

## **Draft Euratom Work Programme 2016-2017**

### **Important notice:**

This paper is made public just before the adoption process of the work programme to provide potential participants with the currently expected main lines of the Euratom work programme 2016-2017. It is a working document not yet endorsed by the Commission and its content does not in any way prejudice the final decision of the Commission.

The adoption and the publication of the work programme by the Commission are expected in mid-October 2015. Only the adopted work programme will have legal value.

This adoption will be announced on the Horizon 2020 website and on the Participant Portal. Information and topic descriptions indicated in this working document may not appear in the final work programme; and likewise, new elements may be introduced at a later stage. Any information disclosed by any other party shall not be construed as having been endorsed by or affiliated to the Commission.

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## Introduction

The Euratom Research and Training Programme (2014-18)<sup>1</sup> complements Horizon 2020<sup>2</sup> in the field of nuclear research and training. Its general objective is to support nuclear research and training activities with an emphasis on continually improving nuclear safety and radiation protection, notably to contribute to the wellbeing of EU citizens by participating in the development of a safe and low-carbon energy system at European level, in both the short and longer term, whilst also addressing other beneficial applications of ionising radiation in the medical and industrial sectors.

By contributing to these objectives, the Euratom Programme (i) reinforces outcomes under the three priorities of Horizon 2020 (excellent science, industrial leadership, and societal challenges), and (ii) supports the development of the Energy Union, one of the main objectives laid down in the 'Strategic Agenda for Jobs, Growth, Fairness and Democratic Change' presented by President Juncker in July 2014. In relation to the latter, the Commission Communication on the 'Energy Union Package: A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy'<sup>3</sup>, under the pillar on Research, Innovation and Competitiveness states that *"Nuclear energy presently produces nearly 30% of the EU's electricity. The EU must ensure that Member States and associated countries use the highest standards of safety, security, waste management and non-proliferation. The EU should also ensure that it maintains technological leadership in the nuclear domain, including through ITER, so as not to increase energy and technology dependence."*

The present Work Programme deals with Euratom indirect research actions in both fission and fusion.

Euratom fission research is essentially aimed at enhancing the safety and performance record of nuclear energy production technology, contributing to the development of safe and publicly acceptable solutions for the management of radioactive waste and furthering the understanding of the effects of low doses of ionising radiation on humans and the environment in order, notably, to ascertain strategies relevant to radiation protection. This research continues to be guided by the results of the Interdisciplinary Study 'Benefits and Limitations of Nuclear Fission for a Low Carbon Economy'<sup>4</sup>, which was presented at the 2013 Symposium of the same name co-organised by the European Commission and the European Economic and Social Committee, in particular regarding the incorporation of social sciences and humanities and the need to consider fission strategies in the context of the overall EU energy mix. In terms of objectives, this research promotes the use in all Member States and

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<sup>1</sup> Council Regulation (Euratom) N°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

<sup>2</sup> 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

<sup>3</sup> COM (2015) 80 final

<sup>4</sup> <http://www.eesc.europa.eu/?i=portal.en.events-and-activities-symposium-on-nuclear-fission>

associated countries of high standards of nuclear safety, including in radioactive waste management and radiation protection, and contributes to maintaining European technological leadership and independence in the nuclear domain.

Compared to the Euratom Work Programme 2014-2015, the fission part of Euratom Work Programme 2016-2017 places more emphasis on the long-term security of energy supply at EU level with topics on the possible optimisation of the use of resources through further investigation of the safety and feasibility of Generation-IV reactors and closed fuel cycle options, whilst continuing to pay particular attention to the European added value of research on related safety issues. Activities concerning fission safety and radiation protection presented in this Work Programme are in line with the Council Directive 2009/71/Euratom of 25 June 2009, and its revision 2014/87/Euratom, establishing a Community framework for the nuclear safety of nuclear installations, the Council Directive (2011/70/Euratom) of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste, and the Council Directive 2013/59/Euratom laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation.

Euratom fusion research is aimed at developing magnetic confinement fusion as a new energy source. Following the expiry, at the end of 2013, of the European Fusion Development Agreement (EFDA) and the Contracts of Association between the Commission and national fusion laboratories, and in line with the provisions of the Euratom Research and Training Programme (2014-18), the Euratom Work Programme 2014-2015 set up a new framework consisting of multiannual support (i) to a consortium (EUROfusion) of national fusion laboratories and institutes to implement a joint programme in line with the fusion roadmap ('Fusion Electricity – A roadmap to the realisation of fusion energy'), and (ii) for the continued operation of JET, the Joint European Torus, as the principal research device exploited under this joint programme. This new approach to fusion research in Europe promotes enhanced integration across Europe in order to ensure the success of ITER and electricity generation from a 'DEMO' device around the middle of the century. Fusion research in Europe has always been the best example Europe can offer of a unified research programme, and the establishing of EUROfusion and the continued exploitation of JET maintains and reinforces this unity. In line with the article 4(5) of the Council Regulation (Euratom) No 1314/2013 on the Euratom Research and Training Programme 2014-2018, the Commission Decision C(2014)5009 adopting the Euratom Work Programme 2014-2015 constitutes a 5-year financing decision for both the EUROfusion joint programme (Grant Agreement for a European joint programme) and the 'New JET Operation Contract' (NJOC). The present Work Programme 2016-2017 will therefore provide limited funding for complementary activities to the EUROfusion joint programme and the NJOC.

International cooperation remains an important element of all Euratom activities and will continue to be implemented under the various multilateral frameworks (OECD/NEA, IEA, IAEA, GIF, etc.), as well as through the bilateral Euratom cooperation agreements with third countries that, under the provisions of the Euratom Treaty, cover all international collaborative activities between EU entities and the third countries in question.

The Euratom Programme may contribute financially to corporate communication in 2016 in accordance with article 18(2)(d) of the Regulation establishing the Programme. This contribution would cover the corporate communication of the Union's political priorities provided that they are related to the aims of the Programme".

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## **CHAPTER A: CALL FOR PROPOSALS (NFRP)**

The activities funded by this Work Programme have been developed in accordance with the Council Regulation on the Euratom Research and Training Programme (2014-2018). They are organised in six main sections:

- A. Support safe operation of nuclear systems
- B. Contribute to the development of solutions for the management of radioactive waste
- C. Foster radiation protection
- D. Management of research reactor availability in Europe
- E. Support the development of nuclear competences at EU level
- F. Fission/fusion cross-cutting actions

Where appropriate, social science and humanities, socio-economic issues and trans-national access to research infrastructures are addressed within each of the six sections.

International cooperation with third countries is promoted through bilateral Euratom cooperation agreements, but also multilateral initiatives such as those under the auspices of the OECD/NEA, IEA, IAEA, GIF, etc. Where necessary and relevant, specific references to international cooperation are made in the work programme sections, but these should not be considered exhaustive. More detailed provisions, notably regarding possible Euratom funding to entities in third countries, are available on the Horizon 2020 webpage<sup>5</sup>.

In carrying out the activities proposed in this work programme, due attention should be paid to the dissemination of research results through scientific publications, as well as to the exploitation of research results by the stakeholders concerned.

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<sup>5</sup> [http://ec.europa.eu/research/horizon2020/index\\_en.cfm](http://ec.europa.eu/research/horizon2020/index_en.cfm)

Proposals are invited against the following topics:

## **A - Support Safe Operation of Nuclear Systems**

The actions under this section take into account the European collaborative research activities already supported by Euratom and the priorities of the Strategic Research and Innovation Agenda (SRIA) of SNETP<sup>6</sup> and its three pillars NUGENIA<sup>7</sup>, ESNII<sup>8</sup> and NC2I<sup>9</sup>.

### **NFRP 1: Continually improving safety and reliability of Generation-II and -III reactors**

*Challenge:* A number of current Generation-II reactors should continue operating for a few decades and Generation III should still be in operation one century from now. The objective of this action is to complement, where needed, earlier investment in research regarding the safety and reliability of Generation-II and -III reactors, with particular attention to the new requirements of the amended Nuclear Safety Directive (Council Directive 2014/87/Euratom of 8 July 2014 amending the Directive 2009/71/Euratom establishing a Community framework for the nuclear safety of nuclear installations).

*Scope:* Safety and reliability improvements are to be sought in a number of areas, with due consideration to the NUGENIA roadmap. The action should address the remaining technology gaps and encompass experiments as well as numerical simulations. It should focus on the integrity of structural components in ageing reactors, the knowledge basis for lifetime management of the reactor islands and the management of severe accidents. This can involve *inter alia*: probabilistic safety assessment, uncertainty analyses, the identification and understanding of deterioration mechanisms, the assessment of the need for and feasibility of retrofitted safety systems, the development of tools to establish safety cases for Long Term Operation, study of the prevention of hydrogen production, the improved modelling of reactor behaviour, the methodology of seismic risk assessment, the evaluation of accident-tolerant fuel, the improved assessment of fire risks and the safety demonstration of digital I&C equipment and their practical implementation. All aspects of meltdown, as a key issue of Generation-II and -III reactors, are also considered to be in scope. Results obtained as part of this action should be made public. In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged.

*Expected impact:* This action will help industrial stakeholders to develop efficient solutions in response to the new requirements of the amended Nuclear Safety Directive. It will result in reinforcement of the safety features of the Generation-II and -III EU nuclear reactor fleet. This should improve the market profile of EU-based reactor designs and strengthen the competitiveness of the EU nuclear sector through promoting an excellent level of safety in response to market requirements and trends.

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<sup>6</sup> Sustainable Nuclear Energy Technology Platform

<sup>7</sup> Nuclear Generation II and III Association

<sup>8</sup> European Sustainable Nuclear Industrial Initiative

<sup>9</sup> Nuclear Cogeneration Industrial Initiative



Type of action: Research and innovation actions.

The conditions related to this topic are provided at the end of this call and in the Annex 1

## **NFRP 2: Research on safety of fast neutron Generation-IV reactors**

Challenge: The first Generation-IV reactors are expected to be fully operational in the next 25-30 years in various places around the world. In the meantime, all Generation-IV concepts and designs currently under development, both in Europe and worldwide, will need to demonstrate compliance with evolving and ever more stringent safety requirements. In this context, a significant increase in the level of safety is expected to be demonstrated by fast neutron reactors and new reactor coolants. These should exhibit more favourable behaviour in the case of severe accidents, whilst also offering major advantages in terms of the use of the uranium resource, reduction of high-level waste production and potentially increased proliferation resistance. This activity will build on the strong operational experience gained in the EU on fast neutron reactors, whilst ensuring that research and technical expertise on nuclear safety of Generation-IV reactor is shared effectively at EU level. The challenge is also to ensure that all European stakeholders, including civil society, can be represented in the assessment of the status of current developments concerning Generation-IV R&D with respect to expected safety features.

Scope: This action is aimed at development of the technical assessment of safety improvements of critical fast neutron Generation-IV systems and their supporting reactor islands, as identified by ESNII in the SET Plan Integrated Roadmap<sup>10</sup>. This can include *inter alia* the study of core parameter optimisation and reactivity control, reliability of automatic shut-down systems, diversified systems of residual power removal more resistant to common mode failure, demonstrable natural circulation of cooling fluids in ultimate heat transfer processes, improved strategy of confinement modes and severe accident behaviour and mitigation including their simulation, in-service inspection and repair of safety-related components, as well as the related licensing aspects. The safety of different fuel cycle options is within scope, including dense MOX driver fuel, multiple recycling of plutonium, use of low-enriched uranium and transmutation of some minor actinides, as is the design and operational features facilitating and improving safety of decommissioning. These safety improvements will need to be endorsed by the EU scientific community in view of building up the main corpus of EU technical standards for Generation-IV to be used as the reference to demonstrate compliance with the amended Euratom Safety Directive. The proposed action should involve standardisation bodies at national and EU levels.

Expected impact: This action is to draw on the unique expertise and operational experience feedback gained by the EU in Generation-IV technology in order to place the EU at the forefront of the development of safety standards for this new generation of reactors, thereby helping EU safety standards to be adopted worldwide. This will ensure deployment of this

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<sup>10</sup> <https://setis.ec.europa.eu/set-plan-process/integrated-roadmap-and-action-plan>

next generation of reactors in conformity with the recognised stringent European safety standards whilst also boosting EU technological and industrial competitiveness.

*Type of action:* Research and innovation actions.

The conditions related to this topic are provided at the end of this call and in the Annex 1

### **NFRP 3: Investigating the safety of closed nuclear fuel cycle options and fuel developments**

*Challenge:* The open fuel cycle uses only a few percent of the energy contained in uranium. This efficiency can be greatly improved through the recycling of spent fuel, including, in the longer term, multi-recycling strategies. Furthermore, such closed fuel cycles could facilitate the management of ultimate radioactive waste by reducing its volume and radiotoxicity. The EU benefits from extensive operational experience in this domain, which is unique in the world. This experience should be exploited and extended to further improve nuclear safety, radiation protection and environmental protection aspects of fuel reprocessing options. This challenge is also to be seen in relation to partitioning and transmutation processes for suitable recycling strategies, development and qualification, and safety assessment of innovative fuels and claddings for advanced Generation-IV systems.

*Scope:* This action will address research and innovation in fuel cycle chemistry and physics for the optimisation of fuel design in line with the strategic research and innovation agenda and deployment strategy of SNETP, notably of its ESNII component. The focus shall be on reprocessing and fuel manufacture, including MOX, with the objective of increasing the safety of installations for interim storage during normal operation and hypothetical accident scenarios. As such, it should include research and innovation for developing compatible techniques for dissolution, reprocessing and manufacturing of innovative new nuclear fuels, including oxides potentially containing minor actinides. Moreover, this action should aim at further integrating EU activities on partitioning and fuel fabrication and foster the participation of the chemical separation community from European research institutions and educational establishments.

*Expected impact:* This action will lead to the provision of more science-based strategies for nuclear fuel management in the EU. It will reinforce the EU leadership in this domain and open up new avenues towards the EU energy security of supply and increased competitiveness. It will allow nuclear energy to contribute significantly to EU energy independence. In the longer term, it will facilitate the management of ultimate radioactive waste by reducing its volume and radio-toxicity.

*Type of action:* Research and innovation actions.

The conditions related to this topic are provided at the end of this call and in the Annex 1

#### **NFRP 4: Research on the safety of Small Modular Reactors**

*Challenge:* Small Modular Reactors (SMRs) are considered as an interesting option for certain applications (e.g. small remote electricity network or cogeneration), offer interesting perspectives in terms of export potential and are in principle easier to build and to operate under certain site conditions. The smaller size of the reactor also offers interesting safety features, notably in terms of residual heat removal, but these features may differ significantly from those of large power reactors and need to be further investigated.

*Scope:* This action should investigate safety features of SMRs, notably passive ones, and provide a set of essential technical specifications, against which compliance of SMRs with the amended Euratom Safety Directive could be tested. The research should also propose the methodology for the performing of these tests, including the experimental validation of essential items of the proposed models of safety demonstration as well as their effects on the SMR licensing process under various typical fields of application. To increase the effectiveness of the initiative, particular attention should be devoted to feasibly deployable SMR concepts. Due account should also be taken of decommissioning and spent fuel management of SMRs in the above safety demonstration. In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged.

*Expected impact:* This action will allow the EU to establish standards for compliance of SMR to the requirements of the revised Euratom Safety Directive. It will pave the way for robust science-based recommendations to decision makers in this area at EU level. In the longer term, it will also improve the flexibility of nuclear power generation regarding power output and adaptation to local grid and siting conditions, while taking into account the highest safety standards. Ultimately, it will reinforce EU's commercial prospects and competitiveness in this field.

*Type of action:* Research and innovation actions.

The conditions related to this topic are provided at the end of this call and in the Annex 1

#### **NFRP 5: Materials research for Generation-IV reactors**

*Challenge:* As highlighted in the Joint Programme on Nuclear Materials (JPNM) developed by the EERA<sup>11</sup>, materials research and innovation is at the cornerstone of many technological developments, notably in the nuclear field, where technical qualification and certification are subject to stringent safety criteria. It is therefore of paramount interest for Euratom to support research and innovation in this area, notably for resolving the key remaining issues regarding structural and fuel materials to be used in Generation-IV reactor concepts under consideration in the EU.

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<sup>11</sup> European Energy Research Alliance

Scope: Whilst the EU nuclear materials research community has significant experience and extensive knowledge of materials behaviour under conditions typical for Generation-IV reactor concepts, there are still some areas where further research and innovation is needed to reach technological maturity. This applies in particular to changes in properties of materials and joints under fast neutron irradiation and/or high temperature of the coolant, as well as to the compatibility between structural materials, the coolant and advanced fuels. This action should include the refinement of physical models and/or modelling-oriented experiments aimed at the validation of models of microstructural change and the resulting effects on material properties, as well as advanced micro-structural characterisation techniques. This research and innovation could also include the development, testing and qualification of mitigation strategies involving, for example, the development of suitable surface engineering concepts for current known material deficiencies.

Expected impact: This action aims at significant progress regarding the predictive capability of changes in material properties and behaviour and subsequent refinement of Generation-IV reactor design codes. This will help to overcome the bottlenecks in the certification of materials and hence in the development of safety demonstration for Generation-IV reactor technologies. In addition, it is expected that progress achieved in Generation-IV material-related technology could contribute to safety improvements in other nuclear energy systems and components.

Type of action: Research and innovation actions.

The conditions related to this topic are provided at the end of this call and in the Annex 1

Additional information regarding the five specific challenges in section A - Support Safe Operation of Nuclear Systems: The Commission considers that proposals requesting a contribution from Euratom of between EUR 2 and 5 million would allow each of these five specific challenges to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. Proposals will be ranked in only one budget cluster for these five specific challenges.

## **B - Contribute to the Development of Solutions for the Management of Radioactive Waste**

The actions under this section take into account the European collaborative research activities already supported notably by Euratom and the priorities of the Strategic Research Agenda (SRA) of IGD-TP<sup>12</sup>.

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<sup>12</sup> Implementing Geological Disposal Technology Platform

## **NFRP 6: Addressing key priority R&I issues for the first-of-the-kind geological repositories**

*Challenge:* There is a broad consensus in Europe and worldwide that a Deep Geological Repository (DGR) is the safest practical solution for the final disposal of high- and intermediate-level long-lived ultimate radioactive waste, including vitrified waste from the reprocessing of spent nuclear fuel, spent fuel if this is considered waste in national programmes, and possibly other long-lived wastes. Thanks to a concerted and long-term strategy, Europe has acquired a clear leadership in this domain and will host the world's first such repositories, which are expected to become operational around 2020-2025. However, there still are some key technological issues to be resolved for this to become reality.

*Scope:* This action will address key R&I issues in view of the construction and operation in the EU of the first DGRs, notably with respect to validating data and performance. The focus should be on topics of high priority and European added value that were raised in safety reviews and identified in the SRA of IGD-TP. These concern notably the disposal of new and unconventional fuels, the validation of the properties of engineered barrier materials and the confirmation of the integrated performance of engineered barrier systems. A further goal is to identify the aspects of these first EU DGR projects that could be amenable to the transfer of knowledge and technology to other countries or regions with less mature programmes, and therefore the action should also involve a mechanism of communicating results to these countries in the most effective way.

*Expected impact:* This action will contribute to further progress in resolving remaining technological innovation issues important in the actual implementation of the planned DGRs in the EU, thereby consolidating the EU leadership in this domain. The involvement of countries with less mature programmes alongside the more advanced programmes will stimulate and foster the cooperation amongst EU Member States and associated countries in this important domain and hence facilitate steps towards decision making and implementation of DGRs in other Member States and associated countries.

*Type of action:* Research and innovation actions.

The conditions related to this topic are provided at the end of this call and in the Annex 1

## **NFRP 7: Research and innovation on the overall management of radioactive waste other than geological disposal.**

*Challenge:* Deep geological disposal has been the subject of research for many decades, including in the Euratom Framework Programmes. However, the interim storage of waste destined for geological disposal, as well as the management and disposal of other, especially non-standard, radioactive waste types and forms present specific challenges. High added value can result from research and innovation actions at EU level through improving or developing knowledge in this area.

*Scope:* This action will address R&I in view of further improving the management of radioactive waste generated by the nuclear industry. This includes all management steps, up to

and including disposal, in the case of, for example, unconventional or legacy waste, operational wastes, waste arising from repair or maintenance and decommissioning/dismantling waste, and could also include the interim storage and other pre-disposal management steps in the case of spent fuels and other wastes destined for geological disposal. The action would encompass the characterisation, quality control / checking and treatment of these radioactive wastes, particular attention being paid to the long-term safety of storage, the minimising of volume, chemical complexity and toxicity, the possibilities of recycling and material valorisation and the facilitating of handling and management. This action should be undertaken in close cooperation with the operational stakeholders concerned to facilitate the early uptake of the results in the development of disposal solutions. It should also establish due cooperation or coordination with Waste Management Organisations for the definition of waste acceptance criteria. In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged.

*Expected impact:* This action will lead to the further refinement of the EU policy on radioactive waste management. It will help develop new or improved solutions for the management of radioactive waste, including waste destined for geological disposal, whilst further improving safety aspects and possibly realising economy and efficiency gains, for example in the dismantling of nuclear installations. It will strengthen EU integration for addressing an important remaining challenge regarding the use of nuclear energy.

*Type of action:* Research and innovation actions.

The conditions related to this topic are provided at the end of this call and in the Annex 1

### **NFRP 8: Pan-European knowledge-sharing and development of competence in radioactive waste management**

*Challenge:* The Radioactive Waste Management Directive (2011/70/Euratom) requires each Member State to, *inter alia*, establish a national programme for the management of radioactive waste, including the carrying out of the necessary research. It is thus important for the Euratom research and training programme to contribute to the wider development of R&D and managerial competences in the field of radioactive waste management at EU level. In this respect, particular attention should be paid to the needs of Member States and associated countries with little or no practical experience in this area.

*Scope:* This action will aim to further develop scientific, technical and managerial knowledge and competences in the area of radioactive waste management at pan-European level, encompassing the whole range of waste types and forms and origins. The focus should be on the development and transfer of knowledge and competence rather than the actual elaboration and harmonisation of national strategies and programmes. The action should build on the body of knowledge already acquired and complement the training and guidance material developed in earlier Euratom and national programmes. It will include the production of hands-on guidance documents on management aspects and state-of-the-art reports covering the various scientific, technical and economic aspects of radioactive waste management,

including geological disposal solutions. It should also propose a methodology to assess the potential and opportunities for transfer of knowledge, competence and technology between radioactive waste management programmes. The action should be directed at the concerned institutional and operational stakeholders with the objective to help them develop strategies, plan and prioritise RD&D actions and develop national programmes adapted to the varying situations and local conditions that exist across the EU. The action should involve specialised research and training organisation, as well as the IGD-TP as source of knowledge and competence.

*Expected impact:* This action will help to consolidate and extend the knowledge base and competences at pan-European level in the area of radioactive waste management. This in turn will help Member States and associated countries developing their national programme for radioactive waste management including the supporting research and development actions, which is central to the implementing of the Radioactive Waste Management Directive. It should also pave the way to the coordinated and integrated implementation of joint or shared RD&D activities and facilities in any future Joint Programming action of MS RD&D programmes at EU level.

*Type of action:* Coordination and support actions.

The conditions related to this topic are provided at the end of this call and in the Annex 1

*Additional information regarding the three specific challenges in section B - Contribute to the Development of Solutions for the Management of Radioactive Waste:* For the specific challenges NFRP 6 and 7 above, the Commission considers that proposals requesting a contribution from Euratom of between EUR 2 and 4 million would allow these specific challenges to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. With regard to the specific challenge NFRP 8 above, the Commission considers that proposals requesting a contribution from Euratom of between EUR 1 and 2 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. Proposals will be ranked in only one budget cluster for these three challenges.

### **C - Foster radiation protection**

The action under this section takes into account the European collaborative research activities already supported notably by Euratom and the priorities of the Strategic Research and Innovation Agendas (SRIA) of MELODI<sup>13</sup> and partner associations in radio-ecology,

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<sup>13</sup> Multidisciplinary European Low Dose Initiative

dosimetry, emergency management<sup>14</sup>, complemented recently by the signature of Memoranda of Understanding with five medical associations<sup>15</sup>. Effective cooperation between these various scientific communities and the coherent integration of their activities are a key objective of the recently established European Joint Programme (EJP)<sup>16</sup> in this field.

This area is also partly addressed in NFRP 14 below.

### **NFRP 9: Impacts of low-dose radiation exposure**

*Challenge:* A better understanding of the effects of low-dose ionising radiation on human health is essential in helping to reduce uncertainty regarding the radiation risk resulting from a number of medical and other practices, including practices involving naturally occurring radioactive materials. In particular, a reinforced cooperation between the medical and nuclear sectors in this area is highly desirable and will be mutually beneficial. It will allow the formulation of science-based recommendations to decision-makers and practitioners in the respective sectors in view of the effective protection of patients, workers and the general public, and the fine-tuning of the necessary precautionary measures. The rapid development and deployment of medical technology using ionising radiation poses specific challenges as regards radiation protection of patients and medical staff. Research into innovative and updated radiation protection tools and methods will allow the formulating of practical recommendations and improved protection of patients and staff in everyday medical practices.

*Scope:* Thanks to research based on the high quality data collected during the medical use of ionising radiation, this action should allow significant progress to be made in the understanding of radiation effects and underlying mechanisms, notably by performing radiation molecular epidemiology studies of people who have undergone radiology procedures (i.e. looking at side-effects from radiotherapy on healthy surrounding tissues and tissues exposed during radiology diagnosis). The action should also consider creating a networked and structured repository for patient dosimetry, imaging meta-data and bio-banking, the latter being integrated with health databases. The action shall build on the above-mentioned Memoranda of Understanding between MELODI and a number of relevant European medical associations and should involve contributions from public health and/or healthcare organisations. The objective is to further improve the science base for recommendations to decision-makers and practitioners in the respective sectors, including for optimisation of radiation protection in medical imaging. The results should therefore be presented and discussed with relevant stakeholder groups with the view to stimulate the debate, in their respective spheres, on the possible refinement of procedures for the protection of concerned persons (doctors, medical physicists, patients, technicians and operators). The

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<sup>14</sup> ALLIANCE – European Radioecology Alliance, EURADOS – European Radiation Dosimetry Group, NERIS - European Platform on preparedness for nuclear and radiological emergency response and recovery

<sup>15</sup> EANM – European Associations of Nuclear Medicine, EFOMP – European Federation of Organisations in Medical Physics, EFRS – European Federation of Radiographer Societies, ESR – European Society of Radiology, ESTRO – European Society for Radiotherapy and Oncology

<sup>16</sup> CONCERT



effective involvement of the different actors mentioned above and notably the interaction with MELODI and partner associations will be considered during evaluation. In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged.

*Additional information:* The Commission considers that proposals requesting a contribution from Euratom of between EUR 8 and 10 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

*Expected impact:* This action will allow significant progress to be achieved in the interaction between the radiation protection and medical scientific communities at EU level, leading to cross-fertilisation of research efforts and the provision of more consolidated and robust science-based policy recommendations to decision makers in the respective sectors. In the longer term, these efforts will translate into additional or improved practical measures in view of the effective protection of people in the medical and nuclear sectors. Ultimately, the risks from radiation will be better evaluated and the necessary precautionary measures better quantified, leading to a more robust system of protection of patients, workers and the general public, whilst not unduly penalising activities through unnecessary and costly measures. This could also lead to some revision of the relevant regulatory frameworks.

*Type of action:* Research and innovation actions.

The conditions related to this topic are provided at the end of this call and in the Annex 1

## **D - Management of research reactor availability in Europe**

### **NFRP 10: Support for the optimised use of European research reactors**

*Challenge:* The further coordination of the exploitation of available research reactors in Europe is expected to help resolve the recurrent shortage of medical radioisotopes and optimise the use of irradiation time in the available reactors thereby reducing disruptions and delays occurring in many experiments. It would also help the planning and eventual refurbishment or construction of new reactors.

*Scope:* This activity aims at networking the largest possible number of research reactor operators at EU level in order to further the exchange of information on the availability of research reactors against research needs across the EU. It will also identify key parameters that are influencing reactor availability and derive an overall strategy for research reactors in Europe. This should be undertaken in collaboration with existing initiatives in this domain and taking into consideration the global context, e.g. reports from the OECD/NEA on the subject of supply of radioisotopes. A high level of inclusiveness is expected in this action.

*Impact:* This action will allow the more efficient use of research reactors in Europe for the purpose of energy research and training and the production of medical radioisotopes like Molybdenum-99. This will contribute to the addressing of key challenges of Horizon 2020 in the sectors of energy and health. The principal impact of this action will be the prevention of

future crises in the supply of Molybdenum-99 and the more effective planning of research reactor needs in the EU.

Type of action: Coordination and support actions.

The conditions related to this topic are provided at the end of this call and in the Annex 1

### **NFRP 11: Support for the EU security of supply of nuclear fuel for research reactors**

Challenge: The security of supply of nuclear fuel for research reactors (RR) is a key element in the availability of such reactors in the EU, which are essential for, notably, materials research, isotope production, silicon doping, nuclear science and engineering and related education and training purposes. It is thus imperative to recognise the needs and devise an appropriate European response in this area.

Scope: This action should involve a multidisciplinary research consortium able to tackle technical as well as economical and legal aspects, and should include EU-based RR fuel manufacturers alongside a fully representative number of EU RR operators. It will investigate future needs in terms of volume and fuel design requirements for each reactor for which European operators do not possess relevant data, as well as the safety-related technical requirements of RR fuel manufacturing, storage, transport, and reprocessing, and can include possible pilot scale experiments. It will also have to address the regulatory context and the legal and economic conditions for the long-term sustainability of EU-based RR fuel manufacturing and long-term supply of LEU (low-enriched uranium). This action should be undertaken considering *inter alia* the activities of the Euratom Supply Agency (ESA).

Impact: This action will help to secure the supply of nuclear fuel for research reactors in Europe. In doing so, this action will also reinforce the security of supply of medical radioisotopes like Molybdenum-99 and the availability, in the EU, of an adequate neutron irradiation capability for materials testing and other applications. This action will thus address key challenges related to both the energy and health sectors.

Type of action: Research and innovation actions.

The conditions related to this topic are provided at the end of this call and in the Annex 1

Additional information regarding the specific challenges in section D - Management of research reactor availability in Europe: For the specific challenge NFRP 10, the Commission considers that proposals requesting a contribution from Euratom of between EUR 0.5 and 1 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. With regard to NFRP 11, the Commission considers that proposals requesting a contribution from Euratom of between EUR 4 and 6 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals

requesting other amounts. Proposals will be ranked in only one budget cluster for these two challenges.

## **E - Support the development of nuclear competences at EU level**

### **NFRP 12: Support for careers in the nuclear field**

*Challenge:* This action aims at addressing the difficulties encountered with maintaining and renewing an adequate number of well-educated and trained nuclear researchers and professionals, especially in view of expected high retirement and low renewal rates in countries with a strong nuclear tradition and of the growing need for further specialised training in emerging nuclear energy countries.

*Scope:* Special attention is to be devoted to the further implementation, in the nuclear and relevant medical *and* industrial sectors, of initiatives to attract new talent in the nuclear field and develop competences and expertise beyond the academic curricula. This could be achieved through further proposals of 'Euratom Fission Training Schemes', based on ECTS and ECVET mechanisms and complemented by setting up a strong grant programme to support the participation of students in nuclear training programmes in the EU. These programmes would relate to nuclear technology, safety and radiation protection and address the integration of students and bright young researchers into Euratom-supported research projects. Proposals should cover periods between six months and two years. The aim is to respond to the needs of the nuclear industry, regulatory bodies and TSOs. Also important are the so-called nuclear activities of proximity, which include medical applications, the relevant non-nuclear industrial applications and the transport of radioactive materials. Links should be established with the 'European Nuclear Education Network' (ENEN) and the different Euratom fission science and technology platforms. In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged and will be considered during the evaluation.

*Additional information:* The Commission considers that proposals requesting a contribution from Euratom of between EUR 2 and 3 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

*Expected impact:* This action will revive the interest of the young generation for careers in the nuclear sector (in particular, reactor safety, geological disposal, radiation protection).

*Type of action:* Coordination and support actions.

The conditions related to this topic are provided at the end of this call and in the Annex 1

## **F - Fission/fusion cross-cutting actions**

The actions under this section take into account the research activities already supported by Euratom, including through the EUROfusion joint programme. Activities will not be funded if there is duplication of or significant overlap with work already supported in the fission or fusion programmes.

### **NFRP 13: Fission/fusion cross-cutting research in the area of multi-scale materials modelling**

*Challenge:* As the fusion programme progresses towards the ultimate goal of electricity generation, there are increasing opportunities for synergies in a wide range of areas that are common with fission. The present action is to encourage closer integration of research efforts between fission and fusion research communities in the domain of multi-scale modelling in research on material properties and the development of new materials.

*Scope:* Ferritic-martensitic (F/M) steel is a promising material for use in both fusion and fission installations. Multi-scale modelling is expected to be an efficient and effective tool in the development of a complete description and in-depth understanding of phenomena in these steels. In this context, the predictive capability of models is of paramount importance and should be aimed at supporting the elaboration of design rules. Proposed modelling approaches would need to be supported by robust validation means, including where necessary testing of environmental degradation and appropriate irradiation campaigns ranging from neutrons to ions. Contributions to benchmarking, the development of codes and standards as well as to small specimen test technology is also encouraged. Only proposals that clearly demonstrate substantial benefit for both fission and fusion, that include actors from both communities (specifically EUROfusion and EERA Joint Programme on Nuclear Materials), and that complement the existing research efforts in both domains will be retained.

*Expected impact:* This action will help the cross-fertilisation in nuclear materials research between the two main fields of activity represented by fission and fusion and will result in a better general understanding and critical mass in the discipline as a whole. In turn, it will help overcome bottlenecks that are limiting developments in fission and fusion, including in technology areas with safety relevance.

*Type of action:* Research and innovation actions.

The conditions related to this topic are provided at the end of this call and in the Annex 1

### **NFRP 14: Cross-cutting support to improved knowledge on tritium management in fission and fusion facilities**

*Challenge:* Tritium in the environment and its health impacts are a concern. Indeed, whilst discharges of most radionuclides from fission installations are decreasing, as a result of the use of new techniques of effluent decontamination, tritium discharges are increasing owing to new nuclear fuel management modes and the lack of detritiation capability. Discharges are

also anticipated from fusion installations once they start operating as nuclear facilities. Further research is needed to assess and mitigate impacts of discharges and potentially to limit them.

Scope: This action should assess technologies to minimise tritium permeation at source and to capture and store tritium from treatment of metallic waste and liquid and gaseous effluents, e.g. using photo-synthesised polymers. This action should also include (i) an assessment of the tritium inventory in both fission and fusion systems using state-of-the-art modelling tools for tritium migration studies, e.g. from primary to secondary systems between which tritium may pass, (ii) refinement of the knowledge on outgassing and release mechanisms, radiotoxicity, radioecology, radiobiology, dosimetry and metrology of tritium, (iii) engineering solutions for detritiation techniques (metals, liquids and gasses) and waste management to meet the stringent regulations in force in the EU, and (iv) tritium permeation control (anti-permeation techniques). Only proposals that clearly demonstrate substantial benefit for both fission and fusion, that include actors from both communities, and that complement the existing research efforts in both domains will be retained. In line with the strategy for EU international cooperation in research and innovation (COM(2012)497), international cooperation is encouraged and will be considered during the evaluation..

Expected impact: This action will contribute to the solution of a number of key issues in the management of tritium in fission and fusion facilities that will satisfy regulatory requirements and thus minimise environmental and possible subsequent health effects. It will pave the way for robust science-based policy recommendations to decision makers in this area at EU level.

Type of action: Research and innovation actions.

The conditions related to this topic are provided at the end of this call and in the Annex 1

Additional information regarding the two specific challenges in Section F - Fission/fusion cross-cutting actions: The Commission considers that proposals requesting a contribution from Euratom of between EUR 3 and 5 million would allow each of these two specific challenges to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts. Proposals will be ranked in only one budget cluster for these two specific challenges.

## Overall conditions for the call

Opening date(s), deadline(s), indicative budget(s)<sup>17</sup>:

Topic (Type of Action)	Budgets (EUR million)		Deadline
	2016	2017	
Opening: 11 May 2016			
NFRP 1-14 (RIA, CSA)	57.74	47.30	5 Oct 2016

Indicative budget:

EUR 57.74 million from the 2016 budget

EUR 47.30 million from the 2017 budget

Topics	2016 EUR million	2017 EUR million
NFRP 1-5	47.74	7.71
NFRP 6-8	10	8,89
NFRP 9		9
NFRP 10-11		7.70
NFRP 12		6
NFRP 13-14		8 <sup>18</sup>
	<b>57.74</b>	<b>47.30</b>

Indicative timetable for evaluation and grant agreement signature:

For single stage procedure:

- Information on the outcome of the evaluation: Maximum 5 months from the final date for submission; and

<sup>17</sup> The Director-General responsible for the call may decide to open the call up to one month prior to or after the envisaged date(s) of opening.

All deadlines are at 17.00.00 Brussels local time.

The Director-General responsible may delay the deadline(s) by up to two months.

The deadline(s) in 2017 are indicative and subject to a separate financing decision for 2017.

The budget amounts for the 2016 budget are subject to the availability of the appropriations provided for in the draft budget for 2016 after the adoption of the budget 2016 by the budgetary authority or, if the budget is not adopted, as provided for in the system of provisional twelfths.

The budget amounts for the 2017 budget are indicative and will be subject to a separate financing decision to cover the amounts to be allocated for 2017.

<sup>18</sup> The indicative budget for NFRP 13 – 14 split on a 50:50 basis between fission and fusion

- Indicative date for the signing of grant agreements: Maximum 8 months from the final date for submission.

Eligibility and admissibility conditions: The conditions are described in parts B and C of the General Annexes to the work programme

Evaluation criteria, scoring and threshold: The criteria, scoring and threshold are described in part G of the General Annexes to the work programme.

Evaluation Procedure: The procedure for setting a priority order for proposals with the same score is given in part G of the General Annexes.

The full evaluation procedure is described in the relevant [guide](#) published on the Participant Portal.

Consortium agreement: Members of consortium are required to conclude a consortium agreement, in principle prior to the signature of the grant agreement.

## **CHAPTER B: OTHER ACTIONS**

### **B.1: Support for fission research & innovation (R&I) investment projects of pan-European relevance through the InnovFin instrument**

*Objective:* Meeting the EU's energy goals for 2020 and beyond will require continuous development and commercialisation of low-carbon energy and systems. Base load nuclear currently represents the main alternative to fossil sources and may have a strong growth potential after Paris COP-21. Further fission-related developments towards a low-carbon economy and EU security of energy supply are called for in the context of the Energy Union and will also play a role in assuring high levels of safety and in the development of even safer nuclear systems. In this context, fission R&I-related investment projects of pan-European relevance need to be supported.

*Scope:* The Euratom fission programme aims to support fission R&I investment projects, typically in relation to the construction or refurbishing of research infrastructure, specialised equipment or technology demonstrators, through a financial contribution to the InnovFin instrument. This Euratom financial contribution will be matched by a corresponding contribution from the European Investment Bank (EIB), which together could have an overall multiplier effect of around six in terms of volume of EIB loans that will be devoted to innovative fission R&I projects. The size of the loan attributed to a particular project will be determined on a case-by-case basis by the EIB involving an in-depth analysis of the project consortium composition, business plan and associated revenue streams. In this process, the Euratom contribution could be 'pooled' with those from Member States, associated countries and other contributions to particular projects. This investment is expected to support at least three projects identified by Member States or associated countries in the fission domain. Their eligibility criteria will be the relevance of the investment for meeting the above objective, its innovative character and alignment with the goals of the InnovFin financial instrument.

*Expected impact:* This action will help to create the incentive for the realisation of essential investment projects in the fission domain in the EU, in accordance with the objective stated above.

*Type of action:* Financial instrument – InnovFin.

*Indicative timetable:* 3<sup>rd</sup> Quarter 2016 – 4<sup>th</sup> Quarter 2018.

*Selection procedure:* The selection procedure of the EIB will be applied to check the financial viability of each potential financing operation while DG Research & Innovation, assisted by other DG's, will approve each project against eligibility criteria set for the R&I investment project.

*Indicative budget:* EUR 20 million from the 2017 budget.

### **B.2: SOFT Innovation Prize**

Fusion research encompasses innovation in the domains of physics and technology over a wide variety of specialisations. Fusion researchers are constantly challenging the scientific



state-of-the-art and improving the technology thereby creating the conditions for innovation, much of which can be exploited in other science and industrial sectors for the benefit of society. A fundamental basis of Horizon 2020 is the drive and support for innovation across the product development chain from research to market. In this context the researcher plays a critical role.

Objectives pursued: The SOFT Innovation Prize is being offered to highlight and reward the excellence in innovation that can be found in fusion research as well as the quality of the researchers and industries involved. Following the successful running of this contest in coordination with SOFT 2014 (Symposium on Fusion Technology 2014), the European Commission is rerunning the contest in coordination with the next SOFT in 2016. There are no specific categories for this prize. Contestants are free to submit an application concerning any physics or technology innovation that has been or is being developed in magnetic confinement fusion research and that has a market potential or has been taken up (or recognised) by industry to be further developed for the market. In a change from the first edition in 2014, the contest is no longer limited to the European research programme (see eligibility criteria below).

The specific Rules of Contest will be published in 2015 by the European Commission<sup>19</sup>. The European Commission is responsible for the launch and management of the contest and will award the prize based on the judgement of independent experts.

Expected results: By awarding the ‘SOFT Innovation Prize’, the European Commission will showcase innovations in this research sector giving visibility to the most dynamic, forward-looking and innovative researchers, research teams or industrial contestants. This visibility will provide greater potential for valorisation of the research, and the contest will stimulate the research community globally to develop a stronger innovation and entrepreneurial culture in fusion research. The increased competition through a worldwide contest will stimulate EU research and innovation in particular.

Eligibility criteria:

1. The contest is open to researchers or research teams working for the Euratom fusion research programme, to researchers or research teams working for a national programme in an ITER partner country or in any third country that has a bilateral fusion cooperation agreement with Euratom, and to industrial participants benefitting from the ITER project. *Example of proof:* The European Commission may request substantiating document such as contracts, passports, etc.
2. The researcher, research team or industrial participant must obtain permission from the owner of the Intellectual Property Rights (IPR) to submit an application. The owner of the IPR should comment on the state of the IPR, i.e. free or contractually embedded, and name of eventual contractor/s.

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<sup>19</sup> On the Participant Portal (<http://ec.europa.eu/research/participants/portal/desktop/en/home.html>) but also actively publicised elsewhere to maximise participation.

3. The submission should consist of a complete application for the 'SOFT Innovation Prize' including:
  - (a) a technical description of the innovation;
  - (b) a state-of-the-art assessment of the innovation (using a publicly available patent database such as the EPO Espacenet);
  - (c) an account, in general terms, of the market potential for the exploitation of the innovation;
  - (d) the contribution that the prize could provide for the exploitation of the innovation.

Exclusion criteria foreseen in the provisions of articles 106(1), 107, 108 and 109 of the Financial Regulation (Regulation 966/2012) will apply.

Essential award criteria:

After the deadline for submissions, the prize will be awarded to the contestant(s) who in the opinion of the jury best address(es) the following cumulative criteria<sup>20</sup>:

1. **Originality and replicability:** The extent to which the idea is innovative, original and a first-of-a-kind use of the technology in industry or in the domain of application. The description should be clear, logically presented and well illustrated.
2. **Technical excellence:** The extent to which the innovation is demonstrably state-of-the-art and based on excellent science and engineering.
3. **Economic impact and exploitation of the innovation:** The extent to which the submission demonstrates understanding and awareness of the relevant innovation aspects, including market potential / needs and business opportunities.
4. **Planned use of the prize money:** The extent to which the use of the prize money would contribute to the successful exploitation and further development of the innovation, as described in the submission.

Indicative timetable:

Stages	Date and time or indicative period
Opening of the contest	4 <sup>th</sup> quarter 2015
Deadline for submission of application	2 <sup>nd</sup> quarter 2016
Award of the prize	3 <sup>rd</sup> quarter 2016

Type of action: Recognition prize.

Indicative budget: EUR 0.0875 million from the 2016 budget (Prize – 1<sup>st</sup> prize: EUR 0.050 million, 2<sup>nd</sup> prize: EUR 0.025 million and 3<sup>rd</sup> prize: EUR 0.0125 million).

For more detailed information on the general conditions, applicable law, and exclusion criteria, please refer to the model Rules of Contest for prizes in part E of Annex 1. The Rules of Contest are established and published by the European Commission, which will launch and

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<sup>20</sup> Further clarification of these criteria could be provided in the Rules of Contest when published

manage the contest and award the prizes. Contestants have to submit their application via the web-based submission forms published on the Participant Portal.

The evaluation of the submissions is carried out by the Commission with the assistance of up to 6 independent experts. Contestants may at any time be required to submit official proof to support claims made under any of the above eligibility and award criteria.

### **B.3: External expertise**

*Objective:* This action will support the use of appointed independent experts for the evaluation of project proposals and, where appropriate, for the monitoring of running projects as well as for the evaluation of entries submitted to Innovation SOFT prize contest.

*Type of action:* Expert contracts

*Indicative budget:* EUR 0.44 million from the 2016 budget.

### **B.4: Expert group for interim evaluation of the Euratom Research and Training Programme 2014-2018**

*Objective:* In accordance with Article 22(1) of the Council Regulation (Euratom) No 1314/2013 of 16 December 2013 on the Euratom Research and Training Programme (2014-2018), an expert group shall be established to carry out an interim evaluation of the Euratom Programme on the achievements, at the level of results and progress towards impacts, of the objectives and continued relevance of all the measures, the efficiency and use of resources, the scope for further simplification, and European added value. A special allowance of EUR 450/day will be paid to the experts appointed in their personal capacity who act independently and in the public interest. Payment of the allowance is justified by the importance of the task and the amount of work needed to carry out such assignment.

*Type of action:* Expert contracts

*Indicative timetable:* 2<sup>nd</sup> Quarter of 2016 – 1<sup>st</sup> Quarter of 2017

*Indicative budget:* EUR 0.150 million from the 2016 budget.

### **B.5: External expertise for international cooperation in nuclear research with targeted countries**

*Objective:* The objective is to pursue focussed cooperative actions with specific third States in support to the implementation of the Euratom Research and Training Programme 2014-2018, covering the exchange of scientific and technical nuclear expertise through participation of technical experts in programmatic discussions under the legal framework of bilateral Euratom cooperation agreements in fission and fusion research. A special allowance of EUR 450/day will be paid to the experts appointed in their personal capacity who act independently and in the public interest. Payment of the allowance is justified by the importance of the task and the amount of work needed to carry out such assignment.

*Scope:* The targeted countries are Ukraine, owing to its possible future association to the Euratom Programme, and China as a major player in the nuclear sector.

#### With regard to Ukraine

- Fission - This action will principally target radiological data, decommissioning and diversification of nuclear fuel and operational experience of VVERs. This will *inter alia* facilitate the alignment of Ukraine with European best practices regarding safety, whilst giving EU feedback from Ukraine's experience in operating VVERs.
- Fusion - This action will aim to consolidate the Ukrainian initiative to align the Ukrainian fusion programme to the European Fusion Roadmap and to identify effective contributions to the EUROfusion scope of work.

#### With regard to China

- Fission - This action will notably focus on the promotion of an effective dialogue in the area of nuclear safety and on the further implementation of the foreseen cooperation on the use of large Chinese research infrastructures, in particular related to severe accident R&I, as well as on education and training programmes.
- This action will further develop the identified priority areas of the programmatic objectives of the China-Euratom fusion work programme in order to ensure optimal integration into the EUROfusion scope of work. Particular areas of interest are the new Chinese Fusion Engineering Testing Reactor (CFETR), the JET programme, education and training, and specific physics and technology topics e.g. pulse operation, heat exhaust, and divertor configuration & performance.

*Expected impact:* These actions will help to strengthen the bilateral cooperation on challenges of common interest between Euratom and two key third countries both in the fission and fusion research areas. In particular, they will (i) promote Ukraine's integration into the fission research programme and its alignment with the European Fusion Roadmap under the framework of the association to the Euratom programme, (ii) spread European nuclear safety culture and best practices, and (iii) promote win-win collaborations with China, which is arguably the most ambitious country as regards development of new and advanced nuclear technologies.

*Type of action:* Expert contracts.

*Indicative timetable:* 1<sup>st</sup> Quarter 2016 – 4<sup>th</sup> Quarter 2017

*Indicative budget:* EUR 0.115 million from the 2016 budget and EUR 0.115 million from the 2017 budget.

#### **B.6: Public procurement - Studies for the interim evaluation of fission and fusion indirect actions under the Euratom Research and Training Programme 2014-2018**

*Objective:* The objective of the studies is to provide evidence on indirect actions in fission and fusion for the interim evaluation of the Euratom Research and Training Programme 2014-2018. The studies will provide evidence in particular on the achievements, on the relevance of the measures, their efficiency and the European added value. The interim evaluation of the Euratom Programme is carried out in accordance with Article 22(1) of the Council Regulation (Euratom) No 1314/2013 of 16 December 2013. These studies will be also used for

preparations of the impact assessment for the proposal for extension of the Euratom Programme for the two years 2019 and 2020.

Type of action: Public procurement using an existing framework contract

Indicative timeframe: 1<sup>st</sup> Quarter of 2016

Indicative number of specific contracts: 2

Indicative budget: EUR 0.25 million for fusion and 0.25 million for fission from the 2016 budget for both studies.

### **B.7 Contribution to the Organisation for Economic Co-operation and Development (Nuclear Energy Agency) / Secretariat for the Generation-IV International Forum**

Objective: The Charter of the Generation-IV International Forum (GIF) was signed by nine countries in 2001 with the purpose of satisfactorily addressing nuclear safety, waste, proliferation and public perception concerns. Euratom signed the Charter on 30 July 2003 by a decision of the Commission pursuant to Article 101(3) of the Euratom Treaty. A Framework Agreement (FA) for collaboration on R&D, setting the framework conditions for subsequent system and project arrangements, was concluded subsequently in 2005. The Charter was originally for a duration of 10 years, and in 2011 the signatories unanimously prolonged this duration indefinitely. The present FA signatories are Canada, China, Euratom, France, Japan, Russia, South Africa, South Korea, Switzerland and U.S. The FA depository is the OECD Secretary General. The EU Council approved the accession of the Euratom to the FA in its Decision no. 14121/05, Brussels, 8 November 2005, and Euratom formally acceded in May 2006. Accession brings with it certain obligations, including the co-funding of the GIF technical secretariat activities carried out by the OECD/NEA (Nuclear Energy Agency). The level of this funding from each signatory was established by the GIF Policy Group (PG) at its meeting in Beijing, China, 16-17 May 2013.

Type of action: Subscription for operation of the GIF Secretariat for the years 2016-2017, in the form of a 'subscription', in accordance with Article 121(2)(d) of the Financial Regulation and Article 173 of its Rules of Application.

Indicative timeframe: 50 % during first half of 2016 and 50 % during first half of 2017

Indicative budget: EUR 0.3 million from the 2016 budget.

## **CHAPTER C: INDICATIVE BUDGET**

<b>Call</b>	<b>2016 budget<sup>21</sup></b>	<b>2017 budget<sup>22</sup></b>
NFRP 1-14	57.74 from 08.030102	47.30 of which 43.30 from 08.030102 and 4 from 08.035001
<b>TOTAL</b>	<b>57.74</b> from 08.030102	<b>47.30</b> of which 43.30 from 08.030102 and 4 from 08.035001

<b>Other Actions</b>	<b>2016 budget</b>	<b>2017 budget</b>
Subscription	0.3 from 08.030102	
Prizes	0.09 from 08.030101	
Expert contracts	0.71 of which 0.53 from 08.030102 and 0.18 from 08.030101	0.12 of which 0.06 from 08.030102 and 0.06 from 08.030101
Financial instrument (InnovFIN)		20 from 08.030102
Public procurements	0.5 of which 0.25 from 08.030102 and 0.25 from 08.030101	
<b>TOTAL</b>	<b>1.60</b> of which 1.08 from 08.030102 and 0.52 from 08.030101	<b>20.12</b> of which 20.06 from 08.030102 and 0.06 from 08.030101

<b>TOTAL</b>	<b>59.34</b> of which 58.82 from 08.030102 and 0.51 from 08.030101	<b>67.42</b> of which 63.36 from 08.030102, 4 from 08.035001 and 0.06 from 08.030101
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<sup>21</sup> The budget amounts for 2016 are subject to the availability of the appropriations provided for in the draft budget for 2016 after the adoption of the budget for 2016 by the budgetary authority.

<sup>22</sup> The budget amounts for 2017 are subject to the availability of the appropriations provided for in the draft budget for 2017 after the adoption of the budget for 2017 by the budgetary authority.

*For information purpose.*

The table below serves as a reminder of the annual instalments further to the adoption of the 2014-2018 work programme in respect to the Fusion Joint Programme and the Joint European Torus operating contract as part of the Research and Training Programme of the European Atomic Energy Community (2014-2018) complementing the Horizon 2020 Framework Programme for Research and Innovation (decision C(2013) 8563 of 10 December 2013 as amended by decision C(2014)5009).

<b>Overview of the 2014-2018 appropriations that will be committed for the 2014-2018 grant to support the Fusion Joint Programme and the contract for the operation of the JET facilities</b>						
<b>Item</b>	<b>2014 Budget (EUR million)</b>	<b>2015 Budget (EUR million)</b>	<b>2016 Budget (EUR million)</b>	<b>2017 Budget (EUR million)</b>	<b>2018 Budget (EUR million)</b>	<b>TOTAL</b>
Fusion Joint Programme	77.36	72.15	82.00	101.56	124.63	<b>457.70</b>
Contract for operation of JET	63.00	50.00	50.00	50.00	37.00	<b>250</b>
<b>TOTAL</b>	<b>140.36</b>	<b>122.15</b>	<b>132.00</b>	<b>151.56</b>	<b>161.63</b>	<b>707.70</b>

# **ANNEX 1**

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## A. List of countries eligible for funding

1. Legal entities established in the following countries and territories will be eligible to receive funding through the Euratom Research and Training Programme (2014-18) complementing Horizon 2020 (hereinafter Euratom Programme):

- The Member States (MS) of the European Atomic Energy Community (Euratom), including their overseas departments;
- The Overseas Countries and Territories (OCT) linked to the Member States<sup>23</sup>:

Anguilla, Aruba, Bermuda, Bonaire, British Indian Ocean Territory, British Virgin Islands, Cayman Islands, Curaçao, Falkland Islands, French Polynesia, French Southern and Antarctic Territories, Greenland, Montserrat, New Caledonia, Pitcairn Islands, Saba, Saint Barthélemy, Saint Helena, Saint Pierre and Miquelon, Sint Eustatius, Sint Maarten, South Georgia and the South Sandwich Islands, Turks and Caicos Islands, Wallis and Futuna.

- The associated countries (AC): the latest information on which countries are associated, or in the process of association to Euratom Programme can be found in the online manual<sup>24</sup>. Note that entities from associated countries are eligible to participate according to the conditions set out in annex C.

2. International European interest organisations<sup>25</sup> will also be eligible to receive funding from Euratom Programme.

3. Legal entities established in countries not listed above will be eligible for funding when such funding is explicitly foreseen in the call<sup>26</sup>.

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<sup>23</sup> Entities from Overseas Countries and Territories (OCT) are eligible for funding under the same conditions as entities from the Member States to which the OCT in question is linked

<sup>24</sup> [http://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/international-cooperation\\_en.htm](http://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/international-cooperation_en.htm)

<sup>25</sup> These are international organisations, the majority of whose members are Member States or associated countries, and whose principal objective is to promote scientific and technological cooperation in Europe.

<sup>26</sup> Provided that natural or legal persons, groups or non-State entities are not covered by the Council sanctions in force. Please see: the consolidated list of persons, groups and entities subject to EU financial sanctions, available at [http://eeas.europa.eu/cfsp/sanctions/consol-list\\_en.htm](http://eeas.europa.eu/cfsp/sanctions/consol-list_en.htm)

4. In addition, legal entities established in countries not listed above and international organisations (IOs) will be eligible for funding<sup>27</sup>:

- When funding for such participants is provided for under a bilateral scientific and technological agreement or any other arrangement between the Euratom and an international organisation or a third country:
- When the Commission considers participation of the entity essential for carrying out the action funded through Euratom Programme.

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<sup>27</sup> Ibidem

## B. Standard admissibility conditions and related requirements

1. For all actions under this Work Programme, proposals/prize applications must comply with the admissibility conditions set out in this Annex, unless they are supplemented or modified in the call conditions.

To be considered **admissible**, a proposal/application must be:

- a. submitted in the electronic submission system before the deadline given in the call conditions;
- b. readable, accessible and printable.

2. **Incomplete** proposals/applications may be considered inadmissible. This includes the requested administrative data, the proposal description, and any supporting documents specified in the call.

3. The following supporting documents will be required to determine the **operational capacity** for grant proposals, unless otherwise specified in the call:

- A curriculum vitae or description of the profile of the persons who will be primarily responsible for carrying out the proposed research and/or innovation activities;
- A list of up to five relevant publications, and/or products, services (including widely-used datasets or software), or other achievements relevant to the call content;
- A list of up to five relevant previous projects or activities, connected to the subject of this proposal;
- A description of any significant infrastructure and/or any major items of technical equipment, relevant to the proposed work;
- A description of any third parties that are not represented as project partners, but who will nonetheless be contributing towards the work (e.g. providing facilities, computing resources)

4. Grant proposals must include a **draft plan for the exploitation and dissemination** of the results, unless otherwise specified in the call conditions. The draft plan is not required for proposals at the first stage of two-stage procedures or for prizes.

5. In addition, **page limits** will apply to proposals/applications.

Unless stated otherwise in the call conditions, the limit for a full proposal is 70 pages, except for coordination and support actions, where the limit is 50 pages. For prize applications, any specific limits will be set in the call conditions/Rules of Contest.

The limits will be clearly shown in the 'proposal templates' in the Participant Portal electronic submission system. Sections which are not subject to limits will be indicated.

If a proposal/application exceeds the limits, the applicant will receive an automatic warning, and will be advised to re-submit a version that conforms.

After the call deadline, excess pages (in over-long proposals/applications) will be automatically overprinted with a “watermark”.

Expert evaluators will be instructed to disregard these excess pages.

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## C. Standard eligibility conditions

1. All proposals must comply with the eligibility conditions set out in the Rules for Participation Regulation No 1290/2013. Furthermore, for actions under this Work Programme proposals/prize applications must comply with the **eligibility conditions** set out in this Annex, unless they are supplemented or modified in the call conditions.

A proposal/application will only be considered **eligible** if:

- (a) its content corresponds, wholly or in part, to the topic description for which it is submitted
- (b) it complies with the eligibility conditions for participation set out in the table below, depending on the type of action:

	<b>Eligibility conditions for participation</b> <sup>28,29,30</sup>
<b>Research &amp; innovation actions (RIA)</b>	At least three legal entities. Each of the three must be established in a different EU Member State or Euratom Programme associated country. All three legal entities must be independent of each other.
<b>Innovation actions (IA)</b>	At least three legal entities. Each of the three must be established in a different EU Member State or Euratom Programme associated country. All three legal entities must be independent of each other.
<b>Coordination &amp; support actions (CSA)</b>	At least one legal entity established in an EU Member State or Euratom Programme associated country.
<b>Prizes</b>	See conditions for participation in the call conditions/Rules of Contest.

<sup>28</sup> The eligibility criteria formulated in Commission notice Nr. 2013/C 205/05 ([OJEU C 205 of 19.07.2013, pp.9-11](#)) apply for all actions under this Work Programme, including for third parties that receive financial support under the action (in accordance with Article 137 of the Financial Regulation No 966/2012), notably programme cofund actions.

<sup>29</sup> Natural or legal persons, groups or non-State entities covered by the Council sanctions in force and are not eligible to participate in Union programmes. Please see the consolidated list of persons, groups and entities subject to EU financial sanctions, available at <http://eeas.europa.eu/cfsp/sanctions/consolidated-list-en.htm>.

<sup>30</sup> Given that the EU does not recognise the illegal annexation of Crimea and Sevastopol, legal persons established in the Autonomous Republic of Crimea or the city of Sevastopol are not eligible to participate in any capacity. This criterion also applies in cases where the action involves financial support given by grant beneficiaries to third parties established in the Autonomous Republic of Crimea or the city of Sevastopol (in accordance with Article 137 of the Financial Regulation No 966/2012). Should the illegal annexation of the Autonomous Republic of Crimea and the City of Sevastopol end, this Work Programme will be revised.

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Note:

1. *'Sole participants' formed by several legal entities (e.g. European Research Infrastructure Consortia, European Groupings of Territorial Cooperation, central purchasing bodies) are eligible if the above-mentioned minimum conditions are satisfied by the legal entities forming together the sole participant.*

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## D. Types of action: specific provisions and funding rates<sup>31,32</sup>

### **Research and innovation actions (RIA)**

*Description:* Action primarily consisting of activities aiming to establish new knowledge and/or to explore the feasibility of a new or improved technology, product, process, service or solution. For this purpose they may include basic and applied research, technology development and integration, testing and validation on a small-scale prototype in a laboratory or simulated environment.

Projects may contain closely connected but limited demonstration or pilot activities aiming to show technical feasibility in a near to operational environment.

*Funding rate:* 100%

### **Innovation actions (IA)**

*Description:* Action primarily consisting of activities directly aiming at producing plans and arrangements or designs for new, altered or improved products, processes or services. For this purpose they may include prototyping, testing, demonstrating, piloting, large-scale product validation and market replication.

A 'demonstration or pilot' aims to validate the technical and economic viability of a new or improved technology, product, process, service or solution in an operational (or near to operational) environment, whether industrial or otherwise, involving where appropriate a larger scale prototype or demonstrator.

A 'market replication' aims to support the first application/deployment in the market of an innovation that has already been demonstrated but not yet applied/deployed in the market due to market failures/barriers to uptake. 'Market replication' does not cover multiple applications in the market of an innovation<sup>33</sup> that has already been applied successfully once in the market. 'First' means new at least to Europe or new at least to the application sector in question. Often

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<sup>31</sup> Eligible costs for all types of action are in accordance with the Financial Regulation No 966/2012 and the Horizon 2020 Rules for Participation Regulation No 1290/2013. In addition, as training researchers on gender issues serves the policy objectives of Horizon 2020 and is necessary for the implementation of R&I actions, applicants may include in their proposal such activity and the following corresponding estimated costs that may be eligible for EU funding:

- (a) Costs of delivering the training (personnel costs if the trainers are employees of the beneficiary or subcontracting if the training is outsourced);
- (b) Accessory direct costs such as travel and subsistence costs, if the training is delivered outside the beneficiary's premises;
- (c) Remuneration costs for the researchers attending the training, in proportion to the actual hours spent on the training (as personnel costs).

<sup>32</sup> Participants may ask for a lower rate.

<sup>33</sup> A new or improved technology, product, design, process, service or solution.

such projects involve a validation of technical and economic performance at system level in real life operating conditions provided by the market.

Projects may include limited research and development activities.

*Funding rate:* 70% (except for non-profit legal entities, where a rate of 100% applies)

### **Coordination and support actions (CSA)**

*Description:* Actions consisting primarily of accompanying measures such as standardisation, dissemination, awareness-raising and communication, networking, coordination or support services, policy dialogues and mutual learning exercises and studies, including design studies for new infrastructure and may also include complementary activities of strategic planning, networking and coordination between programmes in different countries.

*Funding rate:* 100%

**Prizes***Description:* Prizes are financial contributions given as rewards following the publication of a contest. A ‘recognition prize’ is used to recognise past achievements and outstanding work after it has been performed, whereas an ‘inducement prize’ is used to spur investment in a given direction, by specifying a target prior to the performance of the work.

The Rules of Contest lay down the conditions for participation, the award criteria, the amount of the prize and the arrangements for the payment of the prize to the winners after their award. General Rules of Contest are set out in Annex F.

*Prize amounts:* The amount of the prize is specified in the contest. It is not linked to the costs incurred by the winner.

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# E. Model Rules of Contest (RoC) for prizes

This General Annex provides a model for the Rules of Contest that will be published for prizes under this Work Programme.

## RULES OF CONTEST

### 1. **THEME:** [INSERT NAME OF THE PRIZE]

#### 1.1 Objectives pursued

The objectives of the prize are to:

- [insert objective from work programme/call]
- [same for all objectives]

#### 1.2 Expected results

[insert text from work programme/call]

### 2. **PRIZE AMOUNT:** [INSERT AMOUNT] EUR

*[OPTION for SEVERAL PRIZES: [INSERT AMOUNT] EUR]*

### 3. **DEADLINES & ADMISSIBILITY:**

Deadlines	
Opening of the submission:	dd Month yyyy
<i>[OPTION for inducement prizes, if registration foreseen: Deadline for registration:</i>	dd Month yyyy]
Closing date for submission:	dd Month yyyy at hh:mm:ss CET <sup>34</sup>

<sup>34</sup> Central European Time = Brussels local time.

Applications must be submitted by the (lead) contestant via the Participant Portal 'Submission Service', accessible via the call page.

Applications must be readable, accessible and printable. Incomplete applications may be considered inadmissible if essential elements are missing (see General Annex B to the Main Work Programme).

The page-limit for this prize is: [insert number] pages

*[OPTION for inducement prizes, if registration foreseen:* Participants must moreover declare their intention to participate by registering as 'contestants' via [the Participant Portal 'Submission Service']/[insert adress of functional mailbox].

Sample application forms are available as reference documents on the [Participant Portal](#).

## **4. ELIGIBILITY:**

### 4.1 Eligibility criteria

*[OPTION 1 by default:* The contest is open to all legal entities (i.e. natural or legal persons, including International organisations) or groups of legal entities. regardless of place of establishment ] *OPTION 2 if further specific eligibility criteria are provided in the work programme/call:* The contest is open to [insert eligibility criteria from WP/call].]

Please note however that special rules apply for Israeli entities<sup>35</sup> and for Crimean legal persons and that entities from non-EU Member States that are covered by Council sanctions are not eligible to participate<sup>36</sup> (see General Annex C to the Main Work Programme).

Moreover, applicants that have already received an EU or Euratom prize cannot receive a second prize for the same activities.

### 4.1 Exclusion criteria

Contestants will be excluded if they (or key persons that have power of representation, decision-making or control over them)<sup>37</sup>:

- are bankrupt or being wound up, are having its affairs administered by the courts, have entered into an arrangement with creditors, have suspended business activities, are the subject of such proceedings or a similar procedure provided for in national legislation or regulations;
- have been convicted of an offence concerning professional conduct by a judgment of a competent authority of a Member State which has the force of res judicata
- have been guilty of grave professional misconduct proven by any means which the EU bodies can justify (including by decisions of the European Investment Bank and international organisations)
- are not in compliance with all their obligations relating to social security contributions and taxes (in accordance with the legal provisions of the country in which it is established, with those of the country

35 See Commission Guidelines on the eligibility of Israeli entities and their activities in the territories occupied by Israel since June 1967 for grants, prizes and financial instruments funded by the EU from 2014 onwards (OJ C 205 of 19.7.2013, pp. 9-11).

36 For the list of persons, groups and entities subject to EU financial sanctions, see [http://eeas.europa.eu/cfsp/sanctions/consol-list\\_en.htm](http://eeas.europa.eu/cfsp/sanctions/consol-list_en.htm)

37 See Articles 138(2) and 106(1), 107, 108, 109 of the 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 218, 26.10.2012, p.1).

of the authorising officer responsible and those of the country where the activity is to be implemented)

- have been the subject of a judgement which has the force of res judicata for fraud, corruption, involvement in a criminal organisation, money laundering or any other illegal activity that is detrimental to the EU's financial interests
- are subject to an administrative penalty for misrepresenting the information required for participating in a procurement procedure or another grant award procedure or failing to supply this information, or declared to be in serious breach of its obligations under contracts or agreements covered by the EU budget.
- are subject to a conflict of interests in connection with the prize
- have been granted or have granted, have sought, have attempted to obtain, or have accepted an advantage, financial or in kind, to or from any party whatsoever, where this constitutes an illegal practice or involves corruption, either directly or indirectly and is an incentive or reward relating to the award of the prize.

## 5. AWARD CRITERIA:

The prize will be awarded to the entry that in the opinion of the jury demonstrates a solution that best addresses the following cumulative criteria.:

1. [list the essential/specific award criteria from the work programme/call]
2. [...]
3. [...]
4. [same for all other essential/specific award criteria from the work programme/call].

## 6. DOCUMENTS:

The mandatory supporting documents are set out in the application form.

Contestants may be asked at a later stage for further documents (for legal entity validation, bank account validation, ethics review, declaration of honour on exclusion grounds, etc).

## 7. PROCEDURE:

Applications will be evaluated by an independent expert jury between [month yyyy] and [month yyyy] — first individually (by each expert separately) and then as a group (by the whole jury together).

The jury will evaluate each application against the [insert number] award criteria and score them as follows (only full points; no half marks or decimals):

Criterion	Threshold	Maximum points
1. [insert award criterion]	[insert threshold, e.g. 3]	[insert max points, e.g. 5]
2. [insert award criterion]	[insert threshold, e.g. 3]	[insert max points, e.g. 5]
3. [insert award criterion]	[insert threshold, e.g. 3]	[insert max points, e.g. 5]
4. [insert award criterion]	[insert threshold, e.g. 3]	[insert max points, e.g. 5]
5. [insert award criterion]	[insert threshold, e.g. 3]	[insert max points, e.g. 5]
6. [same for other award criteria]	[insert threshold, e.g. 3]	[insert max points, e.g. 5]

Total	[insert total, e.g. 18]	[insert total, e.g. 30]
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*[[OPTION 1 for recognition and best-in-class prizes: The [5][[iother number]] best applications][OPTION 2 for first-past-the-post prizes: Applications]* will be invited in [month X, year X] for a hearing, to show their proposed solution.]

*[OPTION for special evaluation procedures: [In addition,]* [insert special procedures and indicative timing].]

On the basis of the evaluation, the [Commission]/[Agency] will decide on the award of the prize.

All contestants will be informed [insert indicative date, e.g. 'at the end of 2016'].

## **8. OTHER CONDITIONS:**

### 8.1 Liability

The Commission shall not be held liable for any damage caused or sustained by any of the participants, including any damage caused to third parties as a consequence of or during the implementation of the activities related to the contest.

### 8.2 Applicable law and competent jurisdiction

The contest is governed by the applicable Union law complemented, where necessary, by the law of Belgium. The General Court or, on appeal, the Court of Justice of the European Union, shall have sole jurisdiction to hear any dispute between the Union and any participant concerning the interpretation, application or validity of the rules of this contest, if such dispute cannot be settled amicably. For participants that are International organisations such disputes with the [Commission]/[Agency] relating to the Contest must - if they cannot be settled amicably - be referred to arbitration.

The Permanent Court of Arbitration Optional Rules for Arbitration Involving International Organisations and States in force at the date of entry into force of the Contest will apply.

### 8.3 Payment arrangements

*[OPTION 1 by default: The prize money (EUR[insert amount]) will be paid in one instalment after the award ceremony by bank transfer, provided all the requested documents have been submitted.]*

*[OPTION 2 for special payment schemes: [insert other payment arrangements]]*

### 8.4 Publicity — Promoting the prize — Visibility of EU funding

#### 8.4.1 Publicity by the winner(s)

The winner(s) must promote the action and its results, by providing targeted information to multiple audiences (including the media and the public) in a strategic and effective manner.

Unless the [Commission]/[Agency] requests or agrees otherwise or unless it is impossible, any communication activity related to the action (including in electronic form, via social media, etc.) must:

- (a) display the EU emblem and
- (b) include the following text:

“This action has been awarded the [insert prize name] from the European Union’s Horizon 2020 research and innovation programme”.

When displayed together with another logo, the EU emblem must have appropriate prominence.

For the purposes of its obligations, the winner(s) may use the EU emblem without first obtaining approval from the [Commission]/[Agency].

This does not, however, give it the right to exclusive use.

Moreover, the winner(s) may not appropriate the EU emblem or any similar trademark or logo, either by registration or by any other means.

#### 8.4.2 Publicity by the [Agency or the] Commission

The [Agency or the] Commission may use, for its communication and publicising activities, information relating to the action, documents notably summaries for publication and deliverables as well as any other material, such as pictures or audio-visual material that it receives from the winner(s) (including in electronic form).

The [Agency or the] Commission will publish the name of the winner(s), their origin, the amount of the prize and its nature and purpose— unless the winner has requested to waive this publication (because disclosure risks threatening its security and safety or harm its commercial interest).

Photos and videos taken by the [Agency or the] Commission either in preparation of the award ceremony or during the award ceremony are the sole property of the Commission.

### 8.5 Dissemination and exploitation of results

The winner(s) must comply with the obligations set out in Title III of the Rules for Participation Regulation No 1290/2013<sup>38</sup> [and the following additional [dissemination]/[and] [exploitation] obligations:

- [insert additional obligation from work programme/call]
- [same for further additional obligations].

### 8.6 Processing of personal data

#### 8.6.1 Processing of personal data by the [Commission]/[Agency]

Any personal data will be processed by the [Agency or the] Commission under Regulation No 45/2001<sup>39</sup> and according to the ‘notifications of the processing operations’ to the Data Protection Officer (DPO) of the [Agency or the] Commission (publicly accessible in the DPO register).

Such data will be processed by the ‘**data controller**’ of the [Agency or the] Commission for the purposes of the award, implementation and follow-up of the prize or protecting the financial interests of the EU or Euratom (including checks, audits and investigations; see below).

The persons whose personal data are processed have the right to access and correct their own personal data. For this purpose, they must send any queries about the processing of their personal data to the data controller, via the

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

39 Regulation (EC) No 45/2001 of the European Parliament and of the Council of 18 December 2000 on the protection of individuals with regard to the processing of personal data by the Community institutions and bodies and on the free movement of such data (OJ L 8, 12.01.2001, p. 1).

contact point indicated in the ‘service specific privacy statement(s) (SSPS)’ that are published on the [Agency and/ Commission websites.

They also have the right to have recourse at any time to the European Data Protection Supervisor (EDPS). The winner(s) consent that the [Agency or the/ Commission publish/es/ (in whatever form and medium) the following information:

- name
- Member State of origin (address or NUTS 2 region)
- their activities in relation to the award of the prize (via the summary for publication they provided)
- prize amount.

#### 8.6.2. Processing of personal data by the contestants

The contestants must process personal data in compliance with applicable EU and national law on data protection (including authorisations or notification requirements).

The contestants may grant their personnel access only to data that is strictly necessary for the award, implementation or follow-up of the prize.

The contestants must inform the personnel whose personal data are collected and processed by the [Agency or the/ Commission. For this purpose, they must provide them with the service specific privacy statement(s) (SSPS) (see above), before transmitting their data to the [Agency or the/ Commission.

#### 8.7 Ethics

The activities must be carried out in compliance with:

- (a) ethical principles (including the highest standards of research integrity — as set out, for instance, in the European Code of Conduct for Research Integrity<sup>40</sup> — and including, in particular, avoiding fabrication, falsification, plagiarism or other research misconduct) and
- (b) applicable international, EU and national law, including the EU Charter of Fundamental Rights

No prize will be awarded for activities carried out outside the EU, if they are prohibited in all Member States.

The contestants must ensure that the activities have an exclusive focus on civil applications.

The contestants must ensure that the activities do not:

- (a) aim at human cloning for reproductive purposes
- (b) intend to modify the genetic heritage of human beings which could make such changes heritable (with the exception of research relating to cancer treatment of the gonads) or
- (c) intend to create human embryos solely for the purpose of research or for the purpose of stem cell procurement, including by means of somatic cell nuclear transfer.

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40 The European Code of Conduct for Research Integrity of ALLEA (All European Academies) and ESF (European Science Foundation) of March 2011.  
[http://www.esf.org/fileadmin/Public\\_documents/Publications/Code\\_Conduct\\_ResearchIntegrity.pdf](http://www.esf.org/fileadmin/Public_documents/Publications/Code_Conduct_ResearchIntegrity.pdf)

Research activities involving human embryonic stem cells (hESC) are moreover subject to the conditions set out in the [Statement of the Commission related to research activities involving human embryonic stem cells](#).

For more information and best practice, see the [Online Manual](#), the sample 'proposal template' for prizes and the guidance [How to complete your ethics self assessment](#)'.

## 8.8 Conflict of interests

The contestants must take all measures to prevent any situation where the impartial and objective award of the prize is compromised for reasons involving economic interest, political or national affinity, family or emotional ties or any other shared interest ('**conflict of interests**').

They must inform the *[Commission//Agency]* without delay of any situation constituting or likely to lead to a conflict of interests and immediately take all the necessary steps to rectify this situation.

The *[Commission//Agency]* may verify that the measures taken are appropriate and may require additional measures to be taken by a specified deadline.

## 8.9 Liability for damages

The *[Commission//Agency]* cannot be held liable for any damage caused to the contestants or to third parties as a consequence of the award or implementation of the prize, including for gross negligence.

The *[Commission//Agency]* cannot be held liable for any damage caused by any of the contestants, as a consequence of activities linked to the prize.

## 8.10 Checks, audits and investigations

The *[Agency or the Commission, the European Anti-Fraud Office (OLAF) and the Court of Auditors]* may carry out checks, audits and investigations in relation to the prize.

## 8.11 Withdrawal of the prize — Recovery of undue amounts

The *[Commission//Agency]* may withdraw the prize and recover all payments made, if it finds out that:

- (a) false information or fraud or corruption was used to obtain the prize or
- (b) the winner was not eligible or should have been excluded.

## 8.12 Administrative and financial penalties

If a contestant has committed irregularities or fraud or has made false declarations, the *[Commission//Agency]* may also impose:

- (e) an administrative penalty excluding the contestants from all contracts, grants and contests financed from the EU or Euratom budget for a maximum of five years (or 10 years in case of repetition) and/or
- (f) a financial penalty between 2% and 10% of the value of the prize (or between 4% and 20% in case of repetition).

## ***[OPTION for inducement prizes: 8.13 Cancellation of the contest***

The *[Commission//Agency]* may cancel the contest or decide not to award a prize — without any obligation to indemnify contestants —, if:

- (a) the objective of the contest has already been achieved

- (b) no applications are received
- (c) the jury does not find a winner or
- (d) the winner is not eligible or must be excluded./

## **9. CONTACT:**

For more information, please see the prize website.

In case of questions, please contact /the [Research Enquiry Service](#)//[insert functional mailbox]/.

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## F. Technology readiness levels (TRL)

Where a topic description refers to a TRL, the following definitions apply, unless otherwise specified:

- TRL 1 – basic principles observed
- TRL 2 – technology concept formulated
- TRL 3 – experimental proof of concept
- TRL 4 – technology validated in lab
- TRL 5 – technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)
- TRL 6 – technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies)
- TRL 7 – system prototype demonstration in operational environment
- TRL 8 – system complete and qualified
- TRL 9 – actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)

## G. Evaluation rules

### Selection Criteria

1. *Financial capacity*: In line with the Financial Regulation No 966/2012 and the Horizon 2020 Rules for Participation Regulation No 1290/2013<sup>41</sup>. For grants, coordinators will be invited – at the proposal stage – to complete a self-assessment using an on-line tool.
2. *Operational capacity*: As a distinct operation, carried out during the evaluation of the award criterion ‘Quality and efficiency of the implementation’, experts will indicate whether the participants have sufficient operational capacity to carry out the proposed work, based on the competence and experience of the individual participant(s).
3. For prizes, neither financial capacity nor operational capacity is needed.

### Award criteria, scores and weighting

1. Grant proposals will be evaluated by experts, on the basis of the **award criteria** ‘excellence’, ‘impact’ and ‘quality and efficiency of the implementation’(see Article 15 of the Horizon 2020 Rules for Participation Regulation No 1290/2013).

The aspects to be considered in each case depend on the types of action as set out in the table below, unless stated otherwise in the call conditions:

	<b>Award criteria</b>		
	<p><b>Excellence</b></p> <p><i>The following aspects will be taken into account, to the extent that the proposed work corresponds to the topic description in the work programme:</i></p>	<p><b>Impact</b></p> <p><i>The following aspects will be taken into account:</i></p>	<p><b>Quality and efficiency of the implementation</b></p> <p><i>The following aspects will be taken into account*:</i></p>
<b>All types of action</b>	<p><b>Clarity and pertinence of the objectives;</b></p> <p><b>Soundness of the concept, and credibility of the proposed methodology;</b></p>	<p><b>The extent to which the outputs of the project would contribute to each of the expected impacts mentioned in the work programme under the</b></p>	<p>Quality and effectiveness of the work plan, including extent to which the resources assigned to work packages are in line with their objectives and</p>

<sup>41</sup> Horizon 2020 Rules for Participation Regulation No 1290/2013 is applicable to the Euratom Research and Training Programme according to Article 7(1) of the Council Regulation (Euratom) No 1314/2013.

		<b>relevant topic;</b>	<p>deliverables;</p> <p>Appropriateness of the management structures and procedures, including risk and innovation management;</p> <p>Complementarity of the participants and extent to which the consortium as whole brings together the necessary expertise;</p> <p>Appropriateness of the allocation of tasks, ensuring that all participants have a valid role and adequate resources in the project to fulfil that role.</p>
<b>Research and innovation actions (RIA); Innovation actions (IA) ;</b>	<p><b>Extent that the proposed work is beyond the state of the art, and demonstrates innovation potential (e.g. ground-breaking objectives, novel concepts and approaches, new products, services or business and organisational models)</b></p> <p><b>Appropriate consideration of interdisciplinary approaches and, where relevant, use of stakeholder knowledge.</b></p>	<p>Any substantial impacts not mentioned in the work programme, that would enhance innovation capacity; create new market opportunities, strengthen competitiveness and growth of companies, address issues related to climate change or the environment, or bring other important benefits for society.</p> <p>Quality of the proposed measures to:</p> <ul style="list-style-type: none"> <li>• Exploit and disseminate the project results (including management of IPR), and to manage research data where relevant.</li> <li>• Communicate the project activities to different target audiences</li> </ul>	
<b>Coordination &amp; support actions (CSA)</b>	Quality of the proposed coordination and/or support measures.	<p>Quality of the proposed measures to</p> <ul style="list-style-type: none"> <li>• Exploit and disseminate the project results (including management of IPR), and to manage research data where relevant.</li> </ul>	

		<ul style="list-style-type: none"> <li>• Communicate the project activities to different target audiences</li> </ul>	
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\* not all aspects are relevant to proposals involving just one beneficiary

**2. Scoring and weighting:**

Unless otherwise specified in the call conditions:

- Evaluation scores will be awarded for the criteria, and not for the different aspects listed in the above table. For full proposals, each criterion will be scored out of 5. The threshold for individual criteria will be 3. The overall threshold, applying to the sum of the three individual scores, will be 10.
- For Innovation actions, to determine the ranking, the score for the criterion ‘impact’ will be given a weight of 1.5.
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**3. Priority order** for proposals with the same score:

Unless the call conditions indicate otherwise, the following method will be applied

If necessary, the panel will determine a priority order for proposals which have been awarded the same score within a ranked list. Whether or not such a prioritisation is carried out will depend on the available budget or other conditions set out in the call fiche. The following approach will be applied successively for every group of ex aequo proposals requiring prioritisation, starting with the highest scored group, and continuing in descending order:

- (a) Proposals that address topics, or sub-topics, not otherwise covered by more highly-ranked proposals, will be considered to have the highest priority.
- (b) The proposals identified under (a), if any, will themselves be prioritised according to the scores they have been awarded for the criterion excellence. When these scores are equal, priority will be based on scores for the criterion impact. In the case of Innovation actions, this prioritisation will be done first on the basis of the score for impact, and then on that for excellence.

If necessary, any further prioritisation will be based on the following factors, in order: size of budget allocated to SMEs; gender balance among the personnel named in the proposal who will be primarily responsible for carrying out the research and/or innovation activities.

If a distinction still cannot be made, the panel may decide to further prioritise by considering how to enhance the quality of the project portfolio through synergies between projects, or other factors related to the objectives of the call or to Euratom Programme in general. These factors will be documented in the report of the Panel.

- (c) The method described in (b) will then be applied to the remaining ex aequos in the group.

4. For prizes, the award criteria, scoring and weighting will be set out in the call conditions/Rules of contest.

**Evaluation procedure**

1. Calls may be subject to either a one-stage or two-stage submission and evaluation procedure.

2. Proposals are evaluated by independent experts (see Article 15(7) Horizon 2020 Rules for Participation Regulation No 1290/2013 for exceptional cases).

As part of the evaluation by independent experts, a panel review will recommend one or more ranked lists for the proposals under evaluation, following the scoring systems indicated above. A ranked list will be drawn up for every indicative budget shown in the call conditions.

3. Proposal coordinators receive an Evaluation Summary Report (ESR), showing the results of the evaluation for a given proposal. For proposals that successfully pass the first stage of two-stage calls, common feedback is provided to all coordinators, but the first stage ESR is only sent after the second stage evaluation.

4. If special procedures apply, they will be set out in the call conditions/Rules of Contest.

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## **H. Budget flexibility**

The budgets set out in this Work Programme are indicative.

Unless otherwise stated, final budgets may vary following evaluation.

The final figures may vary by up to 20% compared to those indicated in this Work Programme, for the following budgeted activities:

- total expenditure for calls (up to 20% of the total expenditure for each call);
- repartition of call budgets within a call (up to 20% of the total expenditure of the call);
- evaluation and monitoring (up to 20% of the total expenditure for all these activities);
- other individual actions not implemented through calls for proposals (up to 20% for each one).

## I. Actions involving classified information

In the case of actions involving security-related activities, special provisions for classified information (as defined in the [Commission Rules of Procedure](#) (*Decision 2015/444/EC, ECSC, Euratom*, and further explained in the [Guidelines for the classification of research results](#)<sup>42</sup>) will be taken in the grant agreement, as necessary and appropriate.

Proposals should not contain any classified information. However, it is possible that the output of an action ('results') needs to be classified, or that classified inputs ('background') are required. In such cases proposers have to ensure and provide evidence of the adequate clearance of all relevant facilities. Consortia have to clarify issues such as e.g. access to classified information or export or transfer control with the national authorities of their Member States/Euratom Programme associated countries prior to submitting the proposal. Proposals need to provide a draft security classification guide, indicating the expected levels of classification. Appropriate arrangements will have to be included in the consortium agreement.

The Work Programme will indicate which topics are likely to lead to a security scrutiny.

These provisions do not apply to prizes.

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<sup>42</sup> [http://ec.europa.eu/research/participants/data/ref/h2020/other/hi/secur/h2020-hi-guide-classif\\_en.pdf](http://ec.europa.eu/research/participants/data/ref/h2020/other/hi/secur/h2020-hi-guide-classif_en.pdf)

## **J. Actions involving financial support to third parties**

Where a topic allows for grant proposals which foresee a financial support to third parties (in accordance with Article 137 of the Financial Regulation No 966/2012), the proposal must clearly detail the objectives and the results to be obtained and include at least the following elements:

- a fixed and exhaustive list of the different types of activities for which a third party may receive financial support,
- the definition of the persons or categories of persons which may receive financial support,
- the criteria for awarding financial support
- the criteria for calculating the exact amount of the financial support,
- the maximum amount to be granted to each third party (may not exceed EUR 60 000 for each third party unless it is necessary to achieve the objectives of the action) and the criteria for determining it.

Projects must publish widely their open calls and adhere to Horizon 2020 standards with respect to transparency, equal treatment, conflict of interest and confidentiality. All calls for third parties must be published on the Horizon 2020 Participants Portal, and on the projects own web site. The calls must remain open for at least three months. If call deadlines are changed this must immediately be published on the call page on the participant's portal and all registered applicants must be informed of the change.

The calls must have a clear European dimension – either by carrying out cross border experimentation or in other ways expanding the impact of local experiments to European scale.

The financial support may also take the form of a prize awarded following a contest organised by the beneficiary.

In this case, proposals must clearly detail at least the following elements:

- the conditions for participation;
- the award criteria;
- the amount of the prize;
- the payment arrangements.

Further conditions regarding the above-listed elements or other elements may be laid down in the call conditions.

The beneficiary of the EU grant must ensure that the recipients of the financial support allow the Commission, the European Anti-fraud Office (OLAF) and the Court of Auditors to exercise their powers of control on documents, information, even stored on electronic media, or on the final recipient's premises.