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PROPOSAL

From:	Secretary-General of the European Commission, signed by Mr Jordi AYET PUIGARNAU, Director
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To:	Mr Jeppe TRANHOLM-MIKKELSEN, Secretary-General of the Council of the European Union
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Subject:	Proposal for a COUNCIL REGULATION on the Research and Training Programme of the European Atomic Energy Community (2019-2020) complementing the Horizon 2020 Framework Programme for Research and Innovation

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2017/0312 (NLE)

Proposal for a

COUNCIL REGULATION

**on the Research and Training Programme of the European Atomic Energy Community
(2019-2020) complementing the Horizon 2020 Framework Programme for Research and
Innovation**

EXPLANATORY MEMORANDUM

1. CONTEXT OF THE PROPOSAL

- **Reasons for and objectives of the proposal**

In order to continue the funding of nuclear research and training it is necessary to adopt a new regulation to prolong all research activities carried out under Council Regulation (Euratom) No 1314/2013 on the Research and Training Programme of the European Atomic Energy Community (2014-2018) complementing the Horizon 2020 Framework Programme for Research and Innovation¹.

The primary aim of Euratom-funded fission research is to enhance the safety of nuclear technologies. This research also contributes to the development of safe, publicly acceptable solutions for the management of radioactive waste and to supporting radioprotection and the development of medical applications of ionising radiation. Euratom fusion research aims to help decarbonise the energy system by developing magnetic confinement fusion. The direct actions of the programme contribute to the implementation of nuclear safeguards in Europe and globally.

The Euratom programme proposal for 2019-2020 continues to complement the Horizon 2020 programme². It determines the budget for direct and indirect actions, sets research and development (R&D) objectives and identifies R&D support instruments.

The proposal will ensure that Union-funded research and training in nuclear science and technology continue in 2019-2020, thereby maintaining a programme that complements, catalyses and coordinates Member States' activities in order to maximise Union added value.

In accordance with Article 7 of the Euratom Treaty, the current (2014-2018) Euratom programme is bound by a five-year timeframe. The present proposal intends to ensure the seamless continuation of the programme in 2019-2020. This approach will ensure the continuity and coherence of action throughout the full seven-year period, 2014-2020, and therefore greater coherence with the Horizon 2020 timeline. This is all the more important in view of the fact that the Euratom programmes and Horizon 2020 pursue mutually reinforcing objectives.

- **Consistency with existing policy provisions in the policy area**

The 2019-2020 Euratom programme is carrying over the research activities of the 2014-2018 Euratom programme. It is entirely consistent with the latter and with the impact assessment for 2014-2020 that was produced prior to its adoption.

¹ Council Regulation (Euratom) No 1314/2013 of 16 December 2013 on the Research and Training Programme of the European Atomic Energy Community (2014-2018) complementing the Horizon 2020 Framework Programme for Research and Innovation (OJ L 347, 20.12.2013, p. 948).

² Regulation (EU) No 1291/2013 of the European Parliament and of the Council of 11 December 2013 establishing Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020) and repealing Decision No 1982/2006/EC (OJ L 347, 20.12.2013, p. 104).

- **Consistency with other Union policies**

The 2019-2020 Euratom programme remains consistent with all relevant Union policies in fields relating to research and innovation in general, and nuclear and related safety aspects in particular. It thus supports the implementation of:

- Council Directive 2009/71/Euratom establishing a Community framework for the nuclear safety of nuclear installations³, as amended by Council Directive 2014/87/Euratom⁴;
- Council Directive 2011/70/Euratom establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste⁵;
- Council Directive 2013/59/Euratom laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation⁶.
- The programme contributes to the implementation of the chapter 7 of the Euratom Treaty, related to the EU nuclear safeguards system. It also contributes to the EU security agendas and strategies.

2. LEGAL BASIS, SUBSIDIARITY AND PROPORTIONALITY

- **Legal basis**

The legal basis for this regulation is Article 7 of the Euratom Treaty.

- **Choice of the instrument**

The 2019-2020 Euratom programme is implemented through a new Regulation.

3. RESULTS OF EX-POST EVALUATIONS, STAKEHOLDER CONSULTATIONS AND IMPACT ASSESSMENTS

- ***Ex post* evaluations/fitness checks of existing legislation**

In line with Article 22 of Regulation (Euratom) No 1314/2013 and the *Better Regulation Guidelines*⁷, the Commission has carried out an interim evaluation of the 2014-2018 Euratom programme. Its report (COM(2017) 697 final) sets out a strategic overview of the evaluation process and its responses to the recommendations of the independent expert groups. The accompanying Commission staff working documents (SWD(2017) 426 final, SWD(2017) 427 final) cover the areas for evaluation (relevance, efficiency, effectiveness and European added value).

The Commission's analyses produced no conclusive finding bringing into question the strategy and format of the 2014-2018 programme or requiring it to propose a revision of the programme's scope, activities or mode of implementation in 2019-2020. Also, the

³ OJ L 172, 2.7.2009, p. 18.

⁴ OJ L 219, 25.7.2014, p. 42.

⁵ OJ L 199, 2.8.2011, p. 48.

⁶ OJ L 13, 17.1.2014, p. 1.

⁷ COM(2015) 215 and SWD(2015) 110.

Commission will ensure that any outstanding issues are addressed in the implementing decision on the 2019-2020 Euratom work programme.

The interim evaluation found that the challenges of nuclear safety and diminishing nuclear skills in Europe can be tackled effectively by exploiting synergies between Member State and private sector research efforts and between scientific disciplines and technological sectors. Action at EU level can strengthen the research and innovation framework in the nuclear field and coordinate Member States' research efforts, thereby avoiding duplication, retaining critical mass in key areas and ensuring the most efficient use of public financing. R&D in fusion energy is long-term and high-risk; conducting it in the context of an EU-level programme means that the risk is shared and generates a breadth of scope and economies of scale that could not be achieved otherwise.

- **Stakeholder consultations**

In line with the *Better Regulation Guidelines*, the Commission carried out a public consultation between October 2016 and January 2017 to feed into the interim evaluation of the 2014-2018 Euratom programme and the proposal for the 2019-2020 Euratom programme. It received 323 responses from individuals and stakeholders, representing all areas of research and various activities (public research bodies, technical support organisations, umbrella organisations, end-users, etc.). The consultation covered all key areas for evaluation, including relevance, effectiveness, efficiency, implementation and EU added value. In all, 75 % of the respondents had participated in the current or previous Euratom programmes.

The overall feedback on the 2014-2018 Euratom programme was positive: 80 % agreed or strongly agreed that the programme is relevant. The approval ratings varied from field to field and were strongest in relation to education and training, and research on waste management and the safety of existing reactors. These latter fields and fusion research are also the areas in which respondents felt the main progress had been made and saw Europe as a world leader. Respondents cited knowledge-sharing and mobilising a wider pool of competences as the main aspects of the programme's added value. On the other hand, only 30 % felt that the programme had some leverage effect on private investments.

- **Collection and use of expertise**

In the course of preparing its proposal, the Commission collected input and relied on expertise from a number of sources. In 2017, the Euratom Scientific and Technical Committee issued an opinion on the future Euratom programme and two independent expert groups produced a report on the interim evaluation of the 2014-2018 Euratom programme⁸. In 2016, a separate panel of experts carried out a mid-term review of the European joint programme on fusion research, as implemented by the EUROfusion consortium.

- **Impact assessment**

Based on the same provisions of the 2014-2018 Euratom programme, the 2019-2020 Euratom programme maintains the same scope and is based on the original *ex ante* impact assessment produced for the whole seven-year period (2014-2020) as part of the Horizon 2020 impact assessment (SEC(2011) 1427, Annex 6). The roadmap for the 2019-2020 Euratom

⁸ Reports available on - https://ec.europa.eu/research/evaluations/index_en.cfm?pg=home

programme⁹ provides for a new impact assessment only if the Commission proposes major changes for the extension of the programme.

The Commission expert group on the interim evaluation of indirect actions of the 2014-18 Euratom programme made some recommendations addressed to the Commission¹⁰, in particular about education and training, and about health aspects of radiation protection research. These recommendations will be taken into account when preparing the 2019-2020 Euratom work programme.

Regarding the recommendations concerning indirect actions in fusion research the Commission will interact directly with EUROfusion to ensure that these recommendations are addressed to the extent possible. Their consideration is currently on-going, and the Commission will monitor this process as part of its routine activities of oversight and management of the Euratom programme.¹¹

The recommendations regarding the direct actions of the Euratom programme will be addressed at the maximum possible scope during the period. In particular, the recommendation to continue education and training activities will be addressed as well as the reinforcing of knowledge management activities and improving open access of the JRC nuclear research infrastructures. The increase of synergies with non-nuclear activities will be considered mainly in the field of nuclear science applications.

Some recommendations concern long-term aspects of nuclear research or instruments that the programme shares with Horizon 2020. The Commission intends to address these in the *ex-ante* impact assessment for the next Euratom programme under the new (post-2020) multiannual financial framework.

4. BUDGETARY IMPLICATIONS

The budget of the proposal is presented in current prices. The attached legislative financial statement sets out the budgetary, human and administrative resource implications.

5. OTHER ELEMENTS

- **Implementation plans and monitoring, evaluation and reporting arrangements**

Programme performance will be monitored annually on the basis of a set of key performance indicators (see Annex II) and an *ex post* evaluation will be carried out by 2022. In addition, performance will be assessed at the level of direct and indirect actions, as follows:

- direct actions: the JRC's performance is assessed internally by means of an annual internal peer review (productivity and impact evaluation – PRIME) based on an ISO-certified evaluation methodology, and externally through peer review by a number of top-level experts selected in consultation with the JRC's board of governors;

⁹ http://ec.europa.eu/smart-regulation/roadmaps/docs/2016_rtd_008_euratom_extension_en.pdf

¹⁰ For the details on recommendations and Commission's response please refer to the Commission Report on interim evaluation of the Euratom Research and Training Programme 2014-2018

¹¹ Ibidem.

- indirect actions: individual projects are subject to a compulsory mid-term review.
- **Detailed explanation of the specific provisions of the proposal**

The following key changes have been introduced compared to the 2014-2018 Euratom programme:

- Article 4 the budget for direct and indirect actions was updated for 2019-2020.
- Article 5 introduces the openness of the 2019-2020 Euratom programme to countries and territories associated to the 2014-2018 Euratom programme.
- Article 22 delete obsolete provisions concerning the evaluation of the programme.
- Article 23 gives an update of the repeal and transitional provisions: these include provisions allowing funds allocated to H2020 financial instruments to be reused by the 2019-2020 Euratom programme (or its successor); the possibility to transfer accumulated but non-committed assigned revenue (contributions from associated countries) to the 2019-2020 Euratom programme; and the smooth continuation of Programme Committee tasks.
- Annex I on the activities to be supported by the 2019-2020 Euratom programme was updated –the European Fusion Development Agreement (EFDA) is now replaced by EUROfusion. The wording concerning the Joint European Torus (JET) in Annex 1 was revised in order not to prejudge the funding possibilities under the 2019-2020 Euratom programme which are likely to depend on the outcome of Brexit negotiations.

Proposal for a

COUNCIL REGULATION

on the Research and Training Programme of the European Atomic Energy Community (2019-2020) complementing the Horizon 2020 Framework Programme for Research and Innovation

THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Atomic Energy Community, and in particular the first paragraph of Article 7 thereof,

Having regard to the proposal from the European Commission,

Having regard to the opinion of the European Parliament,

Having regard to the opinion of the European Economic and Social Committee¹²,

Whereas:

- (1) One of the aims of the European Atomic Energy Community (the ‘Community’) is to contribute to the raising of the standard of living in the Member States including by promoting and facilitating nuclear research in the Member States and complementing it by carrying out a Community research and training programme.
- (2) Nuclear research can contribute to social and economic prosperity and environmental sustainability by improving nuclear safety, security and radiation protection. Equally important is the potential contribution of nuclear research to the long term decarbonisation of the energy system in a safe, efficient and secure way.
- (3) The interim evaluation of the Research and Training Programme of the Community 2014-2018 established by Council Regulation (Euratom) No 1314/2013¹³ (the ‘2014-2018 Programme’) concluded that the action is relevant and continues to be instrumental in addressing challenges in nuclear safety, security and safeguards, radioactive waste management, radiation protection and fusion energy.
- (4) In order to ensure continuity of nuclear research at Community level, it is necessary to establish the Research and Training Programme of the Community for the period from 1 January 2019 to 31 December 2020 (the ‘Euratom Programme’). The Euratom Programme should have the same objectives as the 2014-2018 Programme, support the same activities and use the same mode of implementation which proved to be efficient and appropriate for the purpose of achieving the programme's objectives.

¹² OJ C , p. .

¹³ Council Regulation (Euratom) No 1314/2013 of 16 December 2013 on the Research and Training Programme of the European Atomic Energy Community (2014-2018) complementing the Horizon 2020 Framework Programme for Research and Innovation (OJ L 347, 20.12.2013, p. 948).

- (5) By supporting nuclear research, the Euratom Programme will contribute to achieving the objectives of the Horizon 2020 Framework Programme for Research and Innovation (the 'Horizon 2020 Framework Programme') established by Regulation (EU) No 1291/2013 of the European Parliament and of the Council¹⁴ and will facilitate implementation of the Europe 2020 strategy and the creation and operation of the European Research Area.
- (6) Notwithstanding the potential impact of nuclear energy on energy supply and economic development, severe nuclear accidents may endanger human health. Therefore, nuclear safety and, where appropriate, security aspects dealt with by the Joint Research Centre (the 'JRC') should be given the greatest possible attention in the Euratom Programme.
- (7) The European Strategic Energy Technology Plan (the 'SET Plan'), set out in the conclusions of the Council meeting of 28 February 2008 in Brussels, is accelerating the development of a portfolio of low carbon technologies. The European Council agreed, at its meeting on 4 February 2011, that the Union and its Member States would promote investment in renewables, and safe and sustainable low carbon technologies and would focus on implementing the technology priorities established in the SET Plan. Each Member State remains free to choose the type of technologies that it would support.
- (8) As all Member States have nuclear installations or make use of radioactive materials particularly for medical purposes, the Council has recognised, in the conclusions of its meeting in Brussels on 1 and 2 December 2008, the continuing need for skills in the nuclear field, in particular through appropriate education and training linked with research and coordinated at Community level.
- (9) While it is for each Member State to choose whether or not to make use of nuclear power, it is also acknowledged that nuclear energy plays different roles in different Member States.
- (10) By signing the Agreement on the Establishment of the ITER International Fusion Energy Organisation for the Joint Implementation of the ITER Project¹⁵, the Community has undertaken to participate in the construction of the ITER Project (ITER) and its future exploitation. The Community contribution is managed through the 'European Joint Undertaking for ITER and the Development of Fusion Energy (Fusion for Energy)', established by Council Decision 2007/198/Euratom¹⁶.
- (11) For fusion to become a credible option for commercial energy production, it is, firstly, necessary to successfully complete, in a timely manner, the construction of ITER and start its operation. Secondly it is necessary to establish an ambitious, yet realistic roadmap towards the production of electricity by 2050. Reaching those goals requires the European fusion programme to be directed towards a joint programme of activities

¹⁴ Regulation (EU) No 1291/2013 of the European Parliament and of the Council of 11 December 2013 establishing Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020) and repealing Decision No 1982/2006/EC (OJ L 347, 20.12.2013, p. 104).

¹⁵ OJ L 358, 16.12.2006, p. 62.

¹⁶ Council Decision 2007/198/Euratom of 27 March 2007 establishing the European Joint Undertaking for ITER and the Development of Fusion Energy and conferring advantages upon it (OJ L 90, 30.3.2007, p. 58).

implementing this roadmap. In order to secure the achievements of on-going fusion research activities, as well as the long-term commitment of, and collaboration between, the fusion stakeholders, continuity of the Community's support should be ensured. A stronger focus should be placed primarily on the activities in support of ITER but also on the developments towards the demonstration reactor, including the stronger involvement, as appropriate, of the private sector. Such rationalisation and refocusing should be achieved without jeopardising the European leadership of the fusion scientific community.

- (12) The JRC should continue to provide independent customer-driven scientific and technological support for the formulation, development, implementation and monitoring of Community policies, in particular in the field of nuclear safety and security research and training. To optimize human resources and ensure no duplication of research in the Union, any new activity carried out by the JRC should be analysed to check its consistency with existing activities in the Member States. The security aspects of the Horizon 2020 Framework Programme should be limited to the direct actions of the JRC.
- (13) The JRC should continue to generate additional resources through competitive activities, including participation in indirect actions of the Euratom Programme, third party work and, to a lesser extent, the exploitation of intellectual property.
- (14) In the interest of all its Member States, the role of the Union is to develop a framework to support joint cutting-edge research, knowledge creation and knowledge preservation on nuclear fission technologies, with special emphasis on safety, security, radiation protection and non-proliferation. That requires independent scientific evidence, to which the JRC can make a key contribution. That has been recognised in the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, dated 6 October 2010, entitled 'Europe 2020 Flagship Initiative Innovation Union', in which the Commission stated its intention to strengthen scientific evidence for policy making through the JRC. The JRC proposes to respond to that challenge by focusing its nuclear safety and security research on the Union's policy priorities.
- (15) With the aim of deepening the relationship between science and society and reinforcing public confidence in science, the Euratom Programme should favour an informed engagement of citizens and civil society on research and innovation matters by promoting science education, by making scientific knowledge more accessible, by developing responsible research and innovation agendas that meet the concerns and expectations of citizens and civil society, and by facilitating their participation in activities under the Euratom Programme.
- (16) The implementation of the Euratom Programme should respond to the evolving opportunities and needs relating to science and technology, industry, policies and society. As such, the agendas should be set in close liaison with stakeholders from all sectors concerned, and sufficient flexibility should be allowed for new developments. External advice might be sought during the Euratom Programme, also making use of relevant structures such as European Technology Platforms.
- (17) The outcomes of the debates that took place at the Symposium on 'Benefits and Limitations of Nuclear Fission Research for a Low Carbon Economy' prepared by an

interdisciplinary study involving, among others, experts from the fields of energy, economics and social sciences, co-organised by the Commission and the European Economic and Social Committee in Brussels on 26 and 27 February 2013, recognised the need to continue nuclear research at the European level.

- (18) The Euratom Programme should contribute to the attractiveness of the research profession in the Union. Adequate attention should be paid to the European Charter for Researchers and Code of Conduct for the Recruitment of Researchers¹⁷, together with other relevant reference frameworks defined in the context of the European Research Area, while respecting their voluntary nature.
- (19) The activities developed under the Euratom Programme should aim at promoting equality between women and men in research and innovation, by addressing in particular the underlying causes of gender imbalance, by exploiting the full potential of both female and male researchers, and by integrating the gender dimension into the content of projects in order to improve the quality of research and stimulate innovation. Activities should also aim at the implementation of the principles relating to the equality between women and men as laid down in Articles 2 and 3 of the Treaty on European Union and Article 8 of the Treaty on the Functioning of the European Union (TFEU).
- (20) Research and innovation activities supported by the Euratom Programme should respect fundamental ethical principles. The opinions on energy matters of the European Group on Ethics in Science and New Technologies should be taken into account as appropriate. Research activities should also take into account Article 13 of the TFEU and reduce the use of animals in research and testing, with a view to ultimately replacing animal use. All activities should be carried out ensuring a high level of human health protection.
- (21) A greater impact should also be achieved by combining the Euratom Programme and private sector funds within public-private partnerships in key areas where research and innovation could contribute to the Union's wider competitiveness goals. Particular attention should be given to the involvement of small and medium-sized enterprises.
- (22) The Euratom Programme should promote cooperation, in particular in the field of safety, with third countries based on common interest and mutual benefit notably to promote continuous improvement of nuclear safety.
- (23) In order to maintain a level playing field for all undertakings that are active in the internal market, funding provided by the Euratom Programme should be designed in accordance with state aid rules so as to ensure the effectiveness of public spending and prevent market distortions such as crowding-out of private funding, creating ineffective market structures or preserving inefficient firms.
- (24) The need for a new approach to control and risk management in Union research funding was recognised by the European Council in its conclusions of 4 February 2011, which called for a new balance between trust and control and between risk-taking and risk avoidance. The European Parliament, in its Resolution of 11 November

¹⁷ Commission Recommendation of 11 March 2005 on the European Charter for Researchers and on a Code of Conduct for the Recruitment of Researchers (OJ L 75, 22.3.2005, p. 67).

2010 on simplifying the implementation of the Research Framework Programmes¹⁸, called for a pragmatic shift towards administrative and financial simplification and stated that the management of Union research funding should be more trust-based and risk-tolerant towards participants.

- (25) The financial interests of the Union should be protected through proportionate measures throughout the expenditure cycle, including the prevention, detection and investigation of irregularities, the recovery of funds lost, wrongly paid or incorrectly used and, where appropriate, penalties. A revised control strategy, shifting focus from minimisation of error rates towards risk-based control and fraud detection, should reduce the control burden for participants.
- (26) It is important to ensure sound financial management of the Euratom Programme and its implementation in the most effective and user-friendly manner possible, while also ensuring legal certainty and its accessibility to all participants. It is necessary to ensure compliance with the relevant provisions of Regulation (EU, Euratom) No 966/2012 of the European Parliament and of the Council (the "Financial Regulation")¹⁹ and with the requirements of simplification and better regulation.
- (27) To ensure the most efficient implementation possible, and easy access for all participants through simplified procedures, and to achieve a coherent, comprehensive and transparent framework for participants, participation in the Euratom Programme and dissemination of research results should be subject to the rules applicable to the Horizon 2020 Framework Programme, as set out in Regulation (EU) No 1291/2013 of the European Parliament and of the Council with certain adaptations or exceptions.
- (28) In order to allow the most effective use of the debt and equity financial instruments set up under the Horizon 2020 Framework Programme, while preserving the distinct nature of actions under the Euratom Programme and making full use of the available budget, repayments resulting from any of those financial instruments due to the non-utilisation of funds made available under the Euratom Programme or the 2014-2018 Programme should directly benefit the Euratom Programme or its successor programme.
- (29) It is important to ensure the possibility to use the available external assigned revenue accumulated at the end of the 2014-2018 Programme in light, in particular, of the identical objectives and actions pursued by the Euratom Programme.
- (30) It is important to continue to facilitate the exploitation of intellectual property developed by participants while protecting the legitimate interests of other participants and the Community in accordance with Chapter 2 of the Treaty establishing the European Atomic Energy Community ('the Treaty').
- (31) The participant guarantee funds, managed by the Commission and established pursuant to Council Regulation (Euratom) No 1908/2006²⁰ and Council Regulation

¹⁸ OJ C 74E, 13.3.2012, p. 34.

¹⁹ Regulation (EU, Euratom) No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union and repealing Council Regulation (EC, Euratom) No 1605/2002 (OJ L 298, 26.10.2012, p. 1).

²⁰ Council Regulation (Euratom) No 1908/2006 of 19 December 2006 laying down the rules for the participation of undertakings, research centres and universities in action under the Seventh Framework Programme of the European Atomic Energy Community and for the dissemination of research results (2007 to 2011) (OJ L 400, 30.12.2006, p. 1).

(Euratom) No 139/2012²¹, have proved to be an important safeguard mechanism which mitigates the risks associated with the amounts due and not reimbursed by defaulting participants. The participant guarantee fund established pursuant to Regulation (EU) No 1290/2013 of the European Parliament and of the Council²² should also cover actions under this Regulation.

- (32) In order to ensure uniform conditions for the implementation of the indirect actions under the Euratom Programme, implementing powers should be conferred on the Commission to adopt work programmes and the decision on the approval of the funding of indirect actions. Those implementing powers should be exercised in accordance with Regulation (EU) No 182/2011 of the European Parliament and of the Council²³.
- (33) Achieving the objectives of the Euratom Programme in relevant areas requires support for cross-cutting activities, both within the Euratom Programme and jointly with the activities of the Horizon 2020 Framework Programme.
- (34) Effective performance management, including evaluation and monitoring, requires development of specific performance indicators that can be measured over time, are both realistic and reflect the logic of the intervention and are relevant to the appropriate hierarchy of objectives and activities. Appropriate coordination mechanisms should be put in place between the implementation and monitoring of the Euratom Programme, on the one hand, and the monitoring of progress, achievements and functioning of the European Research Area, on the other.
- (35) The Board of Governors of the JRC, set up by Commission Decision 96/282/Euratom²⁴, has been consulted on the scientific and technological content of the direct actions of the JRC.
- (36) For reasons of legal certainty, Regulation (Euratom) No 1314/2013 should be repealed.
- (37) The Commission has consulted the Euratom Scientific and Technical Committee,

HAS ADOPTED THIS REGULATION:

TITLE I ESTABLISHMENT

²¹ Council Regulation (Euratom) No 139/2012 of 19 December 2011 laying down the rules for the participation of undertakings, research centres and universities in indirect actions under the Framework Programme of the European Atomic Energy Community and for the dissemination of research results (2012-2013) (OJ L 47, 18.2.2012, p. 1).

²² Regulation (EU) No 1290/2013 of the European Parliament and of the Council of 17 December 2013 laying down the rules for participation and dissemination in "Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020)" and repealing Regulation (EC) No 1906/2006 (OJ L 347, 20.12.2013, p. 81).

²³ Regulation (EU) No 182/2011 of the European Parliament and of the Council of 16 February 2011 laying down the rules and general principles concerning mechanisms for control by the Member States of the Commission's exercise of implementing powers (OJ L 55, 28.2.2011, p. 13).

²⁴ Commission Decision 96/282/Euratom of 10 April 1996 on the reorganization of the Joint Research Centre (OJ L 107, 30.4.1996, p. 12).

Article 1
Establishment

This Regulation establishes the Research and Training Programme of the European Atomic Energy Community for the period from 1 January 2019 to 31 December 2020 (the 'Euratom Programme'), and lays down the rules for participation in that Programme, including the participation in programmes of funding bodies managing the funds granted in accordance with this Regulation and in activities conducted jointly under this Regulation and under the Horizon 2020 Framework Programme for Research and Innovation (the 'Horizon 2020 Framework Programme') established by Regulation (EU) No 1291/2013 of the European Parliament and of the Council.

Article 2
Definitions

For the purposes of this Regulation, the following definitions shall apply:

- (a) 'research and innovation activities' means the whole spectrum of activities of research, technological development, demonstration and innovation, including the promotion of cooperation with third countries and international organisations, dissemination and optimisation of results and stimulation of the training and mobility of researchers in the European Atomic Energy Community (hereinafter 'the Community');
- (b) 'direct actions' means research and innovation activities undertaken by the Commission through its Joint Research Centre (the 'JRC');
- (c) 'indirect actions' means research and innovation activities to which the Union or the Community (hereinafter the 'Union') provides financial support and which are undertaken by participants;
- (d) 'public-private partnership' means a partnership where private sector partners, the Community and, where appropriate, other partners, such as public sector bodies, commit to jointly support the development and implementation of a research and innovation programme or activities;
- (e) 'public-public partnership' means a partnership where public sector bodies or bodies with a public service mission at local, regional, national or international level commit with the Community to jointly support the development and implementation of a research and innovation programme or activities.

Article 3
Objectives

1. The general objective of the Euratom Programme is 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. The general objective shall be implemented through the activities specified in Annex I in the form of direct and indirect actions which pursue the specific objectives set out in paragraphs 2 and 3 of this Article.

2. The Euratom Programme indirect actions shall have the following specific objectives:
 - (a) supporting safety of nuclear systems;
 - (b) contributing to the development of safe, longer term solutions for the management of ultimate nuclear waste, including final geological disposal as well as partitioning and transmutation;
 - (c) supporting the development and sustainability of nuclear expertise and excellence in the Union;
 - (d) supporting radiation protection and development of medical applications of radiation, including, inter alia, the secure and safe supply and use of radioisotopes;
 - (e) moving towards demonstration of feasibility of fusion as a power source by exploiting existing and future fusion facilities;
 - (f) laying the foundations for future fusion power plants by developing materials, technologies and conceptual design;
 - (g) promoting innovation and industrial competitiveness;
 - (h) ensuring availability and use of research infrastructures of pan-European relevance.

3. The Euratom Programme direct actions shall have the following specific objectives:
 - (a) improving nuclear safety including: nuclear reactor and fuel safety, waste management, including final geological disposal as well as partitioning and transmutation; decommissioning, and emergency preparedness;
 - (b) improving nuclear security including: nuclear safeguards, non-proliferation, combating illicit trafficking, and nuclear forensics;
 - (c) increasing excellence in the nuclear science base for standardisation;
 - (d) fostering knowledge management, education and training;
 - (e) supporting the policy of the Union on nuclear safety and security.

Any new attribution of activity to the JRC shall be analysed by the Board of Governors of the JRC to check its consistency with existing activities in the Member States.

4. The Euratom Programme shall be implemented in such a way as to ensure that the priorities and activities supported are relevant to changing needs and take account of the evolving nature of science, technology, innovation, policy making, markets and society, with the aim of optimizing human and financial resources, and to avoid duplication on nuclear research and development in the Union.

5. Within the specific objectives referred to in paragraphs 2 and 3, account may be taken of new and unforeseen needs that arise during the period of implementation of the Euratom Programme. This may, if duly justified, include responses to emerging opportunities, crises and threats, to needs relating to the development of new Union policies, and to the piloting of actions foreseen for support under future programmes.

Article 4 **Budget**

1. The financial envelope for the implementation of the Euratom Programme shall be EUR 770 220 000. That amount shall be distributed as follows:
 - (a) indirect actions for the fusion research and development programme, EUR 349 834 000;
 - (b) indirect actions for nuclear fission, safety and radiation protection, EUR 151 579 000;
 - (c) direct actions, EUR 268 807 000.

For the implementation of indirect actions of the Euratom Programme, the Commission's administrative expenditure shall account on average for no more than 6 % during the duration of the Euratom Programme.

2. The financial envelope of the Euratom Programme may cover expenses pertaining to preparatory, monitoring, control, audit and evaluation activities which are required for the management of that Programme and the achievement of its objectives, in particular studies and meetings of experts, as far as they relate to the general objectives of this Regulation, and expenses linked to information technology networks focusing on information processing and exchange, together with all other technical and administrative assistance expenses incurred by the Commission for the management of the Euratom Programme. The expenses for continuous and repetitive actions such as control, audit and IT networks will be covered within the limits of the Commission's administrative expenditure specified in paragraph 1.
3. Where necessary and duly justified, appropriations may be entered in the budget beyond 2020 to cover technical and administrative assistance expenses, in order to enable the management of actions not yet completed by 31 December 2020.
4. Where the direct actions contribute to initiatives established by entities entrusted by the Commission with implementation tasks in accordance with Article 6(2) and Article 15, such contribution shall not be considered as part of the financial contribution allocated to those initiatives.
5. Budgetary commitments may be divided into annual instalments. Each year the Commission shall commit the annual instalments taking into account the progress of the actions receiving financial support, the estimated needs and the budget available.

Article 5
Association of third countries

1. The Euratom Programme shall be open to the association of:
 - (a) acceding countries, candidate countries and potential candidates, in accordance with the general principles and general terms and conditions for the participation of those countries in Union programmes established in the respective framework agreements and decisions of association councils or similar agreements;
 - (b) European Free Trade Association (EFTA) members, or countries or territories covered by the European Neighbourhood Policy that fulfil all of the following criteria:
 - (i) a good capacity in science, technology and innovation;
 - (ii) a good track record of participation in Union research and innovation programmes;
 - (iii) fair and equitable dealing with intellectual property rights;
 - (c) countries or territories associated to the Seventh Euratom Framework Programme or the Euratom Research and Training Programme 2014-2018.
2. Specific terms and conditions regarding the participation of associated countries in the Euratom Programme, including the financial contribution, based on the gross domestic product of the associated country, shall be determined by international agreements between the Union and the associated countries.

TITLE II
IMPLEMENTATION

CHAPTER I
Implementation, management and forms of support

Article 6
Management and forms of Community support

1. The Euratom Programme shall be implemented through indirect actions using one or several of the forms of funding provided for by the Financial Regulation, in particular grants, prizes, procurement and financial instruments. The Community support shall also consist of direct actions in the form of research and innovation activities undertaken by the JRC.
2. Without prejudice to Article 10 of the Treaty, the Commission may entrust part of the implementation of the Euratom Programme to the funding bodies referred to in Article 58(1)(c) of the Financial Regulation.

The Commission may also entrust the implementation of indirect action under the Euratom Programme to bodies created under, or referred to in, the Horizon 2020 Framework Programme.

3. The Commission shall adopt, by means of implementing acts, in accordance with the examination procedure referred to in Article 12(3), the decision on the approval of the funding of indirect actions.

Article 7

Rules for participation and dissemination of research results

1. Subject to paragraphs 2 and 3 of this Article, the participation of any legal entity in indirect actions undertaken under the Euratom Programme shall be governed by the rules laid down in Regulation (EU) No 1290/2013 of the European Parliament and of the Council.
2. For the purposes of the Euratom Programme, 'the security rules' referred to in the first subparagraph of Article 43(2) of Regulation (EU) No 1290/2013 shall include the defence interests of the Member States within the meaning of Article 24 of the Treaty.

By way of derogation from the first subparagraph of Article 44(3) of Regulation (EU) No 1290/2013, the Commission or the funding body may, with regard to results which are generated by participants having received Community financial contribution, object to transfers of ownership or to grants of both an exclusive and a non-exclusive licence, to third parties established in a third country not associated to the Euratom Programme where it considers that the grant or transfer is not in accordance with the interest of developing the competitiveness of the Union economy or is inconsistent with ethical principles or security considerations. 'Security considerations' shall include the defence interests of the Member States within the meaning of Article 24 of the Treaty.

By way of derogation from the first subparagraph of Article 49(1) of Regulation (EU) No 1290/2013, the Community and its joint undertakings shall, for the purpose of developing, implementing and monitoring Community policies and programmes or obligations assumed through international cooperation with third countries and international organisations, enjoy access rights to the results of a participant having received a Community financial contribution. Such access rights shall include the right to authorise third parties to use the results in public procurement and the right to sub-license and shall be limited to non-commercial and non-competitive use and shall be granted on a royalty-free basis.

3. The participant guarantee fund established pursuant to Regulation (EU) No 1290/2013 shall cover the risk associated with non-recovery of sums due by participants in actions financed through grants by the Commission or funding bodies under this Regulation.

Article 8

Cross-cutting activities

1. In order to achieve the objectives of the Euratom Programme and to address challenges common to the Euratom Programme and the Horizon 2020 Framework Programme, activities cutting across the indirect actions set out in Annex I and/or those implementing the Specific Programme of the Horizon 2020 Framework

Programme, as established by Council Decision 2013/743/EU²⁵, may benefit from the Union financial contribution.

2. The financial contribution referred to in paragraph 1 of this Article may be combined from the financial contributions for indirect actions set out in Article 4 of this Regulation and in Article 6 of Regulation (EU) No 1291/2013, and implemented through a single funding scheme.

Article 9
Gender equality

The Euratom Programme shall ensure the effective promotion of gender equality and the gender dimension in research and innovation content.

Article 10
Ethical principles

1. All the research and innovation activities carried out under the Euratom Programme shall comply with ethical principles and relevant national, Union and international legislation, including the Charter of Fundamental Rights of the European Union and the European Convention on Human Rights and its Supplementary Protocols.

Particular attention shall be paid to the principle of proportionality, the right to privacy, the right to the protection of personal data, the right to the physical and mental integrity of a person, the right to non-discrimination and the need to ensure high levels of human health protection.

2. Research and innovation activities carried out under the Euratom Programme shall have an exclusive focus on civil applications.

Article 11
Work programmes

1. The Commission shall adopt, by means of implementing acts, in accordance with the examination procedure referred to in Article 12(3), work programmes for the implementation of the indirect actions. Such work programmes shall allow for bottom-up approaches that address the objectives in innovative ways.

The work programmes shall set out the essential elements for implementing the actions in accordance with the Financial Regulation, including their detailed objectives, the associated funding and a timetable, as well as a multi-annual approach and strategic orientations for the following years of implementation.

2. For direct actions, the Commission shall, in accordance with Decision 96/282/Euratom, draw up a multi-annual work programme, setting out in greater

²⁵ Council Decision 2013/743/EU of 3 December 2013 establishing the Specific Programme Implementing Horizon 2020 - The Framework Programme for Research and Innovation (2014 - 2020)

detail the objectives and scientific and technological priorities presented in Annex I, and a timetable for implementation.

That multi-annual work programme shall also take account of relevant research activities carried out by the Member States, associated countries and European and international organisations. It shall be updated as and when appropriate.

3. The work programmes referred to in paragraphs 1 and 2 shall take account of the state of science, technology and innovation at national, Union and international level and of relevant policy, market and societal developments. They shall be updated as and where appropriate.
4. The work programmes referred to in paragraphs 1 and 2 shall contain a section which identifies the cross-cutting activities as referred to in Article 8.

Article 12

Committee procedure

1. The Commission shall be assisted by a Committee. That committee shall be a committee within the meaning of Regulation (EU) No 182/2011.
2. The Committee²⁶ shall meet in two different configurations, dealing respectively with fission related aspects and fusion related aspects of the Euratom Programme.
3. Where reference is made to this paragraph, the examination procedure in accordance with Article 5 of Regulation (EU) No 182/2011 shall apply.
4. Where the opinion of the Committee is to be obtained by written procedure, that procedure shall be terminated without result when, within the time-limit for delivery of the opinion, the chair of the Committee so decides or a simple majority of Committee members so requests.

Article 13

Information to the Committee

The Commission shall regularly inform the Committee referred to in Article 12 of overall progress in implementing the Euratom Programme, and shall provide it with timely information on all indirect actions proposed or funded under the Euratom Programme.

Article 14

External advice and societal engagement

1. For the implementation of the Euratom Programme, account shall be taken of advice and inputs provided, where appropriate, by:
 - (a) the Euratom Scientific and Technical Committee pursuant to Article 134 of the Treaty;

²⁶ With a view to facilitating the implementation of the Euratom Programme, for each meeting of the programme committee as defined in the agenda, the Commission will reimburse, in accordance with its established guidelines, the expenses of one representative per Member State, as well as one expert/adviser per Member State for those agenda items where a Member State requires specific expertise.

- (b) independent advisory groups of high-level experts set up by the Commission;
 - (c) dialogue structures created under international science and technology agreements;
 - (d) forward-looking activities;
 - (e) targeted public consultations (including, where appropriate, regional and national authorities or stakeholders); and
 - (f) transparent and interactive processes that ensure support to responsible research and innovation.
2. Full account shall also be taken of the research and innovation agendas established by, inter alia, European Technology Platforms, Joint Programming Initiatives and European Innovation Partnerships.

CHAPTER II ***Specific fields of action***

Article 15 **Small and medium-sized enterprises**

Particular attention shall be paid to ensuring the adequate participation of, and innovation impact on, small and medium-sized enterprises (SMEs) and the private sector in general in the Euratom Programme. Quantitative and qualitative assessments of SME participation shall be undertaken as part of the evaluation and monitoring arrangements.

Article 16 **Public-private and public-public partnerships**

To attain the objectives set out in Article 3, specific activities of the Euratom Programme may be implemented through:

- (a) Joint Undertakings established on the basis of Chapter 5 of the Treaty;
- (b) public-public partnerships based on the 'Programme co-fund actions' funding scheme;
- (c) contractual public-private partnerships, as referred in Article 25 of Regulation (EU) No 1291/2013.

Article 17 **International cooperation with third countries and international organisations**

1. Entities established in third countries and international organisations shall be eligible to participate in indirect actions of the Euratom Programme under the conditions set out in Regulation (EU) No 1290/2013. Exceptions to the general principle in that regard are set out in Article 7 of this Regulation. International cooperation with third countries and international organisations shall be promoted by the Euratom Programme with a view to:
- (a) strengthening the Union's excellence and attractiveness in research and innovation as well as its economic and industrial competitiveness;
 - (b) tackling effectively common societal challenges;

- (c) supporting the Union's external and development policy objectives, complementing external and development programmes. Synergies with other Union policies shall be sought.
2. Targeted actions with the objective of promoting cooperation with specific third countries or groups of third countries shall be implemented on the basis of a strategic approach as well as common interest, priorities and mutual benefit, taking into account their scientific and technological capabilities and market opportunities, and the expected impact.

Reciprocal access to third country programmes should be encouraged. In order to maximise impact, coordination and synergies with initiatives of Member States and associated countries shall be promoted. The nature of the cooperation may vary according to the specific partner countries.

Cooperation priorities shall take into account developments in Union policy opportunities for cooperation with third countries, and the fair and equitable treatment of intellectual property rights.

Article 18

Information, communication, exploitation and dissemination

1. When implementing the Euratom Programme, dissemination and communication activities shall be considered an integral part of the actions supported by the Euratom Programme.
2. Communication activities may include:
 - (a) initiatives aimed at widening awareness and facilitating access to funding under the Euratom Programme, in particular for those regions or types of participant that have a relatively low participation;
 - (b) targeted assistance to projects and consortia to provide them with access to the necessary skills to optimise the communication, exploitation and dissemination of results;
 - (c) initiatives to foster dialogue and debate on scientific, technological and innovation-related issues with the public, and to take advantage of social media and other innovative technologies and methodologies;
 - (d) communication of the Union's political priorities provided that they are related to the aims of this Regulation; in particular, the Commission shall provide timely and thorough information to Member States.
3. Subject to the Treaty and relevant Union legislation, dissemination activities may include:
 - (a) actions which bring together results from a range of projects, including those that may be funded from other sources, to provide user-friendly databases and reports that summarise key findings;
 - (b) dissemination of results to policy makers, including standardisation bodies, to promote the use of policy-relevant results by the appropriate bodies at international, Union, national and regional level.

CHAPTER III

Control

Article 19

Control and audit

1. The control system set up for the implementation of this Regulation shall be designed so as to provide reasonable assurance of achieving adequate management of the risks relating to the effectiveness and efficiency of the operations as well as the legality and regularity of the underlying transactions, taking into account the multi-annual character of programmes as well as the nature of the payments concerned.
2. The control system shall ensure an appropriate balance between trust and control, taking into account administrative and other costs of controls at all levels, especially for participants, so that the Euratom Programme objectives can be achieved and the most excellent researchers and most innovative enterprises can be attracted to it.
3. As part of the control system, the audit strategy for expenditure in the indirect actions under the Euratom Programme shall be based on the financial audit of a representative sample of expenditure across the whole Programme. Such representative sample shall be complemented by a selection based on an assessment of the risks related to expenditure.

Audits of expenditure in the indirect actions under the Euratom Programme shall be carried out in a coherent manner in accordance with the principles of economy, efficiency and effectiveness in order to minimise the audit burden of the participants.

Article 20

Protection of the financial interests of the Union

1. The Commission shall take appropriate measures ensuring that, when actions financed under this Regulation are implemented, the financial interests of the Union are protected by the application of preventive measures against fraud, corruption and any other illegal activities, by effective checks and, where irregularities are detected, by the recovery of the amounts wrongly paid and, where appropriate, by effective, proportionate and dissuasive administrative and financial penalties.
2. The Commission or its representatives and the Court of Auditors shall have the power of audit, on the basis of documents and on-the-spot, over all grant beneficiaries, contractors and subcontractors who have received Union funds under this Regulation.

Without prejudice to paragraph 3, audits by the Commission may be carried out up to two years after the final payment.

3. The European Anti-Fraud Office (OLAF) may carry out investigations, including on-the-spot checks and inspections in accordance with the provisions and procedures laid down in Regulation (EU, Euratom) No 883/2013 of the European Parliament and of the Council²⁷ and Council Regulation (Euratom, EC) No 2185/96²⁸, with a view to

²⁷ Regulation (EU, Euratom) No 883/2013 of the European Parliament and of the Council of 11 September 2013 concerning investigations conducted by the European Anti-Fraud Office (OLAF) and

establishing whether there has been fraud, corruption or any other illegal activity affecting the financial interests of the Union in connection with a grant agreement or grant decision or a contract funded under the Euratom Programme.

4. Without prejudice to paragraphs 1, 2 and 3, cooperation agreements with third countries and with international organisations, contracts, grant agreements and grant decisions resulting from the implementation of this Regulation shall contain provisions expressly empowering the Commission, the Court of Auditors and the OLAF to conduct such audits and investigations, according to their respective competences.

CHAPTER IV *Monitoring and evaluation*

Article 21 **Monitoring**

1. The Commission shall annually monitor the implementation, including progress and achievements, of the Euratom Programme. The Commission shall provide the Committee, referred to in Article 12, with information in this regard.
2. The Commission shall report and make publicly available the results of the monitoring referred to in paragraph 1.

Article 22 **Evaluation**

1. Evaluations shall be carried out in a sufficiently timely manner to feed into the decision-making process.

By 31 December 2022, the Commission shall carry out, with the assistance of independent experts selected on the basis of a transparent process, an ex-post evaluation of the Euratom Programme. Such evaluation shall cover the rationale, implementation and achievements, as well as the longer-term impacts and sustainability of the measures, to feed into a decision on a possible renewal, modification or suspension of a subsequent measure.
2. Without prejudice to paragraph 1, direct and indirect actions of the Euratom Programme shall be subject to separate evaluations.
3. The evaluations referred to in paragraphs 1 and 2 shall assess the progress towards the objectives set out in Article 3, taking into account the relevant performance indicators defined in Annex II.
4. Where appropriate and available, Member States shall provide the Commission with data and information necessary for the monitoring and evaluation of the measures concerned.

repealing Regulation (EC) No 1073/1999 of the European Parliament and of the Council and Council Regulation (Euratom) No 1074/1999 (OJ L 248, 18.9.2013, p. 1)

²⁸ Council Regulation (Euratom, EC) No 2185/96 of 11 November 1996 concerning on-the-spot checks and inspections carried out by the Commission in order to protect the European Communities' financial interests against fraud and other irregularities (OJ L 292, 15.11.1996, p. 2).

5. The Commission shall communicate the conclusions of the evaluations referred to in paragraphs 1 and 2, accompanied by its observations, to the European Parliament, the Council and the European Economic and Social Committee.

TITLE III

FINAL AND TRANSITIONAL PROVISIONS

Article 23

Repeal and transitional provisions

1. Regulation (Euratom) No 1314/2013 is repealed with effect from 1 January 2019.
2. Without prejudice to paragraph 1, activities or actions benefiting from the Community financial support under Regulation (Euratom) No 1314/2013 shall continue to be governed by the rules applicable to those activities or actions until their termination, completion or closure. Where necessary, any remaining tasks of the Committee established by the Regulation (Euratom) No 1314/2013 shall be undertaken by the Committee referred to in Article 12 of this Regulation.
3. The financial envelope referred to in Article 4 may also cover the technical and administrative assistance expenses necessary to ensure the transition between the Euratom Programme and the measures adopted under Regulation (Euratom) No 1314/2013.
4. By way of derogation from Article 14(a) of the Financial Regulation, appropriations not used and available at 31 December 2018 arising from external assigned revenue relating to the Regulation (Euratom) 1314/2013 shall be carried over automatically and used for the Euratom Programme.
5. By way of derogation from the third subparagraph of Article 140(6) of the Financial Regulation, annual repayments generated by a financial instrument established under Regulation (EU) No 1291/2013 and resulting from the non-utilisation of funds made available under this Regulation or Regulation (Euratom) 1314/2013 shall be assigned to the Euratom Programme or its successor programme.

Article 24

Entry into force

This Regulation shall enter into force on the third day following that of its publication in the *Official Journal of the European Union*.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels,

For the Council
The President

LEGISLATIVE FINANCIAL STATEMENT

1. FRAMEWORK OF THE PROPOSAL/INITIATIVE

- 1.1. Title of the proposal/initiative
- 1.2. Policy area(s) concerned in the ABM/ABB structure
- 1.3. Nature of the proposal/initiative
- 1.4. Objective(s)
- 1.5. Grounds for the proposal/initiative
- 1.6. Duration and financial impact
- 1.7. Management mode(s) planned

2. MANAGEMENT MEASURES

- 2.1. Monitoring and reporting rules
- 2.2. Management and control system
- 2.3. Measures to prevent fraud and irregularities

3. ESTIMATED FINANCIAL IMPACT OF THE PROPOSAL/INITIATIVE

- 3.1. Heading(s) of the multiannual financial framework and expenditure budget line(s) affected
- 3.2. Estimated impact on expenditure
 - 3.2.1. *Summary of estimated impact on expenditure*
 - 3.2.2. *Estimated impact on operational appropriations*
 - 3.2.3. *Estimated impact on appropriations of an administrative nature*
 - 3.2.4. *Compatibility with the current multiannual financial framework*
 - 3.2.5. *Third-party contributions*
- 3.3. Estimated impact on revenue

LEGISLATIVE FINANCIAL STATEMENT

1. FRAMEWORK OF THE PROPOSAL/INITIATIVE

1.1. Title of the proposal/initiative

Council Regulation on the research and training programme of the European Atomic Energy Community (2019-2020) complementing the Horizon 2020 framework programme for research and innovation

1.2. Policy area(s) concerned

- 08 Research and Innovation
- 10 Joint Research Centre

1.3. Nature of the proposal/initiative

- The proposal/initiative relates to **a new action**
- The proposal/initiative relates to **a new action following a pilot project/preparatory action**²⁹
- The proposal/initiative relates to **the extension of an existing action**
- The proposal/initiative relates to **an action redirected towards a new action**

1.4. Objective(s)

1.4.1. *The Commission's multiannual strategic objective(s) targeted by the proposal/initiative*

The Euratom Programme shall strengthen the research and innovation framework in the nuclear field and coordinate Member States' research efforts, thereby avoiding duplication, retaining critical mass in key areas and ensuring public funding is used in an optimal way. The technical objectives of the Euratom Programme shall be 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. The programme will contribute to the 'Innovation Union' flagship by supporting policy-relevant, pre-commercial and crosscutting nuclear research and facilitating knowledge and technology transfer process between academia, industry and public authorities. By putting emphasis on training in all its activities, boosting competitiveness in the current nuclear industry and creating a new sector of high-tech industry for fusion energy in particular, the Euratom Programme will lead to growth and new jobs in a wide range of disciplines.

1.4.2. *Specific objectives for indirect actions*

Specific objectives:

²⁹ As referred to in Article 54(2)(a) or (b) of the Financial Regulation.

Specific objective No.1 – supporting safety of nuclear systems;

Specific objective No.2 – contributing to the development of safe, longer term solutions for the management of ultimate nuclear waste, including final geological disposal as well as partitioning and transmutation;

Specific objective No.3 – supporting the development and sustainability of nuclear expertise and excellence in the Union;

Specific objective No. 4 – supporting radiation protection and development of medical applications of radiation, including, inter alia, the secure and safe supply and use of radioisotopes;

Specific objective No. 5 – Moving toward demonstration of feasibility of fusion as a power source by exploiting existing and future fusion facilities;

Specific objective No. 6 - Laying the foundations for future fusion power plants by developing materials, technologies and conceptual design;

Specific objective No. 7 - Promoting innovation and industrial competitiveness;

Specific objective No. 8 – Ensuring availability and use of research infrastructures of pan-European relevance;

1.4.3. *Specific objectives for direct actions*

Specific objectives

Specific objective No.1 – Improve nuclear safety including, fuel and reactor safety, waste management and decommissioning, and emergency preparedness;

Specific objective No.2 – Improve nuclear security including: nuclear safeguards, non-proliferation, combating illicit trafficking and nuclear forensics;

Specific objective No.3 – Raising excellence in the science base for standardisation;

Specific objective No. 4 – Foster knowledge management, education and training;

Specific objective No. 5 – Support the policy of the Union on nuclear safety and security and the related evolving Union legislation.

1.4.4. *Expected result(s) and impact*

Specify the effects which the proposal/initiative should have on the beneficiaries/groups targeted.

1) The Euratom Programme's impacts can be expected in improving the safe exploitation of nuclear power plants, in taking further significant steps towards safe implementation of geological disposal of high-level and long-lived nuclear waste, and ensuring more robust regulation of industrial and medical practices involving the use of ionising radiation.

2) The Euratom Programme will lead to the strengthened nuclear security through research on nuclear safeguards and implementation of enhanced verification and

detection technologies, as concerns both nuclear materials and nuclear fuel cycle. The programme includes nuclear forensics capabilities in support to MS globally.

3) The Euratom Programme will contribute to the development of nuclear skills and expertise in the Union through research, training and mobility actions, and better access to and use of research facilities.

4) Through supporting fusion research the Euratom Programme will develop relevant technologies and qualify materials for a demonstration power plant.

1.4.5. *Indicators of results and impact*

Specify the indicators for monitoring implementation of the proposal/initiative.

The following section specifies for the specific objectives of the Euratom Programme a number of key indicators for assessing results and impacts.

Indicators for indirect actions:

1) Supporting safety of nuclear systems

Indicator: The number of projects (joint research and/or coordinated actions) likely to lead to a demonstrable improvement in nuclear safety practice in Europe

Current: 21 (2017); Target: 33 (2020)

2) Contributing to the development of safe, longer term solutions for the management of ultimate nuclear waste, including final geological disposal as well as partitioning and transmutation;

Indicator: The number of projects contributing to the development of safe long term solutions for the management of ultimate nuclear waste

Current: 10 (2017); Target: 11 (2020),

3) Supporting the development and sustainability of nuclear expertise and excellence at Union level

Indicator: number of PhD students, Post-Doc researchers, trainees and fellows supported by Euratom

Current: 745 (2017); Target: 1000 (total for 2014-2020)

4) Supporting radiation protection and development of medical applications of radiation, including, inter alia, the secure and safe supply and use of radioisotopes;

Indicator: Number of projects likely to have a demonstrable impact on regulatory practice regarding radiation protection.

Current: 2 (2017); Target: 3 (2020)

5) Moving towards demonstration of feasibility of fusion as a power source by exploiting existing and future fusion facilities

Indicator: Number of publications in high impact journals

Current: ca. 350 (2016); Target: 350 (2020).

6) Laying the foundations for future fusion power plants by developing materials, technologies and conceptual design;

Indicator: Percentage of the Fusion Roadmap's milestones established for a period 2014-2020 reached by the Euratom Programme;

Current: 28% (2015) Target: 90% (2020);

7) Promoting innovation and industrial competitiveness

Indicator: Number of spin-offs from the fusion research under Euratom Programme

Current: 3 (2015); Target: 12 (2020)

Indicator: Patents applications generated by European fusion laboratories

Current: 2 new patents per year (2015); Target: 8 (2020);

8) Ensuring availability and use of research infrastructures of pan-European relevance;

Indicator: Number of researchers using research infrastructures through Euratom mobility and access support (per year)

Current: 958 (2015), Target: 1000 (2020);

Indicators for direct actions

1) Improve nuclear safety including: fuel and reactor safety, waste management, decommissioning and emergency preparedness.

- JRC policy support indicator – Number of occurrences of tangible specific impacts on Union policies resulting from technical and scientific policy support provided by the JRC. This indicator counts cases where JRC's support becomes part or even the basis of European policy, i.e. cases where JRC's work helped putting Commission priorities on a solid and robust scientific evidence base. Impacts are identified in the JRC's annual evaluation exercise performed by an internal peer group of experts on the basis of an ISO certified evaluation methodology:

Current 15 (2016), Target 15 per year (2019-2020)

- JRC scientific productivity indicator – Number of peer reviewed publications. This indicator counts the peer-reviewed articles published within a given year in (i) journals, the titles of which are listed in the Thomson-Reuters Science Citation Index Expanded (SCI-e) and/or Social Science Citation Index (SSCI). This indicator reflects the degree to which JRC publishes the results of its research:

Current 45 (2016), Target 50 per year (2019-2020)

2) Improve nuclear security including: nuclear safeguards, non-proliferation, combating illicit trafficking and nuclear forensics.

- JRC policy support indicator: Current 19 (2016), Target 22 (2019-2020)

- JRC scientific productivity indicator: Current 21 (2016), Target 22 (2019-2020)

3) Raising excellence in the nuclear science base for standardisation.

- JRC policy support indicator: Current 6 (2016), Target 12 (2019-2020)

- JRC scientific productivity indicator: Current 50 (2016), Target 55 (2019-2020)

4) Foster knowledge management, education and training.

- JRC policy support indicator: Current 9 (2016), Target 10 (2019-2020)

- JRC scientific productivity indicator: Current 15 (2016), Target 18 (2019-2020)

5) Support the policy of the Union on nuclear safety and security, and the related evolving Union legislation.

- JRC policy support indicator: Current 13 (2016), Target 18 (2019-2020)

- JRC scientific productivity indicator: Current 7 (2016), Target 7 (2019-2020)

1.5. Grounds for the proposal/initiative

1.5.1. Requirement(s) to be met in the short or long term

The focus of the fission programme on safety-related issues addresses key societal concerns regarding the use of current nuclear technology, such as operational safety of nuclear power plants and safe disposal of the most hazardous forms of radioactive waste (high-level waste and spent nuclear fuel).

Research on fusion can have an impact only in the longer term but energy and climate change are at the top of the political agenda, and as a potential low-carbon, secure and base-load source of electricity, fusion and related research are clearly relevant in this context.

1.5.2. Added value of Union involvement (it may result from different factors, e.g. coordination gains, legal certainty, greater effectiveness or complementarities). For the purposes of this point 'added value of Union involvement' is the value resulting from Union intervention which is additional to the value that would have been otherwise created by Member States alone.

A key element of Euratom Programme added value is the ability to mobilise a wider pool of excellence, competencies and multi-disciplinarity in the nuclear research field than is possible at the level of individual Member States. The Euratom Programme also enables a Europe-wide approach to the improvement, through

cooperative research and innovation, of nuclear safety and radiation protection in all areas of application, which complements the Euratom Directives on nuclear safety, radioactive waste management and basic safety standards. This involves demonstrable scientific and technological progress in all areas that would not have been possible without a collaborative pan-European approach. In areas such as education and training, use of research infrastructures and international cooperation, the Euratom Programme also enables a much more broad-based coordination throughout Europe. This is of particular benefit to smaller Member States, especially with nuclear power programmes, which can then benefit from economies of scale afforded by the Europe-wide pooling effect. In the broader energy context, in which the European dimension is being championed through the Energy Union, the Euratom Programme also has a key role to play under the 'research, innovation and competitiveness pillar', in particular as part of the SET-Plan activities.

1.5.3. *Lessons learned from similar experiences in the past*

The Euratom research and training programme builds on the experience accumulated from past Euratom Programmes. Over a period spanning several decades, Euratom programmes have:

- succeeded in involving Europe's best researchers and institutes in nuclear field;
- made a major contribution to Europe's knowledge base in nuclear field and had an important impact on networking and cooperation, with a significant restructuring effect on European nuclear research.

Together with the successes, there are important lessons to be learned from the past:

- Research, innovation and education should be addressed in a more coordinated manner to ensure the relevance of the activities and the mutual synergy with national programmes;
- Research results should be better disseminated and valorised into new products, processes and services;
- The intervention logic should be more focused, concrete, detailed and transparent;
- The anticipated impact should be considered in the project planning process.
- Monitoring and evaluation in the execution phase need to be strengthened.

The recommendations for direct actions in recent evaluation reports note that the JRC can

- promote stronger integration in the production of knowledge in the Union;;
- introduce impact analyses and cost-benefit studies of specific work as part of the new JRC programme;
- improving the knowledge management enabling the transfer of knowledge and skills in EU and worldwide

- reinforce its education and training activities offering its experience and infrastructure to the next generation of nuclear scientist
- create more synergy between its nuclear and non-nuclear activities exploiting the potential for knowledge transfer in some areas.

1.5.4. *Compatibility and possible synergy with other appropriate instruments*

The Euratom Programme (2019-2020) shall contribute to the objectives outlined in the 'Horizon 2020' framework programme for research and innovation (2014-2020). Accordingly, appropriate links and interfaces between the Euratom Programme and the 'Horizon 2020' Framework Programme may be established by means of cross-cutting actions. The programme contributes to the implementation of the chapter 7 of the Euratom Treaty, related to the EU nuclear safeguards system. It also contributes to the EU security agendas and strategies.

1.6. **Duration and financial impact**

- Proposal/initiative of **limited duration**
 - Proposal/initiative in effect from 01/01/2019 to 31/12/2020
 - Financial impact from 2019 to 2026
- Proposal/initiative of **unlimited duration**
 - Implementation with a start-up period from YYYY to YYYY,
 - followed by full-scale operation.

1.7. **Management mode(s) planned³⁰**

- Direct management** by the Commission
 - by its departments, including by its staff in the Union delegations;
 - by the executive agencies
- Shared management** with the Member States
- Indirect management** by entrusting budget implementation tasks to:
 - third countries or the bodies they have designated;
 - international organisations and their agencies (to be specified);
 - the EIB and the European Investment Fund;
 - bodies referred to in Articles 208 and 209 of the Financial Regulation;

³⁰ Details of management modes and references to the Financial Regulation may be found on the BudgWeb site:
<https://myintracomm.ec.europa.eu/budgweb/EN/man/budgmanag/Pages/budgmanag.aspx>

- public law bodies;
- bodies governed by private law with a public service mission to the extent that they provide adequate financial guarantees;
- bodies governed by the private law of a Member State that are entrusted with the implementation of a public-private partnership and that provide adequate financial guarantees;
- persons entrusted with the implementation of specific actions in the CFSP pursuant to Title V of the TEU, and identified in the relevant basic act.
- *If more than one management mode is indicated, please provide details in the 'Comments' section.*

Comments

Management of the Programme will be through the services of the Commission

2. MANAGEMENT MEASURES

2.1. Monitoring and reporting rules

Specify frequency and conditions.

On annual basis, performance of the Programme is monitored through a set of Key Performance Indicators. Research and training activities are also reported in annual reports prepared by DG RTD and JRC. Individual projects are subject to a compulsory mid-term review.

2.2. Management and control system

2.2.1. Risk(s) identified

The Commission accepts the clear need to manage the budget in an efficient and effective manner, and to prevent fraud and waste. It remains the ultimate objective of the Commission to achieve a residual error rate of less than 2% of total expenditure over the lifetime of the programme, and to that end, it has introduced a number of simplification measures. However, other objectives such as the attractiveness and the success of the Union research policy, international competitiveness, scientific excellence and in particular the costs of controls (see point 2.2.2) need to be considered. The Commission takes note of the European Parliament's opinion (in the discharge 2014) that [the EP] "Remains convinced that the Commission must continue to strive for an acceptable balance between the attractiveness of programmes to participants and the legitimate necessity of accountability and financial control". Taking these elements in balance, it is proposed that the Directorates General charged with the implementation of the research and innovation budget will establish a cost-effective internal control system that will give reasonable assurance that the risk of error over the course of the multiannual expenditure period is, on an annual basis, within a range of 2-5%; with the ultimate aim to achieve a residual level of error as close as possible to 2% at the closure of the multiannual programmes, once the financial impact of all audits, correction and recovery measures have been taken into account.

2.2.2. Information concerning the internal control system set up

The internal control framework for grants is built on:

- The implementation of the Commission's Internal Control Standards;
- Procedures for selecting the best projects and translating them into legal instruments;
- Project and contract management throughout the lifetime of every project;
- Ex-ante checks on 100% of claims, including receipt of audit certificates and ex-ante certification of cost methodologies;
- Ex post audits on a sample of claims; and

– Scientific evaluation of project results.

For direct actions, financial circuits include ex-ante checks for procurement and ex-post controls. Risks are assessed annually and progress in the execution of work and the consumption of resources is monitored regularly, based on defined objectives and indicators.

2.2.3. *Estimate of the costs and benefits of the controls and assessment of the expected level of risk of error*

The cost of the internal control system for the Commission's Directorates General charged with the implementation of the research and innovation budget (including Euratom) was estimated at €267m per year (based on the 2009 Tolerable Risk of Error exercise). It has also led to a considerable burden on beneficiaries and Commission services. There has been a strong feeling, amongst the beneficiaries as well as amongst the legislative authority, that the control burden has become too great. This runs the risk of lowering the attractiveness of the Union research programme, and so negatively affecting Union research and innovation. 43 % of the total costs of control of the Commission services (not including the costs of the beneficiary) are borne at the stage of project management, 18 % on selection of proposals, and 16 % on negotiation of contracts (16 %). Ex post audits and their resulting implementation amounted to 23 % (€61m) of the total. However, this considerable control effort has not managed to fully achieve its objective. The estimated "residual" error rate for FP7, after taking account of all recoveries and corrections that have been or will be implemented, remains over 2 %. The current rate of error from audits of FP7 carried out by the Directorate General Research and Innovation is around 5 %, reduced to around 3% due to the effects of the audits. It is unlikely that the 2 % residual error will be attained. The rate of error identified by the European Court of Auditors is in a similar range.

2.3. Measures to prevent fraud and irregularities

Specify existing or envisaged prevention and protection measures.

The Directorates General charged with the implementation of the research and innovation budget are determined to fight against fraud at all stages of the grant management process. They have developed, and are implementing, anti-fraud strategies, including an enhanced use of intelligence, especially using advanced IT tools, and training and information for staff. Sanctions have been developed to provide deterrents to fraud, as well as appropriate penalties if they are identified. These efforts will continue. Overall the measures proposed should have a positive impact on the fight against fraud, especially the greater emphasis on risk based audit and reinforced scientific evaluation and control. It should be underlined that detected fraud has been very low in proportion to total expenditure, nevertheless the Directorates General charged with the implementation of the research budget remain committed to combat it. The Commission shall take appropriate measures ensuring that, when actions financed under this Regulation are implemented, the financial interests of the Union are protected by the application of preventive measures against fraud, corruption and any other illegal activities, by effective checks and, if irregularities are detected, by the recovery of the amounts wrongly paid and, where appropriate, by effective, proportionate and deterrent penalties. The Commission or

its representatives and the Court of Auditors shall have the power of audit, on the basis of documents and on-the-spot, over all grant beneficiaries, contractors and subcontractors who have received Union funds under the Programme. The European Anti-fraud Office (OLAF) may carry out on-the-spot checks and inspections on economic operators concerned directly or indirectly by such funding in accordance with the procedures laid down in Regulation (Euratom, EC) No 2185/96 with a view to establishing whether there has been fraud, corruption or any other illegal activity affecting the financial interests of the Union in connection with a grant agreement or grant decision or a contract concerning Union funding. Without prejudice to the paragraphs above, cooperation agreements with third countries and international organisations and grant agreements and grant decisions and contracts resulting from the implementation of this Regulation shall expressly empower the Commission, the Court of Auditors and OLAF to conduct such audits, on-the-spot checks and inspections

3. ESTIMATED FINANCIAL IMPACT OF THE PROPOSAL/INITIATIVE

3.1. Heading(s) of the multiannual financial framework and expenditure budget line(s) affected

- Existing budget lines

In order of multiannual financial framework headings and budget lines.

Heading of multiannual financial framework	Budget line	Type of expenditure	Contribution			
	Number	Diff./Non-diff. ³¹	from EFTA countries ³²	from candidate countries ³³	from third countries	within the meaning of Article 21(2)(b) of the Financial Regulation
1	<p><u>08 01</u> Administrative expenditure of the 'Research and Innovation' policy area</p> <p>08 01 05 11 Expenditure related to officials and temporary staff implementing research and innovation programmes — Euratom Programme</p> <p>08 01 05 12 External personnel implementing research and innovation programmes — Euratom Programme</p> <p>08 01 05 13 Other management expenditure for research and innovation programmes — Euratom Programme</p> <p><u>10 01</u> Administrative expenditure of the 'Direct research' policy area</p> <p>10 01 05 Support expenditure for research and innovation programmes in the 'Direct research' policy area</p> <p>10 01 05 11 Expenditure related to officials and temporary staff implementing research and innovation programmes — Euratom Programme</p> <p>10 01 05 12 External personnel implementing research and innovation programmes — Euratom Programme</p> <p>10 01 05 13 Other management expenditure for research and innovation programmes — Euratom Programme</p> <p>10 01 05 14 Other expenditure for new major research infrastructures — Euratom Programme</p> <p><u>08 03</u> Euratom Programme Indirect Research</p>	Non-diff.	NO	YES	YES	NO

³¹ Diff. = Differentiated appropriations / Non-diff. = Non-differentiated appropriations.

³² EFTA: European Free Trade Association.

³³ Candidate countries and, where applicable, potential candidates from the Western Balkans.

	<p><u>actions</u></p> <p>08 03 01 01 Euratom Fusion Energy 08 03 01 02 Euratom Nuclear Fission and Radiation Protection 08 03 50 Appropriations accruing from contributions from third parties to research and technological development 08 03 51 Completion of the previous Euratom research framework programme (2007 to 2013)</p> <p>10 03 Euratom Programme — Direct actions 10 03 01 Euratom activities of direct research 10 03 50 Appropriations accruing from contributions from (non-European Economic Area) third parties to research and technological development 10 03 50 01 Appropriations accruing from contributions from (non-European Economic Area) third parties to research and technological development (2014 to 2020) 10 03 50 02 Appropriations accruing from contributions from (non-European Economic Area) third parties to research and technological development (prior to 2014) 10 03 51 Completion of the Seventh Framework Programme — Euratom (2007 to 2013) 10 03 52 Completion of previous Euratom framework programmes (prior to 2007)</p>	Diff.				
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- New budget lines requested

In order of multiannual financial framework headings and budget lines.

Not applicable

3.2. Estimated impact on expenditure

3.2.1. Summary of estimated impact on expenditure

3.2.1.1. Summary of estimated impact on expenditure - **Indirect Research**

EUR million (to three decimal places)

Heading of multiannual financial framework			1	Smart and Inclusive Growth		
DG: RTD (Indirect Research)			2019	2020	>2020	TOTAL
• Operational appropriations						
Number of budget line: 08 03 01 xx	Commitments	(1)= 1a+1b	228.353	242.976	-	471.328
	Payments	(2)= 2a+2b	60.000	244.080	167.248	471.328
Number of budget line: 08 03 01 01	Commitments	(1a)	159.321	169.523	-	328.844
	Payments	(2a)	60.000	130.092	138.751	328.844
Number of budget line: 08 03 01 02	Commitments	(1b)	69.032	73.452	-	142.484
	Payments	(2b)	-	113.988	28.497	142.484
• Appropriations of an administrative nature financed from the envelope of specific programmes ³⁴						
Number of budget line: 08 01 05 11			9.384	9.572		18.956
Number of budget line: 08 01 05 12			0.952	0.971		1.923
Number of budget line: 08 01 05 13			4.240	4.966		9.206
Number of budget line 08 01 05 xx		(3)	14.576	15.509	-	30.085
TOTAL appropriations DG RTD	Commitments	=(1)+(3)	242.928	258.485	-	501.413

³⁴ Technical and/or administrative assistance and expenditure in support of the implementation of EU programmes and/or actions (former 'BA' lines), indirect research, direct research.

	Payments	=2+2a +3	74.576	259.589	167.248	501.413
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3.2.1.2. Summary of estimated impact on expenditure - Direct Research

EUR million (to three decimal places)

DG: Joint Research Centre (Direct Research)			2019	2020	> 2021	TOTAL
• Operational appropriations						
Number of budget line: 10.03	Commitments	(1)	11.316	11.769	0	23.085
	Payments	(2)	4.640	9.917	8.528	23.085
Number of budget line: 10.03.01	Commitments	(1a)	11.316	11.769	0	23.085
	Payments	(2a)	4.640	9.917	8.528	23.085
• Appropriations of an administrative nature financed from the envelope of specific programmes						
Number of budget line: 10.01.05.11			56.368	58.623	0	114.991
Number of budget line: 10.01.05.12			10.400	10.816	0	21.216
Number of budget line: 10.01.05.13			36.447	37.905	0	74.352
Number of budget line: 10.01.05.14			15.702	19.461	0	35.163
Number of budget line: 10.01.05		(3)	118.917	126.804	0	245.722
TOTAL appropriations for DG JRC	Commitments	=1+1a +3	130.234	138.573		268.807
	Payments	=2+2a +3	123.557	136.722	8.528	268.807

Heading of multiannual financial framework	5	'Administrative expenditure'
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EUR million (to three decimal places)

		2019	2020	>2020	TOTAL
DG: RTD Indirect Research + JRC Direct Research					
• Human resources		0	0	0	0
• Other administrative expenditure		0	0	0	0
TOTAL DG RTD + JRC	Appropriations	0	0	0	0
TOTAL appropriations under HEADING 5 of the multiannual financial framework	(Total commitments = Total payments)	0	0	0	0

EUR million (to three decimal places)

3.2.1.3. Summary of estimated impact on expenditure – Indirect + Direct Research

DG: RTD + Joint Research Centre,		2019	2020	> 2020	TOTAL
• Operational appropriations					
Number of budget line: 08 03 01	Commitments (1)	228.353	242.976	-	471.328
	Payments (2)	60.000	244.080	167.248	471.328

Number of budget line: 10.03.01	Commitments	(1a)	11.316	11.769	0	23.085
	Payments	(2a)	4.640	9.917	8.528	23.085
Appropriations of an administrative nature financed from the envelope of specific programmes						
Number of budget line: 08.01.05.xx		(3)	14.576	15.509		30.085
Number of budget line: 10.01.05.xx			118.917	126.804	0	245.722
TOTAL appropriations for DG RTD + JRC	Commitments	=1+1a+3	373.161	397.057	0	770.218
	Payments	=2+2a+3	198.133	396.309	175.776	770.218

		2019	2020	>2020	TOTAL
TOTAL appropriations under HEADINGS 1 to 5 of the multiannual financial framework	Commitments	373.161	397.057	0	770.218
	Payments	198.133	396.309	175.776	770.218

3.2.2. Estimated impact on operational appropriations

- The proposal/initiative does not require the use of operational appropriations
- The proposal/initiative requires the use of operational appropriations, as explained below:

Commitment appropriations in EUR million (to three decimal places)

Indicate objectives and outputs			2019	2020	TOTAL
			OUTPUTS		

↓	Type ³⁵	Average cost	No	Cost	No	Cost	Total No	Total cost
SPECIFIC OBJECTIVE								
- Output EURATOM Indirect Research Fusion	Reports describing facts, findings and results	NA*	34**	159.321	34**	169.523	68**	328.844
- Output EURATOM Indirect Research Fission (estim.)		3-5 M€	25	69.032	25	73.453	50	142.484
- Output EURATOM Direct Research JRC (***)	Products and Services for EU policy makers	46 (****)	250	11.316	250	11.769	500	23.085
Total for specific objective			309	239.669	309	254.745	618	494.413

* the average cost calculation would not be reliable in this particular field with the signature of 1 grant and any contract under Article 10 of the Treaty

** the EUROfusion grant participants report on 33 work packages

(***) The outputs from Direct Research actions are mostly products and services for EU policy makers resulting from the JRC's Multi-annual Work Programme 2019-2020 which are planned to be released by the JRC as a result of its direct research nuclear activities. These refer to scientific and policy reports, reference materials, validated methods, technical systems, scientific information systems, databases, etc. The JRC's Multi-annual Work Programme is a rolling work programme reflecting Commission needs. In this sense, the number of planned deliverables from the work programme is subject to change, since they will have to take into account forthcoming requests from the Commission. A reliable value for 2019-2020 planned deliverables can only be provided at the end of 2018, when the new work programme is finalized.

(****) The average cost of the output is very variable. For instance, a routine deliverable (such as periodical crop forecast bulletin) is not comparable to a final report of a large and expensive study for which a considerable amount of credits may have led to a single study document. Both are relevant and useful but serve different purposes. The average cost indicated is just a mathematical calculation dividing the budget by the estimated number of outputs.

³⁵ Outputs are products and services to be supplied (e.g.: number of student exchanges financed, number of km of roads built, etc.).

3.2.2.1. Summary

- The proposal/initiative does not require the use of appropriations of an administrative nature
- The proposal/initiative requires the use of appropriations of an administrative nature, as explained below:

EUR million (to three decimal places)

	2019	2020	TOTAL
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HEADING 5 of the multiannual financial framework			
Human resources	0	0	0
Other administrative expenditure	0	0	0
Subtotal HEADING 5 of the multiannual financial framework	0	0	0

Outside HEADING 5³⁶ of the multiannual financial framework	Indirect Research	Direct Research	Indirect Research	Direct Research	Indirect Research	Direct Research
Human resources	10.336	66.768	10.543	69.439	20.879	136.207
Other expenditure of an administrative nature	4.240	52.149	4.966	57.366	9.206	109.515
Subtotal outside HEADING 5 of the multiannual financial framework	14.576	118.917	15.509	126.805	30.085	245.722

TOTAL /DG	14.576	118.917	15.509	126.805	30.085	245.722
TOTAL / year	133.493		142.314		275.807	

The appropriations required for human resources and other expenditure of an administrative nature will be met by appropriations from the DG that are already assigned to management of the action and/or have been redeployed within the DG, together if necessary with any additional allocation which may be granted to the managing DG under the annual allocation procedure and in the light of budgetary constraints.

³⁶ Technical and/or administrative assistance and expenditure in support of the implementation of EU programmes and/or actions (former 'BA' lines), indirect research, direct research.

3.2.2.2. Estimated requirements of human resources

- The proposal/initiative does not require the use of human resources.
- The proposal/initiative requires the use of human resources, as explained below:

Estimate to be expressed in full time equivalent units

	2019	2020	TOTAL
• Establishment plan posts (officials and temporary staff)			
XX 01 01 01 (Headquarters and Commission's Representation Offices)			
XX 01 01 02 (Delegations)			
08 01 05 01 (Indirect research)	68	68	
10 01 05 01 (Direct research)	493	493	
• External staff (in Full Time Equivalent unit: FTE)³⁷			
XX 01 02 01 (AC, END, INT from the 'global envelope')			
XX 01 02 02 (AC, AL, END, INT and JED in the delegations)			
XX 01 04 yy ³⁸	- at Headquarters		
	- in Delegations		
08 01 05 02 (AC, END, INT - Indirect research)	14	14	
10 01 05 02 (AC, END, INT - Direct research)	176	176	
Other budget lines (specify)			
TOTAL	751	751	

XX is the policy area or budget title concerned.

The human resources required will be met by staff from the DG who are already assigned to management of the action and/or have been redeployed within the DG, together if necessary with any additional allocation which may be granted to the managing DG under the annual allocation procedure and in the light of budgetary constraints.

Description of tasks to be carried out:

Officials and temporary staff	Tasks derived from the nuclear research /direct and indirect research specific programme, in particular related to nuclear waste management, nuclear safety and nuclear safeguards, security and to nuclear fusion.
External staff	

³⁷ AC= Contract Staff; AL = Local Staff; END= Seconded National Expert; INT = agency staff; JED= Junior Experts in Delegations.

³⁸ Sub-ceiling for external staff covered by operational appropriations (former 'BA' lines).

3.2.3. Compatibility with the current multiannual financial framework

- The proposal/initiative is compatible the current multiannual financial framework.
- The proposal/initiative will entail reprogramming of the relevant heading in the multiannual financial framework.
- The proposal/initiative requires application of the flexibility instrument or revision of the multiannual financial framework.

3.2.4. Third-party contributions

- The proposal/initiative does not provide for co-financing by third parties.
- The proposal/initiative provides for the co-financing estimated below:

Appropriations in EUR million (to three decimal places)

	Year 2019	Year 2020	Total
Specify the co-financing body	Third Countries associated to the programme		
TOTAL appropriations co-financed	pm*	pm*	pm*

* to be added at a later stage

3.3. Estimated impact on revenue

- The proposal/initiative has no financial impact on revenue.
- The proposal/initiative has the following financial impact:
 - on own resources
 - on miscellaneous revenue

EUR million (to three decimal places)

Budget revenue line:	Appropriations available for the current financial year	Impact of the proposal/initiative ³⁹	
		2019	2020
Item 6011		pm	pm
Item 6013		pm	pm
Item 6031		Pm	pm

³⁹ As regards traditional own resources (customs duties, sugar levies), the amounts indicated must be net amounts, i.e. gross amounts after deduction of 25 % for collection costs.

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For miscellaneous 'assigned' revenue, specify the budget expenditure line(s) affected.

08 03 50: Appropriations accruing from contributions from (non-European Economic Area) third parties to research and technological development

10 03 50 Appropriations accruing from contributions from (non-European Economic Area) third parties to research and technological development

Specify the method for calculating the impact on revenue.

The Associated States contribute to a supplementary funding of the Euratom Programme through Association Agreements. The method of calculation has been agreed in these Association Agreements and is not necessarily the same method in all agreements. Mostly the calculations are based on the GDP of the Associated State compared to the total GDP of the Members States whilst applying this percentage to the overall budget.