratom Programme"

In order to fulfil its mission, safeguard its competence and to acquire new knowledge, the JRC continues to develop a strong scientific knowledge base in its core areas of work. This will be accomplished during 2015 by means of:

Maintaining a high reputation in the scientific community by publishing scientific results in peer reviewed journals.

Strengthening and building new strategic partnerships with peer organisations in Europe and beyond.

Carrying out Exploratory Research to strengthen competences and tackle new scientific areas of potential policy relevance.

This heading presents details of Specific Objective (SO) 3 "Maintain scientific excellence in JRC core competences", which is applicable to and supports General Objectives 1 and 2, i.e. both ABB activities 10 02 and 10 03 (JRC direct actions in support of Union policies and JRC direct actions in support of the Euratom Programme).

Relevant general objective(s):

JRC General objective 1 : Provide integrated and pro-active scientific and technical support to the European policy making process

JRC General objective 2: To pursue nuclear research and training activities with an emphasis on continuous improvement of nuclear safety, security and radiation protection, notably to potentially contribute to the long-term decarbonisation of the energy system in a safe, efficient and secure way

Specific objective 3:

Maintain scientific excellence in JRC core competences

Result indicator 1: Peer-reviewed publications listed in SCI-e and SSCI - Scientific article contributions to periodicals or conference proceedings published as journals, the titles of which are listed in the Thomson-Reuters Science Citation Index Expanded (SCI-e) and/or Social Science Citation Index (SSCI)

Source: Periodic Action Review (PAR), as of 2015 JRC Productivity and Impact Evaluation (PRIME)

Baseline 2013	Value 2015	**Milestone**	**Target**
634	EC: 518 Euratom: 181	EC: (2017) 480 Euratom: 2015: >155	EC: 2020: 500 Euratom: 2018: >155

Result indicator 2: Peer-reviewed publications co-authored with non-JRC authors - Proportion of peer-reviewed publications co-authored with non-JRC authors/total number of peer-reviewed publications

Source: Periodic Action Review (PAR), as of 2015 JRC Productivity and Impact Evaluation (PRIME)

Baseline 2013	Value 2015	**Milestone 2017**	**Target 2020**
73.5%	71.5%	(EC+Euratom) 72±3%	72±3%

Result indicator 3: International collaborations - Proportion of peer-reviewed publications co-authored with organisations from countries outside ERA/total number of peer-reviewed publications

Source: Periodic Action Review (PAR), as of 2015 JRC Productivity and Impact Evaluation (PRIME)

Baseline 2013	Value 2015	**Milestone 2017**	**Target 2020**
24%	24%	(EC+Euratom) 21±3%	21±3%

1.3.4 Examples of policy support taken from the JRC Work Programme

In line with the renewed emphasis on the JRC's horizontal character reflected in the mission letter from President Juncker to Commissioner Navracsics inviting him "to progressively develop the organization's role as a service supporting all Commission services with its knowledge and its expertise", the JRC provided scientific support to a large number of policy DG's covering all priorities of the Commission. It is therefore hardly justified to select highlights from only a few policy priorities in the Annual Activity Report. This argument is also valid, since partner DGs are stakeholders of the JRC and expect to see work done for them reflected in the AAR. For the purpose of the present AAR 2015 and the JRC Annual Report 2015, JRC senior management has therefore selected highlights from basically all policy priorities. The examples are listed here below. Moreover, a detailed description can be found in Annex 14 of the present document. In order to convey the notion of highlight, the number of the examples taken from the various policy areas reflect approximately the resources attributed.

Jobs, Growth and Investment

Strengthening Europe’s competitiveness and stimulating investment to create more jobs is a top priority for the European Commission. Sustainable growth requires smart measures that will not create debts, and is the best use of the available public funds to boost private investment in the real economy. In order to succeed, the Commission is focusing on improving the investment environment and strengthening fund absorption. New, sustainable and job-creating projects that will help restore Europe’s competitiveness are being identified and promoted.

During 2015, in support of this endeavour, the JRC continued its work on the circular economy and carried out a series of research activities on aspects of economic policy, regional competitiveness and employability criteria. The JRC also explored the link between exports and jobs, analysed the impact of investments at country and local level, and looked at healthcare as a precondition for a productive and active population.

Some examples of the large number of achievements and impacts of the JRC in this area are described in detail in annex 14. These examples relate to: Supporting a circular economy; EU exports matter for jobs and income back home:

- Smart specialisation for increased competitiveness;
- Tackling macroeconomic imbalances;
- Country-specific recommendations – assessing the impacts of tax reforms;
- Impact assessment of EU investments and territorial policies;
- Analysing how education and skills contribute to employability;
- Better healthcare standards

A Resilient Energy Union

The EU needs to pool its resources and combine its infrastructures to make a real Energy Union, which aims to further integrate the internal energy market while diminishing dependence on fuel and gas imports. Renewable energies and energy efficiency are also priorities for the Commission, and the JRC’s work fully supports the efforts being made to make energy more secure, affordable and sustainable.

In 2015, the JRC inaugurated a new state-of-the-art laboratory dedicated to electric vehicles and smart grid interoperability. This lab will cooperate with its US partner to ensure solutions are harmonised on both sides of the Atlantic. A smart specialisation platform on energy is being developed to support EU regions in fostering innovative low-carbon solutions. JRC work has also focused on the security of gas supply, photovoltaics and the urban application of smart grids.

Some examples of the large number of achievements and impacts of the JRC in this area are described in detail in annex 14. These examples relate to:

- New lab for the interoperability of electric vehicles and smart grids;
- Smart specialisation to help EU regions develop low-carbon solutions;
- Strengthening the security of energy supply;
- Smart grids in Europe: outlook and urban application;
- PV trends and improved measurements

Forward-looking climate change policy

Climate change was a key issue for the European Union in 2015, when the EU played a key role in brokering the historic agreement in Paris, where 195 countries adopted the first-ever universal, legally binding global climate deal. The EU is at the forefront of the fight against climate change and has established itself as a key player in the negotiations under the United Nations Framework Convention on Climate Change (UNFCCC).

The work carried out by the_JRC has been instrumental in delivering scientific evidence and technical assistance to EU policy-making. JRC studies have provided, among others, new data on global emissions and sources of urban pollution, projections of future emissions and their impact and guidance on how to report on greenhouse gas (GHG) emissions from land use, land-use change and forestry.

Some examples of the large number of achievements and impacts of the JRC in this area are described in detail in annex 14. These examples relate to:

- Shaping EU climate policy;
- Global growth in CO_2 emissions almost stalled in 2014;
- Guidance for land use, land-use change and forestry emissions reporting (including the contribution of the land-use sector to the Paris Climate Agreement);
- Measuring the impact of increased use of renewables on GHG emissions;
- Impacts of climate change;
- JRC to evaluate Member States' air quality data

A connected Digital Single Market

A connected Digital Single Market may generate up to EUR 250 billion of additional growth in the course of the next five years. Investing time and resources to ensure interacting, borderless digital services will result in hundreds of thousands of new jobs, mainly for younger jobseekers, a vibrant knowledge-based society and social progress. The Commission’s strategy is focusing on six areas that will put Europe at the forefront of this digital revolution: building trust and confidence, removing restrictions, ensuring access and connectivity, building the digital economy, promoting e-society, and investing in world-class ICT research and innovation.

Through its research activities, the JRC is addressing aspects and challenges in all the above areas. In 2015, it analysed the online services market, used behavioural sciences to improve online privacy, and carried out experiments to convert the radio spectrum into a resource for broadband mobile access. The JRC’s research also showed that SMEs made the best use of European funding for ICT research.

Some examples of the large number of achievements and impacts of the JRC in this area are described in detail in annex 14. These examples relate to:

- Online services and trade: building blocks for the Digital Single Market policy;
- SMEs make best use of European ICT research funding;
- Using the radio spectrum for broadband mobile access;
- Behavioural studies in support of online privacy

A deeper and fairer Economic and Monetary Union

Europe needs a deeper and fairer Economic and Monetary Union (EMU) to preserve the stability of the euro and to enhance the convergence of economic, fiscal and labour market policies across the Member States. The EU is making headway with the reinforcement of economic governance and the launch of the banking union. However, large disparities in economic performance, close to 18 million unemployed and an increased risk of social exclusion demonstrate the need for further progress.

It was against this background that in 2015 the JRC provided solid scientific support for Commission initiatives towards completing the banking union and a better understanding of the impact of fiscal measures on economic and societal outcomes. The JRC also contributed to the social impact assessment of the third Greek stability programme and estimated structural deficits within the EU's economic governance framework.

Some examples of the large number of achievements and impacts of the JRC in this area are described in detail in annex 14. These examples relate to:

- Completing the banking union: Fair and efficient corporate taxation in the EU;
- Understanding the societal and economic impacts of fiscal policy measures ;
- Reinforced economic governance

A deeper and fairer internal market with a strengthened industrial base

The EU's single market is a strong asset in times of increasing globalisation. The Union needs to build on this strength and fully exploit its potential in order for EU companies and industry to thrive in the global economy. European policy-makers are focusing on creating an environment that will reinforce a strong and high-performing industrial base. Key to this objective are investments in new technologies, an improved business environment, easier access to markets and finance - particularly for SMEs - as well as workers with the skills required by industry.

Notably, in 2015 was the support given by JRC in drafting regulations for the new on-road tests for cars, analysing the competitiveness of the EU's oil-refining sector and testing the precision of Galileo signal receivers. It also contributed to the ongoing revision of nanomaterial definition and strengthened the industrial base with two new state-of-the-art technologies stemming from nuclear research.

Some examples of the large number of achievements and impacts of the JRC in this area are described in detail in annex 14. These examples relate to:

- Capping road transport emissions - new on-road tests for cars;
- The EU petroleum-refining sector: fitness check;
- Galileo: high-precision receivers ready for navigation;
- Defining nanomaterials;
- New information system on raw materials;
- From nuclear research to indoor localisation and surgery technologies

An area of justice and fundamental rights based on mutual trust

Combating discrimination and cross-border crime, such as human trafficking, smuggling and cybercrime, is a shared European responsibility that must be addressed while guaranteeing fundamental rights and values, including the protection of personal data.

The JRC's scientific work has contributed to this endeavour, for example, by analysing the available technology for automatic fingerprint identification that could be used at borders to reinforce security in the Schengen area, by developing a new method of

verifying vessel positions that would help fight maritime crime, and by proposing new approaches for a quicker recognition of new drugs, which represent a real challenge for customs authorities and forensic laboratories. The JRC's long-standing expertise in analysing container data has also contributed to new legislation that will facilitate fraud investigations linked to international trade. Last but not least, the JRC has studied how children interact with digital technologies, and has developed new tools to empower and help them enjoy a safe and responsible digital life.

Some examples of the large number of achievements and impacts of the JRC in this area are described in detail in annex 14. These examples relate to:

- Towards automatic fingerprint identification for the Schengen Area;
- Tracking cargo containers to fight customs fraud;
- Fighting maritime crime;
- Fast recognition of new drugs;
- Towards safer internet use by children.

A stronger global actor

When it comes to foreign and security policies, the European Union needs better mechanisms to anticipate events early and to swiftly identify common responses. This includes bringing together, more effectively, the different policies and tools that contribute to Europe's external action. The EU has a strong record of international cooperation. It provides development support to a large number of countries in the world and also assists them in responding to man-made or natural crises. The Sustainable Development Goals agreed by the UN in 2015 are a key milestone.

In 2015, the JRC contributed in several ways to making the EU a stronger global actor. For example, it created a new online knowledge centre to help EU countries and beyond to better manage disaster risk and, with its early-warning and monitoring systems, it supported the EU's response to several disasters as well as its efforts to achieve the new Sustainable Development Goals agreed at UN level. The JRC's expertise in nuclear safety and security also contributes to enhancing the Union's role in this area.

Some examples of the large number of achievements and impacts of the JRC in this area are described in detail in annex 14. These examples relate to:

- Minimising the risk of disasters – new knowledge centre;
- Supporting EU disaster-response operations;
- UN's Sustainable Development Goals and related JRC work;
- Increasing nuclear security with new tools and methods;
- Towards a new generation of nuclear energy systems.

1.3.5 ABB activity "Historical liabilities resulting from nuclear activities carried out by the Joint Research Centre pursuant to the Euratom Treaty"

Relevant general objective(s): n.a.	
Specific objective 4 (definition): Historical liabilities resulting from nuclear activities carried out by the JRC pursuant to the Euratom Treaty ➢ Implement the Decommissioning & Waste Management Programme (see progress indicators)	☒ Euratom
This is a long term objective of the JRC, which is related to the management of the liabilities	

resulting from nuclear activities carried out by the JRC pursuant to the Euratom Treaty.

Due to the status of their facilities and to their respective environment, the Ispra site (IT) is engaged in a wider range of activities than the three other sites Geel (BE), Karlsruhe (DE) and Petten (NL), where most facilities are still operational.

Result indicator:

"**Proportion of progress of decommissioning programme (in budget consumption)"**

This indicator is presented broken down to the situation on the four relevant JRC sites

Source: The values are obtained from the managers of the decommissioning process on the various sites.

1. Decommissioning and waste management activities at **Ispra** *(calculation of progress does not include final repository fees budget)*

Baseline	Value 2015	Milestone 2015	Target (result at the end of the programme)
40%	43%	45%	100% (in 2030)

2. Pre-decommissioning - waste management activities at **Karlsruhe**

Baseline	Value 2015	Milestone 2015	Target (result at the end of the programme)
18%	19%	19%	100% (date not defined)

3. Pre-decommissioning and waste management activities at **Geel**

Baseline	Value 2015	Milestone 2015	Target (result at the end of the programme)
20%	20%	20%	100% (date not defined)

4. Pre-decommissioning and waste management activities at **Petten**

Baseline	Value 2015	Milestone 2015	Target (result at the end of the programme)
25%	25%	25%	100% (date not defined)

Note: With respect to the evolution of the programme and in comparison with the previous AAR, new indicators have been defined which reflect better the progress of the main on-going projects and the respective expected outputs.

Main outputs in 2015

Main outputs for 2015 broken down according to the four relevant JRC sites can be found in Annex 16.	indicator	target

Relevant general objective(s):

JRC General objective 2: To pursue nuclear research and training activities with an emphasis on continuous improvement of nuclear safety, security and radiation protection, notably to potentially contribute to the long-term decarbonisation of the energy system in a safe, efficient and secure way

Specific objective 5 (definition):

Support DG ENER in the preparation of the EURATOM presentation with respect to the obligations under the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management.

☒programme-based (please name the related spending programme)

☒ Non programme-based

Main outputs in 2015

JRC supported DG ENER through the provision of information to the relevant chapters of the EURATOM Joint Convention Report in a continuous and interactive process.

1.3.6 ABB activity "Competitive and Enlargement & Integration activities"

Relevant general objective(s): N/A

Specific objective 6: the specific objectives are as follows:

6a. Provision of services and work on behalf of outside bodies

6b. Scientific and technical support for Union policies on a competitive basis

6c. Operation of the high-flux reactor (HFR)

Brief description:

6a. Provision of services and work on behalf of outside bodies (10 04 02)
This includes research and supply of services under contract to third parties, such as industry, national or regional authorities, as well as contracts in the context of Member States' research programmes. The main objective driving the participation of the JRC in competitive activities is the development of added value to its institutional programme (acquisition/development of knowledge, networking increase, benchmarking, etc.).

6b. Scientific and technical support for Union policies on a competitive basis (10 04 03)
This addresses scientific support tasks performed by the JRC, – in addition to its Institutional Research Framework Programme – and carried out on a competitive basis in support of the European Union's policies, outside of Horizon 2020.

6c. Operation of the high-flux reactor (HFR) (10 04 04)
Chapter 10 04 04 is a budgetary structure intended to receive appropriations of earmarked nature from the Supplementary Research Programme of the HFR in Petten. This Supplementary Programme being fully covered by the financing given by the participating Member States (currently the Netherlands, Belgium and France); it requires a budgetary structure but does not require any financing in commitments or payments from the Commission Budget.

This chapter covers the implementation of the **HFR Supplementary Research Programme 2012-2015 that has the following** scientific and technical objectives:

— to provide a safe, steady and reliable neutron flux for experimental purposes,
— to perform research and development on: material and fuel science for the improvement of the safety of existing nuclear and future reactors (both fission and fusion); radioisotopes for medical applications, reactor ageing and life management, and on waste management,
— to act as a training facility hosting doctoral and post-doctoral fellows in performing their research activities through national or European Programmes.

The reactor is also used for the commercial production of radio-isotopes totalling more than 60% of all the 10 million medical diagnoses executed each year in Europe. It is a fundamental supplier for European radiopharmaceutical companies in this field.

6a, 6b. Result indicator: Contractual income - Annual cashed income from activities outside Institutional budget (% of the Institutional budget)

Baseline 2013	Value 2015	Milestone 2017	Target 2020
18%	18.9%	15%	15%

Main outputs in 2015

Description	indicator	target
6c. - Annual report 2014 - Planning for new	1 Council Decision in the New Supplementary programme	1 Council Decision in the New Supplementary programme

supplementary programme 2016-2019 - Due to Member States' late submission of responses the Council decision on the New Supplementary programme is still pending		

1.3.7 Policy strategy and coordination

Specific objective related to the function "**Policy strategy definition and coordination"** **Specific objective 7:** Coordinate the planning, reporting, monitoring and evaluation in the JRC.
Main outputs in 2015
Coordination of Work Programme Process: The coordination of the execution of the JRC Work Programme 2015/16 was assured without any significant issue. Moreover, the coordination of the planning of the JRC Work Programme 206/17 was supported for the first time by a newly developed internal evaluation, the ex-ante assessment, which helped to keep the JRC's work integrated with the Commission's priorities. Development of Work Programme Procedure: In order to be ready for the rollout of the new JRC strategy, the JRC Work Programme Planning, Execution, Monitoring and Evaluation cycle was subjected to an internal review carried out by representatives of the scientific and horizontal directorates. The overall objective was to simplify the process with a view to absorb new working methods such as competence and knowledge centres into the planning cycle. After the approval of the report end of 2015, the JRC is now implementing the reviewed procedures in the context of the WP 2017/18 planning process. Full implementation of the review will take about two years and addresses also the underlying knowledge management structure. Evaluation & SPP cycle: JRC's internal ex-post evaluation, the JRC Productivity and Impact Review (PRIME) was implemented and fed information into the Programme Statements of the draft Budget procedure as well as into the Management Plan and Annual Activity Reports. A new internal evaluation method, the ex-ante assessment framework was designed, tested in a pilot exercise in May 2015 and eventually being implemented in the context of the WP 2016/17 planning. This new method closes the planning, execution, monitoring and evaluation cycle of the JRC. The method has been further developed in the context of the above-mentioned WP cycle review and it will be implemented again for the planning of the JRC WP 2017/18. The JRC SPP processes were subject to an audit of the Internal Audit Service and started implementation of the recommendations in the last quarter of the year. The JRC indicator system was further integrated with the on-going development at the level of the Integrated Management System, the JRC's publication archive Pubsy and others. Strengthening the integration of JRC scientific advice into policy-making and better relations with policy DGs: Objectives and outputs were achieved as planned. MoUs are updated and the interactive platforms on Jive are active. Science advice to policy and related training: Objectives and outputs were achieved as planned. As a highlight, it is mentioned that the first JRC/IIASA summer school on evidence

and policy hosted by IIASA was held, where scientists and policy officers working in the field of energy, including links to climate and air quality, learnt how to better use evidence for policy-making. Given the success of the initiative, both organisations agreed to continue it on an annual basis.
The importance of science in improving the culture of evidence-informed policy-making was also stressed at the **Science meets Parliaments** event. This occasion brought together scientists and members of the European and national parliaments, and established the basis for greater and continued cooperation between scientists and policy-makers. Several umbrella scientific organisations also participated, including the European Academies Science Advisory Council (EASAC), the Conference of European Schools for Advanced Engineering, Education and Research (CESAER), the European Council of Academies of Applied Sciences, Technologies and Engineering (Euro-CASE), All European Academies (ALLEA), the Leibnitz Association and the United Nations Educational, Scientific and Cultural Organization (UNESCO). The event was organised by the JRC and the European Parliament's Science and Technology Options Assessment (STOA) panel and builds on successful experiences from similar events organised in several Member States, such as Germany, France and the United Kingdom.

Modelling: The JRC now has a rolling inventory of its participation in interservice groups, which makes it possible to trace JRC contributions to the impact assessements being prepared in those interservice groups. This inventory is thus a subset of the inventory of all interservice groups and their impact assessments.

The "Model inventory and data access system" (MIDAS) has been agreed to become a Commission-wide inventory. Preparations for collecting user requirements and populating the inventory with models run/used by policy DGs were started.

A concept for a "competence centre for modelling" was adopted by the JRC, for launch in 2016.
The conference on the quality assurance of models has been postponed, and will likely be merged with the launch of the "competence centre for modelling".

Fact & Figures service: Fact & Figures service: The "Facts and Figures" reports continued to be provided in accordance with the JRC internal demand for this service. There were two country reports delivered containing statistical information about main macro-economic and Europe 2020 headline indicators, co-authorship of scientific publications and a brief political and economic review. The dedicated webpage, accessible through the platform Connected, was updated accordingly.

Specific objective related to the function **"Policy strategy definition and coordination"**

Specific objective 8: Develop and implement strategy, processes and infrastructure for JRC knowledge management and dissemination.

Main outputs in 2015

Objectives and outputs were achieved as planned. Some highlights are listed below:

- The Progress Monitoring of WP implementation is active and updates of the state of the WP can be produced at any time.
- The JRC evaluation portfolio has been completed by two new tools:
    - The ex-ante assessment framework, already described in the context of the new JRC Strategy has been tested in summer 2015 in the context of the planning of the WP 2016-17.
    - The bibliometric toolbox for analysing scientific publications has been extended to

include all types of JRC scientific publications.

  - On top of that, a pilot exercise for analysing scientific social media has been conceived and launched in the last quarter of the year. If successful, the method will complete the JRC evaluation portfolio.

- A competence mapping exercise has been started and was already used in the context of the development of the JRC Strategy. The mapping is based on a methodology developed by the JRC for analysing the nature and frequency of the competences of JRC staff, in particular scientific staff. The exercise will be continued in order to provide updated competence information in support of the implementation of the JRC Strategy.
- Various inputs have been produced for updating the JRC Knowledge Management strategy, in action since 2010. These include conclusions from the WP cycle review, the needs resulting from the JRC Strategy process, needs and objectives identified in discussions with various DGs as well as the evaluation process, including the external FP7 ex-post evaluation. Based on these, the JRC knowledge management strategy will be updated in the course of 2016.
- After several seminars held in the context of (amongst others) the phasing-in of the ex-ante assessment framework the JRC has developed a communication/information strategy for its SPP processes.

Specific objectives related to the function "**Policy strategy definition and coordination"**

Specific objective 9: "Coordinate International, Inter-institutional and Stakeholder Relations"

Address in an active and coordinated manner the JRC's relations and assure visibility among key stakeholders within the EU decision making bodies, EU Member States, Horizon 2020 Associated Countries, Enlargement and Neighbourhood Policy Countries, international organisations, regional cooperation bodies and key partner countries, scientific community, industry and academia.

Main outputs in 2015

Collaboration with European and international partners is essential to enhance the JRC's capability to provide scientific evidence for informed policy-making. Through such collaboration, the JRC exchanges knowledge, maintains a high level of scientific expertise and also opens up its facilities to other research organisations.
Objectives and outputs were achieved as planned. Below a few highlights are listed; Other examples have been presented under Specific objective 7, i.e. summer school and Science meets Parliament conference.

At present, the JRC collaborates with over 1 000 organisations worldwide. In 2015, it concluded new agreements with European partners, such as the Latvian Ministry of Education and Science and its Ministry of Economics, the Slovak Academy of Sciences, Cambridge University in the UK, as well as with international partners, such as the International Institute for Applied Systems Analysis (IIASA), the US University Corporation for Atmospheric Research (UCAR), and the Chinese Academy of Sciences' Institute of Remote Sensing and Digital Earth (CAS-RADI).

Deepening scientific collaboration with Latvia and Slovakia

In June, the JRC and the **Latvian Ministries of Education and Science and Economics** signed a Memorandum of Understanding in an effort to deepen their existing cooperation. One of the focus areas addresses energy, in particular the security of energy supply, as well as renewable energy, including biomass, smart grids and energy efficiency. Current cooperation already includes about 20 joint projects, networks and bilateral agreements in different research fields. During the six months of the Latvian Presidency of the Council of the European Union, the

JRC actively cooperated with Latvia, in particular on topics concerning smart specialisation and standardisation.
In the same month, another Memorandum of Understanding was signed with the **Slovak Academy of Sciences.** This set the framework for future collaboration in the fields of energy, transport, nanotechnology, reference materials, health and environment, innovation and growth. The JRC and the Slovak Academy of Sciences have already cooperated successfully on several scientific projects under the EU's Framework Programmes for research and innovation, as well as within international scientific networks, such as the Academies of Sciences of the Danube region. Active co-operation with the Slovak Republic will continue during the Slovak Presidency of the EU, in the second half of 2016. The JRC will organise and/or participate in several joint events which will take place during this period.

Enhanced collaboration for better use of evidence for policy-making

The JRC and the **University of Cambridge** (UK) decided to expand their bilateral collaboration by signing a Memorandum of Understanding aimed at developing practices in the use of evidence to inform policy-making, and increasing the number of academic exchanges and joint research projects. A pilot activity on green growth and sustainability is already being developed.

International partnerships addressing global challenges

In June, the JRC signed a new arrangement with **the Chinese Academy of Sciences' Institute of Remote Sensing and Digital Earth (CAS-RADI)** in the areas of air quality, human settlement detection and characterisation, land and soil mapping, land cover mapping, digital earth sciences and agricultural monitoring. The parties already have a long-standing collaboration that has delivered a number of tangible outcomes, such as the development of a shared vision of Digital Earth – a participative framework to share information about the state of our planet and the complex interactions between society and the physical environment, and a set of disaster impact methodologies in the field of disaster management.
In July, during an official trip to the United States, the JRC's Director-General Vladimir Šucha also signed a new arrangement with the **America's University Corporation for Atmospheric Research (UCAR)**, focusing on climate prediction, monitoring and the development of joint scenarios and evaluation of impacts to better inform international policy-making. Under this agreement, the JRC and UCAR also agreed to work together on air-quality monitoring and alternative applications of remote-sensing instruments, as well as exploring potential cooperation in the field of vulnerability/resilience and risk assessments. The trip to the US was also an opportunity for the JRC's Director-General to speak at the European Institute, a Washington-based public-policy organisation devoted to transatlantic affairs, and to present the challenges in using scientific evidence to support policy-making. On that occasion, a number of meetings were organised to discuss ongoing and future cooperation with US policy-makers and key research partners.

JRC hosts Brazilian scientists

As of September, the JRC opened its doors to Brazilian scientists for a period of up to two years within the framework of the **Brazilian Mobility Programme 'Science Without Borders'**. Science and technology are core elements of EU-Brazil relations, and the arrival of the Brazilian scientists confirms the JRC's engagement towards reinforcing scientific collaboration. This opportunity stems from the 2013 cooperation arrangement between the JRC and Brazil's Ministry of Science, Technology and Innovation, which foresees strengthening cooperation, enhancing science-based support to policy-making, and boosting innovation in a wide range of fields, including disaster prevention and crisis management, climate change and the sustainable management of natural resources, energy, nanotechnologies, and ICT. The successful candidates work on projects such as forest degradation monitoring by means of remote sensing, assessing and monitoring biodiversity and alien invasive species in Brazilian protected areas, nanotoxicology, economic analysis of global agricultural markets, molecular biology for authentication of agricultural products, as well as development of quality assurance and control tools for the monitoring of pollutants in water.

Specific objective related to the function "**Policy strategy definition and coordination"** **Specific objective 10**: **Technical and administrative coordination of the JRC Euratom Steering Committee (JESC). Monitoring and reporting of the implementation of JESC decisions and actions.**
Main outputs in 2015
The JRC provided the technical and administrative coordination of the JRC Euratom Steering Committee (JESC) as planned, producing agenda, briefing, concept papers, minute of meetings, follow-up of meetings etc.

1.4 Management of the JRC

1.4.1 ABB activity 10 01: Administrative support for the JRC; Specific objective 11: "Development and coordination of core organisational functions, processes and systems"

Specific objective 11: To develop and coordinate core organisational functions, processes and systems, and to align them with the JRC's management objectives to improve operational efficiency of JRC administrative and support services, while reducing costs and risks, and to drive service excellence.	
Indicator 1: Proportion of local support staff Definition: Number of intra-muros jobs in support and coordination functions in a local role / Total number of intra-muros jobs * 100. Source: "HR screening exercise" (Owner: DG HR).	
Baseline (23/01/2015) 7.1%	**Target** (2015) 7.4%
Indicator 2: JRC internal customer satisfaction index regarding the efficiency of JRC support services Definition: Average of scores "Satisfied" and "Somewhat Satisfied" over all services included in the questionnaire of the JRC internal customer satisfaction survey Source: JRC internal survey (Owner: JRC.B.1)	
Baseline (31/12/2015) N/A No survey carried out in 2015	**Target** (2015) 75%
Indicator 3: Overall job satisfaction of JRC staff Definition: Average of scores "Very Satisfied" and "Satisfied" extracted from the EC Staff Satisfaction Survey and filtered for the JRC, concerning the question on "Your overall job satisfaction" Source: "HR Reporting" (Owner: DG HR)	
Baseline (31/12/2015) N/A No survey carried out in 2015	**Target** (2015) 72.2% (= Average value for all Commission staff in 2013)
Main outputs for this specific objective	• All processes documented in the framework of the JRC Integrated Management System (IMS). Implementation

	of the supporting software tool with all the IMS document management and the non-conformity corrective actions and preventive actions workflows integrated. (Q4) • Following the JRC's first Business Process Improvement Project on the Selection & Recruitment Process, at least two other processes critical to the success of the organisation will undergo a similar review and redesign. (Q4) • Full implementation of JRC Document Management strategy and its related action plan, in response to IAC recommendations, and in accordance with e-Domec requirements. (Q4) • Review of Business Continuity Plans. (Q4) • Development of the methodology for JRC security plans in the form of dedicated guidelines and templates as assistance to the system owners in the development of their security plan. (Q4). • Decision implemented on the continuation of ISO 14001 certification, in the light of EMAS. (Q4)

Outputs/achievements in 2015: Following further consolidation of local support activities into corporate and operational ones, the proportion of local support staff resulted in 7.1%. The achieved rate represents a second improvement in a row compared to 7.4% in 2014 and 10.2% in 2013.

With reference to the JRC Integrated Management System (IMS), although the majority of process documentation is at an advanced stage, some key processes are lagging. Moreover, the recently revamped version of ISO 9001 demands changes to some work practices. Given this, it is expected that process documentation will be in an acceptable state for external auditing in June 2016. Regarding IMSIS (Integrated Management System Information System), this supporting software tool was envisaged to be completed in October 2015, thereby allowing it to enter production in December 2015. A 2 month slippage has been encountered and the first IMSIS applications will go live in February 2016.

The restructuring in April 2015 of the unit responsible for undertaking Business Process Improvement (BPI) projects and the reassignment of its remaining staff to take the lead role in the above mentioned IMS project led to a suspension of BPI projects throughout the remainder of the year.

Based on a detailed action plan reviewed on a regular basis, the JRC Document Management Officer (DMO) has implemented the JRC's Document Management Policy and Strategy, mainly focussing on an increased e-Domec compliance of the JRC document and files lifecycle, developing a service oriented and networking approach with all stakeholders, and implementing a specific training and communication plan at all levels in the organisation.

The JRC Business Continuity (BC) Network has been successfully reassembled, with people appointed at site level and two network meetings held. The JRC BC Management policy has been updated with three documents reviewed and approved by the Network. In the frame of the corporate approach to BC endorsed by the Directoire, a project to review the JRC BC Plan and create harmonised sites approach has been conceived, detailed, reviewed with the network during Q3, and approved by the Project Owner.

The methodology for security plans compliant with EC standards and guidelines has been developed and specifically adapted to the context of JRC. The adopted approach allows capturing all information related to each IT system in an integrated tool, thus providing a rapid IT security risk assessment. The tool is compliant with the European Commission Information Systems Security framework, but also mapping to the ISO 27002 controls and some relevant COBIT 5 processes. The set of documents resulting after application of the methodology to one of the JRC systems has been successfully validated by HR.DS. The roll-

out of the methodology will continue in 2016.

The decision of whether to maintain environmental management systems certified to ISO 14001 was postponed until 2016-Q1 as external parameters have complicated the analysis. Firstly, a new version of ISO 14001 was released, superseding the 2004 version which is explicitly referenced in the current EMAS III regulation. Secondly, the Commission's future framework contract for undertaking external EMAS verification audits may also include services for ISO 14001 surveillance and certification audits.

1.4.2 ABB activity 10 01: Administrative support for the JRC; Specific objective 12: "Human resources development"

<table>
<tr><td colspan="2">Specific objective 12: Recruit, train, assess, motivate and retain highly qualified staff so that effective and efficient operation of the DG as well as promotion of equal opportunities within the DG are ensured.</td></tr>
<tr><td colspan="2">Indicator 1: Timeliness of recruitment of officials (internal/external procedure)
Definition: Average number of working days from the publication of the deadline of the vacancies until the date of distribution of relevant administrative act.
Source: JRC internal indicator (Owner: JRC.B.2).</td></tr>
<tr><td>Baseline (31/12/2015)
Internal range: 43 working days
External range: 114 working days</td><td>Target (2015)
Internal ≤60 working days
External ≤120 working days</td></tr>
<tr><td colspan="2">Indicator 2: Gender balance in AD-grade positions
Definition: % of women/(Number of women + men) in senior management, middle management and AD-non-management, respectively positions
Source: "HR reporting" (Owner: DG HR). NB: Officials only, excludes temporary agents</td></tr>
<tr><td>Baseline (31/12/2015)
27.3% (senior mgmt.)
16.4% (middle mgmt.)
24.27% (non mgmt. ADs)</td><td>Target (2015)

≥21.3% (middle mgmt.)</td></tr>
<tr><td colspan="2">Indicator 3: Training evaluation
Definition: Average response of participants on how well learning objectives were met
Source: JRC internal indicator (Owner: JRC.B.3).</td></tr>
<tr><td>Baseline (31/12/2015)
83.4%</td><td>Target (2015)
85%</td></tr>
<tr><td>Main outputs for this specific objective</td><td>• Publication of AD7 specialised competition (tailored research specialist profiles (Q4).
• Launch, in collaboration with DG HR, a new CAST Research for CA FG IV (Q1).
• Full implementation of the recommendations from the Business Process Improvement analysis on the selection and recruitment process. (Q4)
• Contribution to the new Equal Opportunities Strategy 2015-2017, in cooperation with DG HR. (Q4)
• Development of a comprehensive career development framework for non-management positions with particular emphasis on scientific careers. (Q4)
• Introduction of new working methods and tools to enhance knowledge sharing (across organisational boundaries and across the 6 JRC sites). (Q4)
• Implementation of JRC Learning Priorities 2014-2016.</td></tr>
</table>

Outputs/achievements in 2015: In line with its continuous improvement strategy, the JRC strives for developing a solid knowledge base and optimal working conditions, within which staff can develop and grow. A slot for an AD7 specialised competition, designed to take into account the new JRC strategy, has been agreed with DG HR for the beginning of 2017. Furthermore, in close collaboration with DG HR, a new CAST Research for Contract Agents Function Group IV has been successfully implemented and is fully operational. Based on the JRC pilot, a similar permanent CAST scheme is being prepared at Commission level.

Implementation of the recommendations from the Business Process Improvement (BPI) project carried out in 2014 on the selection and recruitment process continues with 40% of the agreed actions completed. As a preliminary positive effect of actions implementation, the timeliness of recruitment of officials has further improved compared to the previous year in the internal phase (from 51 to 43 working days) and especially in the external one (from 160 to 114). Both the related targets have been fully met.

Regarding equal opportunities, considerable progress was made in 2015 in senior management with the nomination of one female director which has significantly improved women representation in this category from 20% in 2014 to 27.3%. This, together with the nomination of five new male Heads of Unit, has however at the same time contributed to a 1.3 percentage point decrease of female representation in middle management. Applications from women for middle management positions stand at an overall low level of 13%. The pilot talent management programme launched in 2015 for women in the AD7-AD13 category aims at improving this rate by addressing the barriers that women face when accessing middle management position. It foresees a tailored made leadership development programme in view of enhancing management skills and reflecting on readiness to take on middle management positions in near or longer term.

With reference to the development of a comprehensive career development framework for non-management positions, a new scheme for standardisation of job titles, elaborated with DG HR and the JRC scientific committee, will be implemented in 2016, synchronised with DG HR.

The migration, as of March 2015, of the corporate intranet to the Connected@JRC collaborative platform represents a new working method and tool to enhance knowledge sharing across all the JRC sites and across organisational boundaries.

Learning and development initiatives according to the JRC Learning Priorities 2014-2016 have been organised to support the JRC's organisational development vision for making the JRC one of the world's leading organisations in transforming scientific knowledge into evidence to support policymaking. In general, the training evaluations by participants achieved an average of 83.4% on how well their learning objectives were met. The increase compared to the previous period (81.5% in 2014) is the result of a series of improvement actions tailoring the offered courses to the needs of the participants. The overall satisfaction increased from 85.4% in 2014 to 87% in 2015.

1.4.3 ABB activity 10 01: Administrative support for the JRC; Specific objective 13: "Procurement and financial resources management"

Specific objective 13: Plan, perform, monitor and report on the spending of financial resources so that sound financial management is ensured throughout the DG's activities
Indicator 1: Timeliness of payments Definition: Proportion of payments done within legal time limits Source: JRC internal indicator (Owner: JRC.B.5).

Baseline (31/12/2015) 94%	**Target** Long-term: 100% 2015: ≥95%* (*2015 target subject to full availability of payment credits)
Indicator 2: Amount of potentially abnormal RAL Definition: 'Remaining to pay' of outstanding commitments Source: JRC internal indicator (Owner: JRC.B.4).	
Baseline (31/12/2015) 6.67%	**Target** (2015) <5% of the total RAL
Indicator 3: Contractual income (old name: "Cashed competitive income") Definition: Annual cashed income from activities outside Institutional budget (% of the Institutional budget) Source: JRC internal indicator (Owner: JRC.B.4).	
Baseline (31/12/2015) 18.87%	**Target** (2015) 15%
Indicator 4: Accuracy of procurement estimation Definition: Average of (actual value of contract / estimated value of contract at the outset of the procedure) Source: JRC internal indicator (Owner: JRC.B.5).	
Baseline (31/12/2015) 15.5%	**Target** (2015) Deviation of ±20%
Indicator 5: Quality of procurement procedures submitted to the PPAG Definition: Proportion of positive opinions of the Public Procurement Advisory Group (PPAG) Source: JRC internal indicator (Owner: JRC.B.6).	
Baseline (31/12/2015) 95%	**Target** ≥95%
Main outputs for this specific objective	• Enhancement of the JRC financial reporting by integration of JRC application data e.g. JIPSY, with the ABAC financial data warehouse (Q4). • Continue development and integration of the Public Procurement and Management Tool (PPMT) taking into account its new corporate dimension at Commission level (Q4). • Reviewed purchasing strategy for the JRC (Q3). • Introduction of multi-annual procurement planning (Q2). • Application of green public procurement strategy across the JRC (Q4). • In the context of e-procurement, minimize the use of paper based procurement files (Q2). • Implementation of an action plan on procurement, in response to the IAS recommendations. (Q4).

Outputs/achievements in 2015: To ensure highest quality in its procurement, the JRC operates the Public Procurement Advisory Group (PPAG), an internal JRC consultative body responsible for carrying out ex ante controls on proposals for procurement and recommending any necessary follow-up measures. In 2015, the percentage of positive opinions on JRC procurement files was 95% meeting the set target and equalling the positive result of the past year.

94% of about 26 500 invoices received in 2015 were paid within contractual time limits according to the financial regulation, equalling the 2014 rate. The JRC will continue to strive

to achieve the 95% target in 2016.

The amount of potentially abnormal "reste à liquider" (RAL), defined as "remaining to pay" of outstanding commitments, suffered an increase resulting in 6.67% of the total RAL, so above the target of maximum 5%. This was due to a considerable decrease of the total RAL (€ 42 000 000 less than 2014) against which the amount of potentially abnormal RAL, which instead remained stable, is compared.

The importance of the JRC's support to policy DGs was again demonstrated in 2015, a year in which competitive income remained stable notwithstanding a reduction in the JRC's institutional budget. Competitive cashing increased to 107% of target (from 105.5% in 2014) and the competitive income indicator increased to 18.87% (from 18.64% in 2014).

The need to ensure accurate budget estimations for procurements so that the market is informed correctly on the needs of the JRC thus allowing for correct market placing has seen a further lessening in the difference between the estimated value and the final value of the individual contracts awarded with an average of 15.5% for 2015 (the deviation in 2014 and 2013 was respectively of 24% and 28%).

The new JRC reporting system, which combines data from local application sources with data from ABAC thus creating a single user view, is optimised for fast querying of large data sets and allows having related information displayed side by side in the same automatic report. This has reduced a lot staff efforts and working time while minimising manual interventions to visualise results. This enhanced financial reporting system is expandable and supports any Business Intelligence tool.

The Public Procurement Management Tool (PPMT) was improved with new functionalities facilitating the monitoring and review of procurement procedures (customised reporting, population of templates, one-click download of procurement files, special Review Board module). The Procedure module, in particular the documentation support, was fully revamped to align it with the "look and feel" of the Request module and to respond better to user needs. In the context of the IT rationalisation process, PPMT was rolled out to OIB and made available for testing to a number of other DGs.

The outline for a JRC procurement strategy, aimed at reducing the number of procurements and financial transactions needed to meet scientific and technical needs, was further defined in 2015 for implementation starting in 2016. In 2015, two large joint procurements across JRC sites have been successfully piloted.

In the frame of the multi-annual procurement planning, the low value ordering patterns 2013-2015 have been analysed and a number of actions identified: launch procurement procedures in 2016 for new framework contracts (e.g. supply of electrical equipment), publish new calls for CEI/vendors lists (e.g. hotels), monitor emerging needs beyond existing framework contracts.

In line with the objective of EMAS compliance by 2016, a workshop on Green Public Procurement (GPP) for the JRC procurement staff was organised in March 2015 in collaboration with DG ENV. Furthermore specific functionalities were developed in PPMT to support the application of GPP in the JRC procurement procedures.

As of March 2015, the ex-ante review of procurement files takes place exclusively by using JRC or Commission IT tools (PPMT, CFTW, ARES) which has led to significant minimisation of paper in the procurement process. Moreover a growing trend for requesting tenders in (only) one original and one electronic copy has been observed during the year. As a successful pilot, most tenders for contracts of less than € 60 000 were received by email only. This reduction in administrative burden for tenderers is to be expanded in 2016 to cover all procedures less than € 135 000. This drive towards electronic procurement has seen, during the first half of 2015, electronically signed expert contracts and payments tested. All Brussels-based experts' contracts and associated payments were generated online in 2015, with trial runs starting in Ispra units. Full implementation across the JRC is foreseen for June 2016.

Actions agreed to address the findings of the IAS audit on procurement are being implemented as per schedule. Full actions completion is expected by mid-2016.

1.4.4 ABB activity 10 01: Administrative support for the JRC; Specific objective 14: "Maintain and report on an effective internal control system"

Specific objective 14: Implement, maintain and report on an effective and reliable internal control system, so that reasonable assurance can be given that resources assigned are used according to the principles of sound financial management; that risk of errors in operations is minimised and that the control procedures put in place give the necessary guarantees concerning the legality and the regularity of the underlying transactions. Assess the compliance, efficiency and effectiveness of the control system through internal audit and by carrying out an assessment of the costs and benefits of controls.

Ensure that controls in place adequately cover the risk of fraud and preventive measures are in place in line with the JRC Anti-Fraud strategy.

Indicator 1: Implementation of Internal Control Standards in the JRC

Definition: Average of scores obtained from the annual survey on the implementation of Internal Control Standards. (Scores range between 1 ("Fully Disagree") and 5 ("Fully Agree"),

Source: JRC internal indicator (Owner: JRC.B.1).

Baseline (31/12/2015)	**Target** (2015)
3.5	3.4

Indicator 2: Proportion of exceptions

Definition: % of transactions recorded in the JRC exception register (exceptions and non-compliance events) with deviations (or overriding) from established processes and procedures.

Source: JRC internal indicator (Owner: Advisor for Public Tendering and Compliance)

Baseline (31/12/2015)	**Target** (2015)
0.27%	<1% (from MP 2014)

Indicator 3: Cost efficiency indicators – Area 'Income from Competitive Activities'

Definition: Total cost of controls of the 3 stages of the competitive process / total competitive projects proposal value.

Source: JRC internal indicator (Owner: JRC.B.4).

Baseline (31/12/2015)	**Target** (2015)
0.36%	≤0.3%

Indicator 4: Cost efficiency indicators – Area 'Procurement'

- Overall indicator 4: The overall cost of control relating to all control costs incurred in the procurement process.

Definition: Total cost of controls of the procurement process / total expenditure executed during the year (i.e. payments made)

- Sub-indicator 4(a): The cost of controls of the procurement stage up to selection of the offer and evaluation

Definition: Cost of preparing the needs assessment, the specifications, publishing, evaluating the offers, notifying the tenderers / value of procurement contracted

- Sub-indicator 4(b): The cost of controls of the financial transaction

Definition: Related cost for all transactions related to this stage / amount paid

- Sub-indicator 4(c): The cost of supervisory measures (ex-post controls)

Definition: Related cost of control of the ex-post controls / value of the transactions checked (%)

Source: JRC internal indicator (Owner: JRC.B.5 and Advisor for Public Tendering and

Compliance).	
Baseline (31/12/2015) Overall indicator 5.84% (a) 1.98% (b) 3.49% (c) 0.15%	**Target** (2015) Overall indicator <6% (a) <5% (b) <4% (c) <0.4%
Indicator 5: Internal Audit Capability's (IAC) recommendations overdue Definition: Number of critical and very important recommendations issued by the IAC overdue for more than six months Source: JRC internal indicator (Owner: JRC.01. Reporting on indicator: JRC.B.1).	
Baseline (31/12/2015) 3	**Target** (2015) 0
Indicator 6: IAC recommendations implemented Definition: % of accepted audit recommendations effectively implemented (data established following follow-up audit) Source: JRC internal indicator (Owner: JRC.01. Reporting on indicator: JRC.B.1).	
Baseline (31/12/2015) 86%	**Target** (2015) >90% implemented
Main outputs for this specific objective	• Implementation of an Internal Control Standards awareness campaign (throughout 2015) by means of training courses, workshops and events. • Adaptation of the frequency and intensity of controls taking into account the related risk levels. (Q3) • Implementation of JRC anti-fraud action plan (2014-2015), including an awareness-campaign in the area of anti-fraud by means of training courses, workshops and events. (Q4)

Outputs/achievements in 2015: Based on the analysis and overall conclusion reported in Part 2 of this report, there is reasonable assurance that, overall, the JRC has suitable internal controls in place and working as intended; risks are being appropriately monitored and mitigated; and necessary improvements and reinforcements are being implemented.

During the reporting year a survey was carried out to assess the staff perception of the degree of implementation of the Internal Control Standards in the JRC and to appraise if the internal control systems are effective. The reporting year's weighted average rate of 3.5 is slightly higher than the target set of 3.4 and evidences a 9% increase in staff perception of the degree of implementation of the internal control standards in the JRC.

The evolution of the cost efficiency indicators for the areas on 'Income from Competitive Activities' and 'Procurement' have been analysed and positively concluded upon in section 2.1.1.2. It is foreseen that the JRC will, as from 2016, be in a position to carry out a review to differentiate the frequency and/or the intensity of the controls it performs as per Art. 66.2 of the Financial Regulation.

As described in Part 2, under *Fraud prevention and detection,* the JRC's complementary action plan for the Anti-Fraud Strategy (AFS) was started in 2014 and expected to be implemented by the end of 2015. The main focus of the action plan was on the reinforcement of the anti-fraud component in the organisation's business processes and on an awareness-raising campaign, including training, in the area of anti-fraud and ethics. An update of the JRC's AFS will take place in 2016 and the actions which have not been fully implemented will be taken into account in the new complementary action plan.

As detailed under section 2.1.1.1, the exceptions and non-compliance events filed in the JRC central register amounted to 0.27% of the total number of transactions, thus meeting

the target of less than 1%.

Three very important recommendations, all of them related to past audits issued by the no longer existing Internal Audit Capability for which a follow-up is expected, resulted overdue for more than six months from their original due dates. This represents a major improvement compared to past years (these overdue recommendations were eleven in 2014 and ten in 2013) showing an increased attention paid by the auditees on the implementation of the agreed corrective actions. Following follow-up audits, 86% of the accepted recommendations resulted fully implemented confirming recognition by the auditees of the importance of the issues tackled by these recommendations. More details are provided in section 2.2.

1.4.5 ABB activity 10 01: Administrative support for the JRC; Specific objective 15: "Information and Communication Technology (ICT) infrastructures management"

<table>
<tr><td colspan="2">Specific objective 15: Define, plan, set up, maintain and develop high quality Information and Communication Technology (ICT) infrastructures, tools and services so that the staff is adequately supported in their operation.</td></tr>
<tr><td colspan="2">Indicator 1: Network availability
Definition: Availability of Internet (Geant) and Intra-site network connectivity averaged over one year and limited to the JRC Ispra site
Source: JRC internal indicator (Owner: JRC.B.7).</td></tr>
<tr><td>Baseline (31/12/2015)
99.84%</td><td>Target (2015)
>99%</td></tr>
<tr><td colspan="2">Indicator 2: Availability of servers
Definition: Availability of critical servers, averaged over one year and limited to those covered by the "On Call" service
Source: JRC internal indicator, as produced by Nagios monitoring software (Owner: JRC.B.7).</td></tr>
<tr><td>Baseline (31/12/2015)
99.995%</td><td>Target (2015)
>99.99%</td></tr>
<tr><td colspan="2">Indicator 3: Timeliness and accuracy of helpdesk performance
Definition: Timeliness: % of incidents that are resolved within the time allocated, depending on the type and severity of the incident, relative to all service requests received within the measurement period.
Accuracy: Average computed from % of incidents that were resolved by the first-line and by the second-line, depending on the type of the incident, relative to all service requests received within the measurement period.
Source: JRC internal indicator (Owner: JRC.B.7).</td></tr>
<tr><td>Baseline (31/12/2015)
Timeliness: 95.65%
Accuracy: 85.65%</td><td>Target (2015)
Timeliness: Incident resolution within target: >95%
Accuracy: First and second line resolution rate: >60%</td></tr>
<tr><td>Main outputs for this specific objective</td><td>• Better alignment of ICT with Commission requirements, including rationalisation following the recommendations of the High Level Committee on IT
• Ensure ICT security compliance with Commission requirements</td></tr>
</table>

Outputs/achievements in 2015: The JRC ICT service desk services were consolidated under one contract in 2014. In 2015 processes, tools used and reporting were harmonised and aligned to EC services. Moreover the implementation of the OneJRC, a scientific master domain, provided additional service to the JRC scientific ICT. This service will enable the JRC to increase compliance with EC requirements.

The Internet (GEANT) and Inter-site network connectivity was available 99.84% of the time and above the target of minimum 99%. To ensure strict follow up of the relevant Service Level Agreement with the supplier, regular meetings continue to be organised.

The main components of JRC corporate IT infrastructure (server virtualization, storage and backup systems) were completely migrated from the existing server rooms to the new corporate JRC Datacentre.

Business critical servers were available to the JRC during 99.995% of the year meeting the target of minimum 99.99%.

With reference to the ICT rationalisation and particularly the consolidation of ICT infrastructure and rooms, the corporate JRC Datacentre utilisation has reached 30% of its total capacity and now hosts roughly 70% of the JRC Ispra ICT power and systems. Out of the initial other 14 data rooms on the Ispra site, only 5 are still up and the migration continues. The Datacentre mimics the current EC wide datacentre rationalisation exercise at JRC level and will be a major player on the disaster recovery infrastructure for critical information systems.

ICT Security compliance was addressed by the DG JRC/HR.DS/DIGIT task force as one of its main objectives resulting in three projects: Net1 Segregation and NemoRS managed by DIGIT, and IPSC segregation managed directly by the Institute for the Protection and Security of the Citizens (IPSC). During 2015, Net1 segregation isolated Net1 clients in Ispra under a newly installed DIGIT managed firewall. NemoRS was installed in Geel and Karlsruhe sites to protect the perimeter infrastructure. All the projects are expected to be finalised in 2016.

The helpdesks performance indicators remained above the targets even if updated with increased scope and additional services. First- and second-line resolution rate improved from 64.92% in 2014 to 85.65% in 2015. The timeliness of incidents resolution dropped to 95.65% from 98.03%. Both indicators meet their targets of minimum 60% and 95% respectively. As of 2016, measurements and reporting aligned to the standard EC method will be used.

1.4.6 ABB activity 10 01: Administrative support for the JRC; Specific objective 16: "Infrastructure development"

Specific objective 16: Infrastructure development: Develop and implement a detailed plan for the evolution of JRC infrastructures (physical infrastructure, laboratory facilities, information technology (IT) infrastructure)

This action aims at implementing the JRC Strategic Infrastructure Development Plan 2012-2020 for the development of the physical infrastructures at JRC. Main drivers for the strategy are recommendations from recent Framework Programme evaluations, the need to renew ageing infrastructures in compliance with Europe's 20/20/20 energy objectives and requirements resulting from the JRC's Scientific Strategy. Compliance with the newly defined 2030 energy targets and the recent Directive 2012/27/EU requiring an average of renovation of 3% of the total heated/cooled surface of public buildings will be strengthened in the coming years.

The JRC Strategic Infrastructure Development Plan 2012-2020 proposes a number of structural improvements for all JRC sites, with a particular emphasis on improving the energy efficiency of buildings. New buildings should reach at least energy efficiency class A; Buildings constructed after 2018 should be zero energy emission buildings; refurbished

buildings should reach at least energy efficiency class C, or higher, if proved it is economically viable. In each case, full economic analysis should take place, considering all associated costs and side consequences to the construction activity.

The JRC Strategic Infrastructure Development Plan is currently being updated with the objective to have it approved by the JRC Director General in the first months of 2015. It will be aligned with the JRC Scientific Strategy. In parallel, the list of short term infrastructure development projects has been regularly monitored, taking into account probable budget availability in the coming years.

Outputs/achievements in 2015: Unlike other DGs, the JRC owns and manages buildings and related infrastructure on all its sites except Brussels. Therefore, this unique task and responsibility receives full senior management attention. In the frame of the intense work carried out for the preparation of the JRC strategy 2030, a specific chapter on "Infrastructure management" is under development. For what concerns the offices buildings, the Directives on Energy Efficiency and Energy Performance of Buildings remain the legal basis when setting objectives within budget constraints. With reference to the major scientific infrastructures and facilities, the JRC scientific strategy, embedded in the overall strategy 2030, will directly impact the development plans of all JRC sites.

In 2015, a number of scientific infrastructures have been reassessed throughout the Working Program Review which took place in July. In order to avoid any overlapping between sites and to increase the sharing of major scientific infrastructure, some projects have been frozen or cancelled (Food contact laboratory, GMO laboratory, Composite materials fabrication and testing) pending the availability of the strategy. At the end of the year, a decision has been taken to give top priority to the construction of the new nuclear laboratory facility Wing M in Karlsruhe, thus postponing the construction in Ispra of the "nearly zero-energy" building 102 in order not to compete with the file of Wing M in the course of the "procédure immobilière" with the European Parliament and Council. A complete revision of all JRC sites development plans has been requested in this context, to be available by end of 2017. In the meantime, all the major infrastructure projects will be authorised on a base-by-case analysis by the Director General.

The major infrastructures delivered as scheduled in 2015 on the Ispra site have been the Interoperability Laboratories VeLA8 and VeLA9 together with the Smart Grid laboratories, in the frame of the cooperation program between the JRC and the US Department of Energy. Furthermore, the extension of the Visitor's Centre, including review and update of the content of this permanent exhibition space, has been finalised. In parallel, on the Karlsruhe site, the Transit Store building (Wing R) and the Guard building (Wing S) have been made operational.

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

In 2015, two actions aimed at optimizing human and financial resource use in support of Commission priorities were launched (specific objectives 17 and 18), and integrated with JRC's HR strategy (specific objective 19).

Specific objective 17 : Devise and implement the JRC scientific strategy

Commissioner Navracsics' mission letter presented DG JRC's goal "to progressively develop its role as a service supporting all Commission services with its knowledge and its expertise". To achieve this DG JRC has developed a comprehensive strategy throughout 2015. The strategy was developed around an inclusive and participatory process involving staff of JRC of all levels in a series of workshops and online consultations.

The strategy specifies the basic approach by which DG JRC attempts to fulfil its mission "to support EU policies through evidence-based scientific and technical advice throughout the whole policy cycle" and ii) it sets priorities (including negative ones) in line with the objectives of the new Commission.

At the same time, the Scientific Strategy allows DG JRC to anticipate and react to scientific and societal developments.

The JRC strategy provides a reference framework enabling DG JRC to identify required initiatives and to assess the opportunity of project proposals. Regarding the latter point, a new internal evaluation method and using this reference framework, the ex-ante assessment framework has been conceived, see also specific objective 18 below.

The strategy process was accompanied by a comprehensive competence mapping (ongoing) of JRC's current staff and this will allow determining where DG JRC must develop expertise on newly emerging issues beyond the current political horizon.

This initiative will ensure optimal alignment of JRC Work Programme, Commission priorities and the resources used.

The implementation of the JRC strategy is a multi-annual process, which will be monitored and assessed on the basis of specially designed indicators.

The strategy document will be presented and rolled out at the end of Q1 2016.

Specific objective 18: Close the loop of planning, execution, monitoring and evaluation.

Every year, the scientific productivity and policy support impact of JRC scientific policy support work is reviewed in an internal peer-review ex-post evaluation, catering for evaluation based numbers a) in the context of Commission reporting (SPP cycle), b) for senior management purposes as well as c) for further uses such as external evaluations.

As part of the development of the JRC strategy, this process has been complemented by an ex-ante evaluation component addressed at assessing project proposals of the JRC's rolling two-year work programme, thereby covering the full cycle of planning, execution, monitoring and evaluation.

The ex-ante assessment framework has been designed, tested in a pilot exercise and already used in the context of planning the WP 2016-17.

Moreover, based on the practical experience made the method was reviewed in the context of the Work Programme cycle review in the last quarter of 2015 and is now ready for use in the planning of the WP 2017-18.

As a result of the WP cycle review, the design specifications for the modified and integrated IT support system (JRC project browser) have been elaborated. Finally, the method will be supported by a new project management platform.

The initiative of developing the ex-ante assessment ensures optimal alignment of JRC Work Programme, Commission priorities and the resources used.

The closing of the loop of the planning, execution, monitoring and evaluation cycle implements an annual cyclic process and which can be monitored and assessed on the basis of the JRC performance framework as detailed in the JRC's SPP documents.

Specific objective 19: Implement the JRC HR strategy.

In support of its business operations, the JRC aims to "Recruit, train, assess motivate and retain highly qualified staff so that effective and efficient operation of the DG as well as promotion of equal opportunities within the DG are ensured". The strategy takes into account the related gaps including amongst others competency gaps emanating from the JRC scientific strategy and has the following objectives:

1. Currently, the JRC employs 2/3 of its staff as officials and 1/3 with temporary contracts, mainly contract agents (CA) and grant holders. The main challenge for the JRC is that following the introduction of a new medium term strategy, the JRC Work Programme for Horizon 2020 prescribes competences some of which result scarce in the JRC. Taking into account the JRC staff dynamics within the reference period 2015-2017 (including imposed staff reductions), the JRC could recruit the necessary AD research specialists from specialised reserve lists.
2. To ensure recruitment of the right people at the right time and in order to meet the needs of the customers with a compliant and cost-effective service, the JRC will work on further assuring the quality of recruitment (best candidate for the post) and improving process efficiency (resources consumed, time from initial request to appointment or contract acceptance).
3. To contribute, in cooperation with DG HR, to the new Equal Opportunities strategy 2015-2017.
4. To develop a comprehensive career development framework for non-management positions with particular emphasis on scientific careers.
5. To follow-up on the organisational development strategy established in 2014.

The main outputs of this objective are reported on under Specific Objective 12 (Section 1.4.2).

1.6 Examples of EU-added value

Horizon 2020 has been designed to maximise Union added value and impact, focusing on Specific Objectives that can not be efficiently realised by Member States acting alone. The programme will strengthen the overall research and innovation framework, coordinate Member States' research efforts and implement cross-border research collaboration, thereby avoiding duplication, creating critical mass in key areas and ensuring public financing is used in an optimal way.

The direct actions of the JRC provide added value because of their unique European dimension, as e.g. independence from Member States' and private interests. The Joint Research Centre provides independent customer driven scientific and technological support for the formulation, development, implementation and monitoring of Community policies in the ten priority area of the Commission.

The JRC's direct beneficiaries of scientific support are the policy Directorate Generals, which design, implement, monitor and evaluate with JRC's support better science based and science informed European polices for the ultimate beneficiaries, which are the European citizens.

In doing this, the JRC delivers European added value through e.g.

- coordination gains in the case of
    - the Industrial Emissions Directive or
    - in enabling European-wide crisis centre coordination);
- legal certainty by developing reference materials and measurements and standards for
    - food safety
    - feed safety,
    - the environment and

    - health;
- training for Member States enforcement laboratories;
- enabling Candidate Countries to acquire the body of EU law through technical support;
- encouraging trust of the Citizen in the legislator by catering for individuals' concerns as e.g. GMO testing in imported samples;
- developing safe and secure approaches for nuclear waste;
- supporting nuclear safeguards;
- providing knowledge for the public regarding radio-activity in the environment.

Besides the EU added value produced by supporting the Commission, the JRC produces added value for the European Union also by supporting international organizations e.g. OECD, the World Bank and IAEA in priority areas of Commission interest.

The Euratom Programme for direct actions, implemented by the Joint Research Centre, provides clear added value because of its unique European dimension. It will notably contribute to the nuclear safety research needed for safe, secure and peaceful use of nuclear energy and other non-fission applications. The JRC will provide a scientific basis for the relevant Union policies and, where necessary, react within the limits of its mission and competence to nuclear events, incidents and accidents. To that effect, the JRC will carry out research and assessments, provide references and standards, and deliver dedicated training and education.

Examples of the EU added value provided are:

- the provision of nuclear reference data to Member States and international organisations,
- the feed-back experience from nuclear power plant incidents management (Clearinghouse),
- research performed complementing the Member States research programmes on the safety of nuclear fuel (the JRC has unique facilities for handling and examination of irradiated fuel).
- In the field of emergency preparedness, JRC is managing on behalf of EURATOM
    - the European Community Urgent Radiological Information Exchange (ECURIE), as well as
    - the EUropean Radioactivity Data Exchange Platform (EURDEP).

The JRC has unique competences and laboratories in Europe in the field of nuclear safeguards and is supporting nuclear inspections to Member States facilities in compliance with international Treaties. In the field of nuclear security, the JRC has unique competences and facilities for testing detection technologies and origin determination of nuclear materials (nuclear forensics); those expertise and facilities are used by Member States institutions and EU industry. These activities are complemented by unique training programmes offered by the JRC to Member States.

Finally the JRC is the representative of the EU in international fora such as Generation IV and provide support to the Commission (DG ENER) on monitoring the technical implementation of the Nuclear Directives (Safety, Waste and spent fuel, Basic Safety Standards).

2. MANAGEMENT AND INTERNAL CONTROL

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:

- Assurance Statements from Sub-delegated Authorising Officers;
- The reports from Authorising Officers in other DGs managing budget appropriations in cross-delegation;
- The contribution of the Internal Control Coordinator (ICC), including the results of internal control monitoring at DG level;
- The reports of the Ex-post supervisory controls performed on a sample of the JRC's financial and procurement transactions;
- The opinion of the internal auditor on the state of control, and the observations and recommendations reported by the Internal Audit Service (IAS);
- The observations and the recommendations reported by the European Court of Auditors (ECA).

These reports result from a systematic analysis of the evidence available. This approach provides sufficient guarantees as to the completeness and reliability of the information reported and results in a complete coverage of the budget delegated to the Director-General of the JRC.

This section reports the control results and other relevant elements that support management's assurance. It is structured into (a) Control results, (b) Audit observations and recommendations, (c) Effectiveness of the internal control system, and resulting in (d) Conclusions as regards assurance.

2.1 Control results

This section reports and assesses the elements identified by management that support the assurance on the achievement of the internal control objectives[15]. The JRC'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 control systems.

The JRC finances its research activities through the voted budget and supplementary credits as presented in the below table detailing the JRC's financing sources for 2015.

In addition, the JRC finances its research activities through the following activities:

- Competitive activities, in line with the Council Decision C126 of 26 April 1994 on the role of the JRC that requires that additional revenue be generated through competitive activities (up to 15% of the institutional budget). The reader is referred to Annex 10.3 for more information on the JRC's 'Revenue Operations'.

- Scientific support activities to other Commission services may be implemented by means of 'Cross-sub-delegations' under which the JRC receives the right to use budgetary resources of other Directorates-General and Services of the Commission. The reader is referred to Annex 10.1 for more details on Cross-sub delegations and Co-delegations.

ABB Activities	Description	Payment appropriations (in EUR)
10 01 and 10 02	Horizon 2020 (2014-2020) The EU Framework Programme for Research and Innovation	261,240,731
10 01 and 10 03	Euratom (2014-2018) Research and Training Programme of European Atomic Energy Community complementing the Horizon 2020 Framework Programme	110,786,497
10 05	The Decommissioning Programme pursuant to Article 8 of the Euratom Treaty	26,125,140
EFTA States Contribution	(Horizon 2020)	7,449,720
Voted Budget (total of above 4 headings)		**405,602,088**
External assigned revenue	**Supplementary Credits from contributions from (non-European Economic Area) third parties associated to the H2020 Framework Programme and Euratom**	**9,627,726**
	Contractual Income	**70,333,562**
Internal assigned revenue		**7,548,052**
Co- and Cross-delegations received[16]	**Co-delegations**	**9,160,383**
	Cross delegations	**17,865,160**
Grand Total Financing sources 2015 in payments[17]		**520,136,971**

Table 2.1-1: **Financing sources for** 2015

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

[16] Details on co and cross-delegations can be found in Annex 10.1

[17] This total does not include appropriations carried over from previous exercises nor the HFR appropriations as reported in table 2 of Annex 2

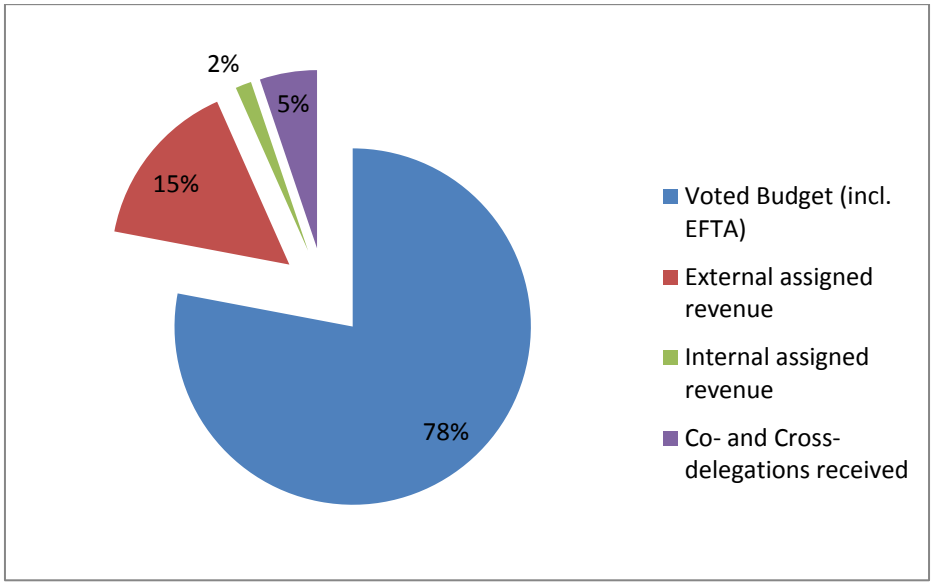


Table 2.1-2: Financing sources in payment appropriations:

In 2015, the JRC had EUR 27 125 140 (representing 5% of its total financing sources in payments) allocated to Decommissioning activities. The JRC's decommissioning and waste management (D&WM) programme was started in 1999 under the coverage of COM(1999)114 "Communication from the Commission to the European Parliament and he Council – Historical liabilities resulting from nuclear activities carried out at the JRC under the Euratom Treaty – Decommissioning of obsolete nuclear installations and waste management". As also explained in Part 1.3.5 of this report, this programme aims to dismantle former, obsolete EURATOM nuclear installations (historical liabilities) so as to plan for (and execute in the future) the long-term dismantling of installations which are still in use (future liabilities). Four JRC sites are involved i.e. Ispra, Karlsruhe, Petten and Geel.

During 2015, the JRC received cross sub-delegated authority to use the budgetary resources of other Directorates General and services of the Commission. Such authorisations are linked to specific research projects or actions. The JRC has also provided sub-delegations to other DGs of the European Commission. In addition, the JRC has put in place Horizontal and Vertical co-delegations[18] (art. 3.2 of the Internal Rules) with other Directorate Generals of the European Commission. The services and amounts concerned for sub-delegations (both cross and co-delegations) are summarised in Annex 10.1 to this report. Being a Commission service itself, the JRC is required to implement the appropriations subject to the same rules, responsibilities and accountability arrangements and therefore payments related to the sub-delegations received are subject to the same financial circuits and controls in place. Statements of assurance on the effective and sound use of these funds were received or provided to the Directors-General concerned.

[18] In accordance with Art. 3.2 of the Internal Rules (Decision C(2015) 1423 final of 05/03/2015 on the Internal Rules on the implementation of the general budget of the European Union (European Commission section) for the attention of the Commission department)

Operational activities

All JRC's operational activities, both expenditure and revenue, are carried out under ***direct management mode*** which has been assessed as having a relatively low inherent risk. The risks are effectively mitigated by means of controls as detailed in Annex 5.

The JRC carries out its expenditure operations through procurement operations. An internal control template (ICT) covering JRC's procurement is available in Annex 5 of this AAR. The type of procurement procedures carried out by the JRC during 2015 is described in Annex 10.2.

The JRC has a mandate to carry out revenue generating operations through competitive activities, which may be defined as the provision by the JRC of scientific and technical services to other bodies both within the European Institutions and for third parties. Annex 10.3 provides details on the JRC's mandate, the type of competitive contracts and information on the contracts signed during 2015.

The additional income generated through competitive activities is used for purchasing scientific equipment and services, hiring temporary staff, and for financing part of the JRC's infrastructure used for these tasks. An ICT covering the JRC's income from competitive activities is available in Annex 5 of this AAR.

The financial circuits in the JRC[19] are based on the "four eyes principle", which ensure that, before any operation is authorised, all aspects of the operation (both operational and financial) are verified by at least one member of staff other than the person who initiated the operation. The JRC has 3 types of financial circuits models in place which are described in detail in Annex 10.4 of this report. The type of financial circuits chosen is determined by the nature of the financial transaction which is undertaken, as well as by geographical considerations. Circuit 1 is the model which is used for the majority of transactions at the JRC, in which there is a clear segregation between the operational and financial roles, respectively, and financial agents are hierarchically independent from the authorising officer. Transactions relating to decommissioning, scientific activities and income-generating activities fall under the financial circuit 1. In any event, all staff having the role of financial agents are based in the Financial Units of the Resources Directorate.

Coverage of the Internal Control Objectives and their related main indicators

2.1.1.1. Control effectiveness as regards legality and regularity

The JRC has set up internal control processes aimed to ensure the adequate management of the risks relating to the legality and regularity of the underlying transactions, taking into account the nature of the payments and revenue concerned.

The control objective is to ensure that the JRC has reasonable assurance that the total amount of any financial operation authorised during the reporting year, which would not be in conformity with the applicable contractual or regulatory provisions, does not exceed 2% of the budget concerned. In order to reach this conclusion, the JRC reviewed the results of the key controls in place (as described below). For each item, materiality is assessed in accordance with Annex 4.

The main risks together with the control processes aimed to mitigate them and the indicators used to measure the performance of the control systems, are outlined in

[19] JRC Financial Circuits and Segregation of Duties (Ref. Ares(2015)3238388)

Annex 5.

Procurement in direct management mode

Financial management and control of 'Procurement in direct management mode' (Annex 5 ICT N°1) is grouped around three main stages: 1) Procurement (from the assessment of needs to the selection of the suppliers - award decision), 2) Financial transactions (from establishing the financial commitment to payment and contract monitoring) and 3) Supervisory measures (including 'ex post' controls and management checks). In addition to the controls performed during the financial circuits, the JRC has made use of five main supervisory measures (including associated indicators) to assess the legality and regularity of its work:

- Exception reporting,
- The Public Procurement Advisory Group,
- Accounting controls,
- *Ex-Post* Supervisory controls,
- The Assurance Statements from Sub Delegated Authorising Officers.

Exception reporting

Control overrides or deviations from standard policies and procedures are tracked and recorded as reports in the 'register of exceptions'. When signalling an exception[20] or a non-compliance event[21], managers are required to report on any envisaged corrective measures and/or follow-up actions. The follow up of the exceptions and other non-compliance events is part of the regular reporting of the authorising officers by sub delegation to the authorising officer by delegation. The 'register of exceptions' is regularly reviewed to determine whether the frequency or the nature of the exceptions registered should prompt a revision of the JRC's procedures.

In total 91 exceptions and non-compliance events were recorded in the central register in the JRC in 2015. Only 6 of these were classified as exceptions, being the majority non-compliance events, i.e. errors. The exceptions were linked to deviations from standard financial and procurement procedures which cannot be directly associated with a material loss. They were mainly associated with decisions to deviate from the original contract provisions i.e. place of delivery of service or derogation to procedures. Decisions taken by the management which led to exceptions were justified in terms of operational objectives, e.g. business continuity. The non-compliance events were in their vast majority associated with *saisine a posteriori* situations where the budgetary commitment was made after the legal commitment.

To put the exception reporting into context, the JRC dealt in 2015 with 34 207 transactions and most of them were payments: 26 479. The exceptions and non-compliance events amount to 0.27% of the total number of transactions, meeting the target set in the Management Plan (less than 1% of transactions subject to exception).

The reporting year showed a minimal increase of 6% in the number of non-compliance events registered, and this increase is explained by the JRC's participation to the World Exposition 2015. In fact, 22% of the declarations were linked to this exceptional event and were mainly resulting from derogations to the standard procurement rules or "saisine a posteriori" for urgent orders.

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[20] An exception constitutes a conscious decision to act against the procedures.

[21] A non-compliance event may be detected after the event, when the rules have already been broken and it generally originates from errors or weaknesses in the control system.

The Public Procurement Advisory Group (PPAG)

The Public Procurement Advisory Group (PPAG) is a consultative body providing support for the correct application of tendering procedures. It is regarded as a key ex-ante control for the JRC which ensures the respect of the procurement principles. The PPAG must be consulted with regard to procurement files for high value contracts (≥ EUR 500 000) and for some negotiated procedure contracts based on Article 134 (1) RAP. In addition, contracts between EUR 60 000 and EUR 500 000 and contracts deriving from some negotiated procedures (for additional services/works, repetition of similar services/works, additional supplies and for all cases based on Articles 135 (1) and 135 (2)) are also submitted to the PPAG for advise, on the basis of a sampling system using a risk-based method.

In 2015, 105 files were screened by the PPAG, representing a value of approximately EUR 234 Million. In the vast majority of cases, 100 files (95%), this scrutiny resulted in a favourable opinion being issued, which confirms the positive trend in the past years.

There were, however, five files for which an unfavourable opinion was issued and five files which were suspended for further analysis. The unfavourable opinions were associated to the breach of the principles of equal treatment and transparency, distortion of competition, non-compliance of the offers, weak definition of the technical specifications and the inadequate use of legal basis. The errors are generally rectified by the cancellation and re-launch of the procedure based on the specific recommendations from the PPAG. However, for one case out of the five, the Authorising Officer considered that none of the PPAG remarks were indicative of a significant legal or reputational risk and decided to overrule the PPAG's opinion by awarding the contract by means of a *"passer-outre".*

During the reporting year there have been four cases in which the Authorising Officer decided not to submit a file to the PPAG for reasons of urgency, even though submission was compulsory. In all the four cases, which represent 1% of the JRC's total value contracted, a negotiated procedure with the only possible provider available in the concerned market followed and PPAG was informed accordingly.

Accounting Controls

The main aim of accounting controls is to assure the quality and reliability of the accounts and underlying transactions through methodical checks on the accounting records (data) and timely communication and correction of the errors. The controls carried out in 2015 have followed the Annual Accounting Quality Plan. The controls performed are additional to the ex-ante controls performed by Financial Verifying Agents and Sub Delegated Authorising Officers on each transaction, in compliance with the Financial Regulation.

The controls on the General Ledger (GL) account of invoices were performed on a sample[22] of payment transactions equivalent to 70.8% of the monetary value of the invoices. The total number of accounting errors is 169, i.e. 1.14 % of the sample. These errors were of an accounting reclassification nature and did not lead to irregular payments. Considering that all errors found have been corrected, the overall estimated error rate is 1.02 %, thus confirming the reliability of the JRC's accounts.

Some recommendations raised in the context of DG BUDG's validation of local systems report are still open, which however do not have an impact on the reliability of the accounts.

[22] Using a risk-based sampling methodology.

Ex-post Supervisory Controls

As part of its control strategy, to determine whether there had been material losses (e.g. due to errors) and whether financial rules and procedures were respected, the JRC periodically carries out checks on the accuracy and regularity of its ex-ante controls, via ex-post controls on a sample of financial transactions[23].

In 2015, ex-post controls were carried out on 96 sampled payments[24] and 51 associated procurement files related to legal commitments (including specific contracts on framework contracts) entered in the course of the year. The procurement procedures are also subject to the ex-ante verification of the PPAG and during the reporting year procurement procedures of approximately EUR 269 Million were screened by the PPAG.

Whilst a variety of formal errors were noted, no systematic errors or weaknesses in the JRC's control system were observed: the ex-post did not find any ineligible or inaccurate payment and no procurement issues were identified. The errors detected were relatively minor and resulting in a detected error rate of 0.0098%, therefore widely below the 2% materiality level, confirming the trend of the past years and indicating that there are no issues concerning the JRC's procurement and payments activities.

Details of the 2015 ex-post controls exercise can be found in the table below.

Sampled Transactions	Sample size: number	Sample size: value (EUR)	% of total value of transactions	Detected error rate (% of total)
Payments	96	44 656 657	16.3%	0.0098%
Procurement	51	6 459 305	3.2%	0%

Table 2.1.1.1-1 Results of 2015 ex-post controls

The Assurance Statements from Sub Delegated Authorising Officers

Assurance statements were provided by the JRC's sub delegated authorising officers in compliance with the reporting requirements detailed in the "Charter of tasks and responsibilities of authorising officers by sub delegation"[25]. The 113 officers concerned include all of the JRC Directors, most of the Unit Heads and other key decision-making staff. All officers provided an assurance statement and all of them have assured the Director General that in exercising their duties:

- they have effectively managed the risks associated with their activities;
- they were not aware of any matters of importance which might compromise the sound management of appropriations or prevent the attainment of objectives;
- they have filed under their authority exceptions/non-compliance events linked to not respecting standard procedures, rules and regulations, if any;
- a request for written confirmation[26] has never been formulated;
- they have not noted incidents which could damage the reputation of the organisation.

Almost all of the officers have participated in the trainings in internal control and risk management and the rest, mainly consisting in newly appointed authorising officers,

[23] Using a representative stratified sampling methodology.

[24] Includes payments carried out by JRC using cross sub-delegations received and excludes payments done by the Paymaster's Office (PMO) (mainly related to salaries and business travel), and 'Hors Budget' Payments i.e. payments made to consolidate accounting data.

[25] With particular reference to sections 4.1, 4.3 and 4.8.

[26] In accordance with the requirements of Article 66(8) of the Financial Regulation.

have committed to participate by the end of 2016. Only six officers, five of whom newly appointed, have not yet participated in the financial training on the expenditure lifecycle and all are expected to participate in 2016.

During 2015, six authorising officers left the JRC, five of whom for retirement, and three ceased to act as such. All provided their assurance statement in due time. Fifteen staff members took over new functions and duties in 2015: eighteen declared that they have received a complete report in writing on the situation, risks and problems related to their functions and eight reported not to have received such a formal handover report, of whom four took up an entirely new function, so there was no predecessor.

Revenue operations through competitive activities

The JRC generates income through providing, under contract, scientific and technical services to customers both within and outside the European Institutions. All income and expenses for competitive activities are subject to ex-ante controls and to the JRC financial circuits, involving a segregation of duties between the initiating and verifying functions.

Financial management and control of the JRC's revenue operations through competitive activities (Annex 5 ICT N°2) is grouped around three phases: 1) Contract proposal (assessment and valuation of proposal), 2) Contract preparation (from signature of contract to forecast of revenue[27]) and 3) Contract implementation (including financial management of the contract).

Revenue operations are also subject to the same legality and regularity indicators which are applied to payment and procurement transactions (as mentioned above under the description on the Procurement controls), i.e. exception reporting, PPAG controls for supplies/services procured for carrying out competitive activities, accounting controls, ex-post controls on related payments and procurement, and the AOSD statements. None of these controls unveiled errors with impact on compliance of the revenue transactions.

During 2015, as a result of the JRC's financial circuits, 5% of the forecast of revenue transactions and 6% of recovery orders[28] (i.e. invoices) have been subject to correction. These errors did not materialise due to the effectiveness of the ex-ante controls carried out.

Support to Commission services is the main source of income and recovery orders issued to these services are subject to verification and approval. Furthermore, the paying Commission services can perform additional verification or audits on financial reports submitted by the JRC. With respect to indirect actions an independent auditor verifies the financial statements prior to submission for reimbursement. During 2015, the independent auditor certified 17 financial statements submitted to the policy DGs, for a total amount of EUR 10,785,098. None of these independent controls unveiled errors with impact on legality and regularity of the revenue transactions.

According to the Financial Regulation, the appropriations inscribed for Administrative Arrangements with other Commission Services are valid for 5 years. In 2015, commitment appropriations of EUR 55.5 million have been generated. During the same period EUR 37.6 million payment appropriations have been inscribed. The actual costs incurred for the ongoing administrative arrangements in 2015 are estimated at EUR 57 million. The remaining appropriations in commitment and payments have to be used within the next 4 years and any unspent appropriation will be cancelled at the beginning of 2020. The JRC monitors the annual utilisation of these funds through a specific

[27] Forecast of Revenue (FOR) transactions are estimate of amounts receivable in the context of the JRC's competitive activities, resulting in provision of commitment appropriations (FR Art. 183.2).

[28] The term 'recovery orders' for the JRC competitive activities refers to the issuing of invoices to its customers and it is not related to the recovery orders issued to recover erroneous amounts due.

reporting tool.

It can be concluded that the controls carried out on the competitive activities contribute to the legality and regularity of the JRC's revenue operations.

Conclusion on the assessment as regards legality and regularity

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 the JRC, the estimated overall amount at risk for the 2015 payments made is EUR 0.1 million, which is the AOD's best, conservative estimation of the amount of expenditure authorised during the year (EUR 273 million[29]) 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 corrections for those 2015 payments made are EUR 0.05 million. This is the amount of errors that the JRC conservatively estimates to identify and correct from controls that it will implement in successive years.

Details of the JRC's overall amount at risk and estimated future corrections can be found in the table below.

Payments made in 2015[30] (EUR)	Error Rate (%)	Amount at risk for 2015 (EUR)	Estimated future corrections (EUR)
273 314 303	0.04%	109 326	*Avg % since 2009 [0.02%], applied to authorised expenditure* 54 663

Table 2.1.1.1-2 Details of error rate, amount at risk and estimated future corrections

In the light of the review of elements supporting assurance and the expected corrective capacity of the controls to be implemented in subsequent years, it is possible to conclude that the internal controls systems implemented by the JRC provide sufficient assurance to adequately manage the risks relating to the legality and regularity of the underlying transactions.

2.1.1.2 Efficiency and Cost-effectiveness

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

[29] Authorised expenditure includes payments carried out by JRC using cross sub-delegations received and excludes payments done by the Paymaster's Office (PMO) (mainly related to salaries and business travel), and 'Hors Budget' Payments i.e. payments made to consolidate accounting data.

[30] Includes payments carried out by JRC using cross sub-delegations received and excludes payments done by the Paymaster's Office (PMO) (mainly related to salaries and business travel), and 'Hors Budget' Payments i.e. payments made to consolidate accounting data.

appropriate quantity and quality and at the best price. This section outlines the indicators used to monitor the efficiency of the control systems, including an overall assessment of the cost-effectiveness of controls.

Procurement in direct management mode

The JRC has produced an estimation of the costs of control of the three main stages related to 'Procurement in direct management mode'[31]. The criteria for the calculation and the indicators used are shown in in Annex 5 ICT N°1.

However, since a quantitative estimation of the volume of errors prevented and detected is not available, it is not possible to quantify the related benefits, other than the EUR 3 014 762 recovered as a result of these controls (Annex 3, Table 8). The main benefit is that the controls performed ensure that errors are detected and corrected.

In consequence, as it is not possible to determine the cost-effectiveness of controls by comparing costs with benefits, it is necessary to consider the efficiency indicators retained. To do so, the JRC has defined efficiency measures for the controls associated with the three main stages:

- For Procurements, an estimated EUR 6 360 759 were invested in controlling 368 procurement procedures for contracts with a total value of EUR 321 758 292. Thus 1.98% of the total contract value was dedicated to control. This covers all types of procurement, ranging from low-value contracts, for example purchase of low-value laboratory equipment, to high value extremely complicated contracts such as in the area of nuclear decommissioning. The cost of control on procurement has increased by 2.2% compared to last year despite a decrease in the number of procurement procedures closed during the year. The increase is mainly due to the fact that the contract value of the procurement procedures closed during the year was higher and a certain number of procedures were of a more complex nature. In addition the cost of control includes an element of 1.5% increase in the average cost of staff. The procurement procedures are to a large extent a regulatory requirement which cannot be curtailed. In addition, the JRC considers that the necessity of these controls is undeniable, because as shown by the risks outlined in annex 5 (ICT N°1), a significant proportion of the appropriations would be at risk in case they would not be in place.
- For financial circuits an estimated EUR 9 534 796 were invested in controlling 34 207 financial transactions worth EUR 273 314 303[32]. Thus 3.49% of the total payment amount was dedicated to control. Despite the increase of 1.5% in the average cost of staff, the overall cost invested in controlling financial transactions has decreased by 4% which is complemented by the fact that the number of financial transactions decreased by 1.5% compared to last year. Each financial transaction costs an estimated EUR 279, which is 3% less when compared to 2014.
- 94% of the invoices received in 2015 were paid within the contractual time limits according to the financial regulation, equalling the 2014 payment delays rate and further enhancing the 2013 rate of 92%. This evidences the constant efforts made to ensure that the vast majority of the payments are made within the legal time limits.
- For supervisory measures an estimated EUR 77 145 were invested in controlling 147 financial transactions worth EUR 51 115 962. Thus 0.15% of the total values

[31] The costs of control have been estimated using DG Budget's guidance on the minimum set of cost-efficiency indicators.

[32] Excluded: payments done by the Paymaster's Office (PMO) (mainly related to salaries and business travel), and 'Hors Budget' Payments i.e. payments made to consolidate accounting data.

of transactions checked ex post were dedicated to control. Each transaction or procedure checked ex post costs an estimated EUR 525. A decrease of 13% resulted in the cost of a transaction or procedure checked ex post, which is considered as reasonable when compared to last year due to the reduction of 11% in the number of payment files (with higher value) sampled and a reduction in the number of staff performing the controls.

The overall cost of control related to 'Procurement in direct management mode' in 2015 was EUR 15 972 700, which represent 5.84% of the total payments executed by the JRC during the year. The overall cost of control decreased by 1.9% compared to 2014 despite an increase of 6.7% in the total payments executed during the year and the increase of 1.5% in the average cost of staff.

The benefits of control in non-financial terms cover: rejection of unjustified purchases, better value for money, deterrents efficiency gains, limiting the risk of litigation and fraud, respect of contractual provisions, system improvements and, as mentioned above, compliance with regulatory provisions.

Revenue operations through competitive activities

The costs of controls incurred for the three main phases of the JRC's revenue operations through competitive activities have been estimated. The criteria for the calculation and the indicators used are shown in in Annex 5 ICT N°2. As mentioned in the previous section, it is not possible to quantify all of the costs and benefits of controls. Estimating the intangible benefits is particularly problematic. The JRC has, nonetheless adopted the following efficiency indicators for the controls associated with the three stages of the revenue process:

- For the contract proposal phase, an estimated EUR 38 693 were invested in assessing the risk and reviewing 231 competitive project proposals with a total value of EUR 73 895 172. Thus 0.05% of the total competitive project proposal value was dedicated to carrying out a risk assessment and management review, with a cost of EUR 168 per proposal. For Support to Commission contracts an additional 0.06% of the total competitive project proposal value is incurred for high level management review. The Third party work (TPW) type of contracts incurred an additional 0.04% of the total contract value for requesting up-front payments. The latter additional cost has led effectively to no default on TPW contracts.
- For the contract preparation phase, an estimated EUR 19 346 were invested in reviewing the contract wording and ensuring these are in line with standard clauses, which represents 0.03% of the total value of the signed competitive contracts with a cost of EUR 84 per contract. For the financial circuits carried out on forecasting of revenue, an estimated EUR 29 019 was invested in controlling 231 forecasts of revenue (FORs) worth EUR 73 895 172. Thus 0.04% of the total forecast of revenue amount was dedicated to control with an estimated cost of EUR 126 per FOR transaction.
- For the contract implementation phase, an estimated EUR 107 033 were invested in monitoring budget consumption of the competitive contracts and reviewing the recovery orders (ROs) issued, which represents 0.15% of the RO values. The competitive cashing indicator (as a percentage of the institutional budget) has increased from 18.62% of last year to 18.87%, which is significantly higher than the target of 15% and clearly evidencing the efficiency of the controls performed. An independent auditor carries out audits on Framework Programme (FP) contracts with a reimbursable value higher than EUR 375 000. Each audit has a fixed cost of EUR 1 500 and the total costs of the audits amounted to EUR 25 500 representing 0.23% of the value of competitive projects audited.

The overall cost of control related to 'Revenue operations from competitive activities' in 2015 was EUR 269 715, which represent 0.36% of total competitive project proposal value for the year. The overall cost of control indicator has remained stable compared to

last year's indicator of 0.39%, despite the increase of 8.5% in the number of competitive project proposals.

JRC considers that the necessity of the controls performed on revenue operations process is undeniable, as they are a regulatory requirement. Furthermore, the JRC considers that these controls are necessary in order to mitigate the risks outlined in annex 5 (ICT N°2).

The benefits of control in non-financial terms cover: accepting only project proposals which have an acceptable level of risk, which are in line with the JRC work programme and which meet customer expectations, sound financial management, deterrents efficiency gains, limiting the risk of litigation, respect of contractual provisions, system improvements and, as mentioned above, compliance with regulatory and research programme provisions.

Conclusion on efficiency and cost-effectiveness

Based on an assessment of the most relevant key indicators and control results, the JRC has assessed the cost-effectiveness and the efficiency of the control system and reached a positive conclusion.

To reach this conclusion the JRC analysed the evolution of the efficiency and cost-effectiveness indicators from 2014 to 2015, and took into account also the results obtained in 2013.

The JRC will elaborate and implement the necessary measures to continue analysing the evolution of these efficiency indicators over time and/or to compare them with relevant benchmarks. As a result of the latter-mentioned analysis the JRC foresees that, as from 2016, it will be in a position to carry out a review to differentiate the frequency and/or the intensity of the controls it performs as per Art.66.2 of the Financial Regulation.

2.1.1.3 Fraud prevention and detection

The JRC has developed and implemented its own anti-fraud strategy (AFS) since 2013, elaborated on the basis of the methodology provided by OLAF. An update of the JRC's anti-fraud strategy will take place in 2016.

The implementation of the AFS and its complementary action plan is monitored regularly throughout the year and reported to the JRC's Internal Control Coordinator (ICC). The actions which have not been fully implemented will be taken into account in the JRC's updated anti-fraud strategy.

In principle, the controls aimed at preventing and detecting fraud are not unlike those intended to ensure the legality and regularity of the transactions. Still, each year the JRC assesses the risk of fraud in the context of its process-based risk management exercise. Activities and operations that are assessed to be potentially vulnerable to a higher risk of fraud are subjected to more in-depth monitoring and control.

The main focus of the action plan was on the reinforcement of the anti-fraud component in the organisation's business processes and on an awareness-raising campaign, including training, in the area of anti-fraud and ethics.

As part of the annual assessment of the implementation of the Internal Control Standards within the JRC, with respect to the ethical climate, the anti-fraud awareness of staff was measured against a target of 4, using the rating scale of 1 for fully disagree to 5 for fully agree or equivalent. The results from the annual assessment demonstrated a rating of 4.08 for all staff, 4.59 for management and 3.8 for staff (other than management). The 2015 results evidenced an increase in the anti-fraud awareness compared to last year as follows: 20% for all staff, 21% for management and 15% for staff (other than management) which clearly shows a rather positive impact of the anti-fraud and ethics awareness campaign ongoing at the JRC.

During the reporting year, no file was transmitted to OLAF, nor did OLAF open a case concerning the JRC.

In conclusion, the anti-fraud measures already in place, including the controls performed through ex-ante and ex-post controls, did not identify any cases of fraud or potential fraud in 2015.

2.1.1.4 Other control objectives: safeguarding of assets

The JRC is spread over 6 sites in 5 different countries with a total number of fixed assets of about 54 000 with significant value. The fixed assets are ranging from simple office furniture to complex scientific and laboratory equipment, including nuclear facilities and buildings.

The following measures are put in place to counterbalance the main risks potentially affecting the JRC sites, i.e. accidents, unauthorised access, intentional acts against safety and security including against the protection of sensitive documents. Regular safety inspections are being carried out on JRC sites regarding laboratory facilities and hazardous materials, by the JRC itself, external consultants and visits by national authorities. Organisational measures are implemented to ensure that access to JRC sites and critical assets are controlled. Personal security clearances are issued to those staff required to deal with classified information. Certification of laboratories and institutes to internationally recognised quality management standards helps to offset risks and ensure compliance with norms and regulations.

The JRC assets comply with the following criteria: a) acquisition value above EUR 420; b) controlled by the JRC, c) expected to be used during more than one reporting period. Items with an acquisition value below the EUR 420 threshold are booked as expenses in the accounts. Nevertheless the JRC records them in the Inventory System (ABAC ASSETS) in order to have control over sensitive items.

The organisation of asset management in the JRC is determined by the nature of the activities. There is a management centre per operational site, having functions as *Inventoried Items Manager/Gestionnaire des Biens Inventoriés* (IIM/GBI). Each site has a Write-Off Committee that supervises the site asset management activities and issues an annual activity report. The JRC asset manager and the JRC accountant provide support and coordination to the operational sites and liaise with the Commission Services in matters concerning asset management.

The regulations (ref. art. 250 of the RAP and art. 157 of the FR) stipulate that physical localisation checks of the inventoried items shall be carried out at least on a three-year basis, which is respected.

2.2 Audit observations and recommendations

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

The JRC is audited by two external independent auditors: the Commission Internal Audit Service (IAS) and the European Court of Auditors (ECA). During the reporting period, following the Commission's decision to centralise the internal audit function into the IAS, the JRC Internal Audit Capability (IAC) ceased to act as such. The IAC has however concluded some audit assignments as below described.

IAS and former IAC audits

In 2015, 2 audit engagements, 1 new audit and 1 follow-up audit, performed in 2014 by the former JRC IAC were finalised. For these audits all recommendations (Table 2.2-1) contained in the reports were accepted by the management and actions plans including deadlines for implementation agreed with the auditors.

The IAC operational audit on **Nuclear Decommissioning and Waste Management Programme (NDWMP) - Financial Aspects**, encompassing all JRC nuclear decommissioning activities, was issued by the former IAC in June 2015 and included 4 very important recommendations, namely numbers 1, 2, 3 and 5. Nr. 1) The auditors observed that delays in the Programme are the major cause of financial risk and requested the JRC to coordinate an in-depth review of the decommissioning budget. The JRC is therefore reviewing its NDWMP Strategy of nuclear sites and the related budget, paying special attention to the assessment of fixed costs and the improvement of estimates. Progress is monitored by the High Level Steering Committee (SC). Nr. 2) Excessive procurement delays and the urgent need for an improvement plan addressing the causes of such delays were identified. Following analysis of delays and related causes, it was agreed to define a single point of contact involving both the Nuclear Decommissioning Unit and the Procurement one to monitor the progress of procurement activities (and budget execution) with the aim to re-assess the performance of the Programme procurements and eventually implement further corrective actions. Nr. 3) In order to face the dwindling practical and regulatory support of the Italian authorities to the Programme development, senior management has been recommended to design an action of internal fine-tuning of the relationship with them. A communication strategy to effectively improve interactions with both authorities and stakeholders is currently under development and once finalised will be submitted to the SC for approval. Nr. 5) As human resources are essential for the long-term success of the NDWMP, the JRC was advised to define a staffing strategy covering mid-term needs (5 10 years). Staff outflow, including retirements and expiration of temporary contracts has been carefully analysed. Key competence gaps are being identified as basis for the elaboration of the strategy.

The IAC audit opinion contained in the report is that in their view the current operational set-up for decommissioning activities provides reasonable short term assurance for achieving the JRC's objectives. For the IAC, nevertheless, this short term assurance is not enough for covering the needs of such a long term and complex program. Accordingly, with the view of ensuring the provision of long term assurance, the JRC is therefore undertaking the above mentioned remedial actions.

The concerned recommendations have been taken over by the IAS who is currently considering an audit on the NDWMP in its 2017-2018 audit plan.

During the reporting period, the IAS concluded 1 new audit engagement and 3 follow-ups on audits issued in previous years by the IAC.

In October 2015, the IAS concluded an **Audit on Strategic Planning and Programming/Activity Based Management (SPP/ABM)**. The objective of the audit was to assess whether there was an effective process in place in the JRC for setting objectives, performance indicators and targets, for aligning activities (ABM) and for

monitoring and reporting on their achievement in the context of the SPP cycle. The auditors recognised the ongoing efforts made by the JRC to improve internal processes and identified some good practices already in place.

A sole very important recommendation (number 4) was issued concerning objectives, indicators and targets requiring the JRC to centralise the indicator system at the level of a single Unit, codify roles and actors, and reinforce quality control responsibilities, in particular, the completeness, consistency, relevance and coverage of the indicators, the application of 'RACER criteria, segregation of duties, and application of targets. According to the agreed action plan, the centralisation as well as conceptual and work flow redesign is ongoing. The review of the actual indicator system has made progress, drawing upon inputs from the review of the Work Programme as well as from the new JRC Strategy process. As a first result, a strongly reviewed indicator system with nearly two-dozens of new indicators is used in the current JRC strategic Plan 2016-2020 and the JRC Management Plan 2016. Regarding the same recommendation, discussions have also taken place with DG RTD regarding the calculation of the indicator 'Number of peer-reviewed publications in high impact journals' and particularly its compliance with the H2020 legal base and alignment with the Research Family DGs".

	Nr of Recommendations by Type		
New Audits	**Critical**	**Very Important**	**Important**
IAC audit on Nuclear Decommissioning and Waste Management - Financial Aspects	0	4	2
IAS audit on Strategic Planning and Programming/Activity Based Management (SPP/ABM)	0	1	4
Total	**0**	**5**	**6**
Grand Total	**11**		

Table 2.2-1: Recommendations in new audit reports

Follow-up audits

An effective follow-up to all audits is foreseen in the JRC management system. The follow-up actions to address audit recommendations should ideally be concluded one year after the original audit report is published. In reality, more time is sometimes required, depending on the size and complexity of the follow-up task. The audit follow-up activities are regularly monitored and reported upon.

As a result of follow-up audits, an estimated 86% of all recommendations within the related original reports were deemed to have been effectively dealt with (Table 2.2-2)

Follow-Up Audits	**Related Original Report**		**% Implemented**
	Date of issue	**Nr of rec.**	
IAC FU of Review of Corporate Networks	October 2011	7	50%
IAS FU of JRC Support of the Cost Certification of FP7 projects (closure)	April 2012	10	100%
IAS FU of Assets Management	March 2013	11	91%
IAS FU of Website managed by the JRC (closure)	May 2014	4	100%
Total		**32**	**86%**

Table 2.2-2: Estimated implementation of recommendations following a follow-up audit

Implementation of action plans

As regards the implementation of recommendations included in audits issued by the IAS and the former IAC in previous years[33], for which a follow-up/desk review has not been carried out by the auditors yet, delays are observed in the completion of some actions related to three very important recommendations from past IAC audits.

Following the results of the IAC **Audit on Business Continuity** (namely recommendations numbers 2 and 7) the JRC coordination functions for Business Continuity (BC) have been internally reorganised in April 2015. Thus, the JRC BC Network has been successfully reassembled and deputising requirements have been identified and included within the documents Guidelines for Business Impact Assessment (BIA) and Template site Business Continuity Plan (BCP), reviewed and approved by the Network. Moreover a draft note for crisis management at the Ispra site has been prepared, proposing roles and responsibilities of the crisis management team and asking the site Director for their formal nomination.

A third overdue recommendation resulted from the **Follow-up audit of Third Party Liability** (namely recommendation number 1). For what concerns the auditors' request to include risk assessment in the project management process, it has been proposed to the senior management to have risk assessment fitting into the project proposal ex-ante assessment phase. In case of favourable decision, the risk assessment will become obligatory for all projects in the context of the planning of the Work Programme 2017-2018 which will start in mid-2016.

Based on all work undertaken by the IAS and the former JRC IAC in the period 2013-2015, the IAS has concluded that the internal control systems audited are overall working satisfactorily although a number of very important findings remain to be addressed in line with the agreed action plans.

As requested by the IAS, particular attention has been given to the combined effect of the four very important recommendations issued in the audit of the NDWPM and to the 3 that are overdue for more than six months from their original due date.

ECA audits

As part of the Statement of Assurance for 2015 (DAS 2015), the ECA sampled 3 JRC transactions. With respect to these transactions 1 preliminary finding has been communicated to the JRC confirming no errors or remarks from the ECA. For the other 2 transactions the review is currently ongoing.

As to the 2014 discharge, there were no additional findings to those reported in last year's AAR.

The JRC is continuing its contribution as associated DG, together with other Commission services, in the implementation of the recommendations to the following 2 ECA special reports (SR):

- How do the EU institutions and bodies calculate, reduce and offset their greenhouse gas emissions? (SR n°14/2014).

[33] IAS audit on Procurement Management (2014). IAC audits on: - Decommissioning, Risk and Project Management at the Ispra Site (2012); - Intellectual Property Rights Management and - Business Continuity (2013); - Document Management, - Management and Sharing of Scientific and Technical Knowledge incl. Decommissioning and - Portfolio of Buildings (2014). IAC follow-up audits of: - Management of Expert Groups (2012); - Third Party Liability and - Security and Safety (2014).

- Can the EU's Centres of Excellence initiative contribute effectively to mitigating chemical, biological, radiological and nuclear risks from outside the EU? (SR n°17/2014).

Conclusion on the assessment of audit results

According to the standing instructions, audit results have been considered in order to assess the impact they may have on the assurance provided by the JRC's Authorising Officer by Delegation.

Regarding the impact of the combined effect of the four very important NDWMP recommendations, the risks have been assessed as follows:

- ***Measures have been included in the action plan to ensure the provision of long- term assurance.***
- ***The current operational set-up, as assessed by the IAC, provides reasonable short term assurance for achieving the JRC's objectives.***
- ***As for the financial risk, the substantive testing was satisfactory and no error was observed.***

As a result of the assessment of the risk underlying all auditors' observations (both internal and external), together with the management measures taken in response, the JRC management has come to the conclusion that the recommendations issued do not raise any assurance implications and are being implemented as part of the on-going continuous efforts in terms of further improvements.

2.3 Assessment of the effectiveness of the internal control systems

The Commission has adopted a set of internal control standards, based on international good practice, aimed to ensure the achievement of policy and operational objectives. In addition, as regards financial management, compliance with these standards is a compulsory requirement.

The JRC 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.

In line with the Commission Internal Control Standard 15 (ICS 15), the JRC performed an annual review of its implementation of the Commission's set of Internal Control Standards; this involved an analysis of the effectiveness and compliance of the standards. It was based on a review by the Internal Control Coordinator (ICC) staff using evidence from a variety of sources including: interviews and declarations from relevant key functions responsible for the implementation of the ICS, results from risk assessments carried out during the year, supervisory reports, audit results from IAS and the former JRC IAC, annual survey to assess the staff perception of the degree of implementation of the ICS, JRC exceptions register and results of the ex-post controls. This has led to the 'top-down' assessment of the JRC's internal control status at the end of the reporting year, with respect to both the ICS compliance and the effectiveness of the control arrangements in place. Furthermore, the 'bottom-up' information on internal control issues received through the Assurance Statements from Sub-delegated Authorising Officers has been checked for confirmation or any counter-indications. Finally, the IAS's Opinion has been taken into account as well.

The functioning of the internal control system has been closely monitored throughout the year by the systematic registration of exceptions (under ICS 8). No internal control weaknesses (ICS 12) were reported during the year. The underlying causes behind these exceptions have been analysed and corrective and alternative mitigating controls have been implemented when necessary. This analysis has enabled the ICC to report to the Director-General that the internal control in the JRC was satisfactory.

During 2015 the JRC carried out various activities to improve effective implementation of the ICSs prioritised by the management in the JRC Management Plan 2015: ICS 3 (staff allocation) and the IT governance aspect of ICS 7 (operational structure). Further enhancing the effectiveness of the JRC's control arrangements in place is an on-going effort in line with the principle of the continuous improvement of management procedures. As a result, the following activities are still ongoing and will be given again focus during 2016. These areas are:

- Staff competence mapping linked to the JRC strategic areas;
- Review of the JRC's Learning & Development framework based on the competence gap and mapping analysis;
- Endorsement and implementation of a common scientific ICT governance for implementing the vision for its IT infrastructure, which should lead de-facto to more synergies and related cost-efficiencies.

Concerning the overall state of the internal control system, generally the JRC complies with the three assessment criteria for effectiveness:

- Staff having the required knowledge and skills;
- Systems and procedures designed and implemented to manage the key risks effectively;
- No instances of ineffective controls that have exposed the DG to the organisation's key risks.

In conclusion, the internal control standards are effectively implemented and functioning and the JRC is taking measures to further improve the effectiveness of its internal control systems as described above.

2.4 Conclusions as regards assurance

This section reviews the assessment of the elements reported above (in Sections 2.1, 2.2 and 2.3) and draws conclusions supporting the declaration of assurance and whether it should be qualified with reservations.

The information reported in Section 2 stems from the results of management and auditor monitoring contained in the reports listed. These reports result from a systematic analysis of the evidence available. The following elements provide sufficient guarantees as to the completeness and reliability of the information reported and results in a comprehensive coverage of the budget delegated to the Director-General of the JRC:

- JRC's internal controls systems provide sufficient assurance to adequately manage the risks relating to the legality and regularity of the underlying transactions;
- JRC has implemented appropriate ex-ante and ex-post controls, to the extent that they remain cost-effective;
- JRC has put has put in place suitable control measures to limit risks of error and prevent, detect and correct fraud and irregularities;
- Recommendations issued by the JRC's auditing bodies do not raise any assurance implications and are being implemented as part of the on-going continuous efforts in terms of further improvements.
- JRC's internal control systems provide sufficient assurance with regards to the achievement of the other internal control objectives;
- Resources were used for the intended purposes, sound financial management was applied, and the non-omission of significant information was ensured;

On 22 February 2016, the JRC organised a meeting with participation from various actors involved in reaching a conclusion towards the reasonable declaration of assurance, e.g. the Director of Resources, the Director for Scientific Policy and Stakeholder Relations, the Internal Control Correspondent, the Evaluation function, the ex-post and exception reporting owner and other JRC key actors. The purpose of this meeting was to analyse and to discuss in detail the evidence collected based on the elements supporting assurance. The group concluded that a) there are areas with weaknesses, which have been brought to the attention of the Director General, and b) that on the basis of the analyses made and on the information available, no evidence justifying a reservation could be found.

Overall Conclusion

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.

3. DECLARATION OF ASSURANCE

I, the undersigned,

Director-General of the Joint Research Centre

In my capacity as authorising officer by delegation

Declare that the information contained in this report gives a true and fair view[34].

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 opinion of the Internal Auditor on the state of control 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.

Brussels, 3 May 2016

Vladimir Šucha

"Signed"

[34] True and fair in this context means a reliable, complete and correct view on the state of affairs in the DG.