

EN

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WORK PROGRAMME 2014 – 2015

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Table of Contents

Introduction 4

SECTION A: CALL FOR PROPOSALS (H2020-NFRP-2014/2015) 6

A - Support Safe Operation of Nuclear Systems 7

NFRP 1 – 2014: Improved safety design and operation of fission reactors 7

NFRP 2 – 2014: Tool for the fast and reliable prediction of severe accident progression and anticipation of the source term of a nuclear accident 8

NFRP 3 – 2014: New innovative approaches to reactor safety 9

B - Contribute to the Development of Solutions for the Management of Ultimate Radioactive Waste 9

NFRP 4 – 2014: EU concerted development of Member State research on radioactive waste management..... 9

NFRP 5 – 2015: Supporting the licensing of geological repositories 10

NFRP 6 – 2014: Supporting the implementation of the first-of-the-kind geological repositories .. 11

C - Foster Radiation Protection 12

NFRP 7 – 2015: Integrating radiation research in the European Union..... 12

D – Cross-cutting aspects for Nuclear Fission and Radiation Protection 13

NFRP 8 – 2015: High density uranium fuel and targets for the production of medical radioisotopes 13

NFRP 9 – 2015: Transmutation of minor actinides (Towards industrial application) 14

E - Support the development of nuclear competences at Union level and socio-economic aspects 15

NFRP 10 – 2014: Education and training (Bologna and Copenhagen processes) 15

NFRP 11 – 2015: Modelling and analysing the energy system, its transformation and impacts. ... 16

NFRP 12 – 2014: Nuclear developments and interaction with society 16

NFRP 13 – 2015: Fostering the network of National Contact Points 18

NFRP 14 – 2014: Regional initiative aiming at nuclear research and training capacity building... 19

NFRP 15 – 2015: Specific support to the work of the Sustainable Nuclear Energy Technology Platform..... 20

NFRP 16 – 2015: Supporting the licensing of Western nuclear fuel for reactors of VVER design operating in the EU..... 20

Conditions for the call..... 22

SECTION B: OTHER ACTIONS' 24

B.1: Fusion Joint Programme 24

B.2: External expertise 27

B.3: Supporting access to Jules Horowitz reactor 28

B.4: Prize - Innovation SOFT..... 28

B.5: Contract for the operation of JET 30

B.6: Contribution to the Organisation for Economic Co-operation and Development (Nuclear Energy Agency) / Secretariat for the GIF..... 31

SECTION C: BUDGET OVERVIEW 33

ANNEXES..... 35

Annex 1: General Conditions 36

Annex 2: Consortium members for fusion programme co-fund grant 55

Introduction

The Euratom Research and Training Programme (2014-18)¹ complements the Horizon 2020² in the field of nuclear research and training. Its general objective is to pursue nuclear research and training activities with an emphasis on continually improving nuclear safety and radiation protection, notably to contribute to the long-term decarbonisation of the energy system in a safe, efficient and secure way. By contributing to these objectives, the Euratom Programme shall reinforce outcomes under the three priorities of the Horizon 2020: excellent science, industrial leadership, and societal challenges.

The indirect actions of the Euratom Programme are focused on two areas: nuclear fission and radiation protection, and fusion research aiming to developing magnetic confinement fusion as an energy source.

As requested by the Council in June 2011, Euratom activities in the area of nuclear fission and radiation protection have been thoroughly reviewed, in the context of the post-Fukushima era. In 2012, DG Research and Innovation (RTD), commissioned³ the Interdisciplinary Study "Benefits and Limitations of Nuclear Fission for a Low Carbon Economy"⁴, which was presented at the 2013 Symposium of the same title co-organised by the European Commission (EC) and the European Economic and Social Committee (EESC). The Council was informed in June 2013 on the conclusions and recommendations made by the high level experts and various stakeholders involved in this Study. These conclusions and recommendations, which notably point out the need for a further focusing on nuclear safety and improved interaction with civil society, constitute the backbone of the research direction proposed in this work programme for fission and radiation protection.

Euratom has been at the centre of the European fusion research effort since the very start of the endeavour to develop magnetic confinement fusion as an energy source. The Euratom Framework Programmes in the fusion domain have ensured that research in fusion science and technology carried out in national fusion laboratories across Europe, also involving collaborative activities with third countries, is coordinated and largely integrated. Instruments such as Contracts of Association (under Art. 10 of the Euratom Treaty) have provided Community support to all Member States and Switzerland as fully associated third country to develop a solid basis in fusion science. More recently, the European Fusion Development Agreement (EFDA) has, through a range of instruments, added a multilateral dimension to fusion research activities, in particular regarding the exploitation of JET, as well as providing a common focus for cooperation with our international partners. However, the current instruments all expire at the end of 2013, and while recognising the achievements to date, it is clear that the challenges ahead require a new programme structure promoting enhanced

¹ Council Regulation on the Research and Training Programme of the European Atomic Energy Community (2014-2018)

² Council and EP regulation on Horizon 2020

³ In cooperation with Directorates General Joint Research Centre (JRC), Energy (ENER), Development and Cooperation (DEVCO) and Education and Culture (EAC) for defining the terms of reference and guidance to experts.

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

integration across Europe in order to ensure the success of ITER and electricity generation from a ‘DEMO’ device around the middle of the XXI Century. The basis for this effort is the Fusion roadmap (‘Fusion Electricity – A roadmap to the realisation of fusion energy’⁵), endorsed by the EFDA members in autumn 2012. The principal aim of the present work programme in this respect is to provide Community support to the joint programme of activities implemented by the national fusion laboratories in line with the Fusion roadmap over the period 2014-2018⁶. International cooperation remains a crucial part of these activities and will continue to be implemented under the various multilateral frameworks (OECD/IEA, IAEA, 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. Fusion research in Europe is the best example Europe can offer of a unified research programme, and it is imperative to retain this unity in the new approach.

⁵ <http://www.efda.org/2013/01/bringing-fusion-electricity-to-the-grid/>

⁶ The present Work Programme is considered as a 5-year programme in respect of the actions proposed in Section B.1 – Fusion Joint Programme and Section B.5 - Contract for the operation of JET, for which it constitutes the financing decision.

SECTION A: CALL FOR PROPOSALS (H2020-NFRP-2014/2015)

Activities concerning the nuclear fission and radiation protection presented in this Work Programme are in line with the Council Directive 2009/71/Euratom of 25 June 2009 establishing a Community Framework for the Nuclear Safety of Nuclear Installations and with the Commission Proposal of 13 June 2013 for a revised Directive (COM(2013) 343), 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 waste⁷, and the Commission Proposal for a Council Directive laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation (COM(2012) 242 final).

The activities funded by this Work Programme have been developed in accordance with the Council Regulation on the Research and Training Programme of the European Atomic Energy Community (2014-2018) complementing the Horizon 2020. They are organised in five main sections:

- A. Support safe operation of nuclear systems
- B. Contribute to the development of solutions for the management of ultimate radioactive waste
- C. Foster Radiation Protection
- D. Cross-cutting aspects for nuclear fission and radiation protection
- E. Support the development of nuclear competences at Union level and socio-economic aspects.

It should be noted that socio-economic issues are also addressed within each of the first four sections, as well as trans-national access to research infrastructures, where appropriate.

International cooperation with third countries is promoted through bilateral Euratom cooperation agreements, but also multilateral initiatives such as those established by the United Nations (UN) or the Organisation for Economic Co-operation and Development (OECD). Reference to international cooperation is specifically mentioned in each of the work programme sections, where considered more particularly pertinent, but this is not restrictive. The detailed provisions are available at Horizon 2020 web page⁸. Dissemination of activities in this work programme through scientific publications will be encouraged.

⁷ OJ L199/48, 2.8.2011

⁸ http://ec.europa.eu/research/horizon2020/index_en.cfm

Proposals are invited against the following topics:

A - Support Safe Operation of Nuclear Systems

NFRP 1 – 2014: Improved safety design and operation of fission reactors

Specific challenge: The European Union (EU) has a strong leadership in reactor design and operation responding to stringent safety requirements from regulators and seeks to foster convergence of nuclear safety approaches. The EU is also at the forefront of the development of innovative reactor designs with even higher safety characteristics. Today's major research challenge is evidently to reinforce research cooperation on reactor safety at EU level and worldwide.

Scope: At EU level, this reinforced cooperation will, first of all, involve Members States' national research programmes while also taking into account the priorities of the strategic research and innovation agenda of SNETP⁹ and NUGENIA¹⁰. The Euratom funding will be devoted to supporting the continuous improvement of nuclear safety of the existing reactor fleet and to optimising the safety characteristics in the design of future reactors, e.g. by implementation of passive safety features and by increasing the redundancy and diversity or by performing experimental tests and developing advanced simulation tools. The focus will be on actions increasing the knowledge basis on reactor life-time management issues relevant to safety (e.g. integrity of structural components, containment, irradiation and corrosion issues, ...), as well as on those promoting safety culture and providing guidance for severe accident management (especially on issues arising after the Fukushima accident e.g. safety of fuel storage, hydrogen explosion, containment behaviour, corium/debris coolability and interactions, ...). The Euratom funding will be dedicated to topics where national programme priorities converge and where European added value is obvious and maximised. International cooperation activities would be beneficial in this area and will be considered during evaluation.

Expected impact: In the short term, this action will provide the knowledge basis for developing robust national and EU policies in the field of nuclear reactor safety, while also helping interacting with stakeholders and civil society on nuclear reactor safety. In the medium term this research will further improve the safety of nuclear reactors in Europe and worldwide through increased resistance of safety relevant equipment and better safety culture. It will also reinforce the EU strong leadership in reactor design and operation responding to stringent safety requirements from regulators and seek to foster European cooperation on nuclear safety approaches. In so doing, the EU will remain at the forefront of the development of innovative reactor designs with even higher safety characteristics.

Type of action: Research and innovation actions.

⁹ Sustainable Nuclear Energy Technology Platform

¹⁰ Nuclear Generation II and III Association

Additional information: The Commission considers that proposals requesting a contribution from the Euratom of between EUR 3 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.

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

NFRP 2 – 2014: Tool for the fast and reliable prediction of severe accident progression and anticipation of the source term of a nuclear accident

Specific Challenge: The fast and reliable prediction of severe accident progression and the anticipation of the source term in case of severe accident is of paramount importance for the protection of people in triggering the appropriate response to a nuclear emergency. The need to improve the tools for predicting the plant status and the source term has been identified as a priority following the Fukushima accident as it gives input to accident management strategies and for dose projection caused by atmospheric releases.

Scope: For use in emergency operation centres, this tool should be adapted to all types of reactors in operation or foreseeable in the EU. Furthermore, this tool should be able to predict the different possible accidental scenarios and provide results in a fast and user-friendly way. Such tool should start with minimal input data from nuclear power plants but be able to incorporate additional refinement as more information becomes available in order to improve predictions. It should also rely on state of the art knowledge on severe accident phenomenology and mitigation measures in order to give results with enough accuracy, confidence and reduced uncertainties. International cooperation with notably Japan, the United States of America, Ukraine and the Russian Federation would be beneficial in this area and will be considered during evaluation.

Expected impact: This research will first of all lead to reinforcing nuclear safety through improved accident management procedures that will ensure a faster and site specific response to nuclear emergencies. The tool to be developed is also to be used for the further assessment of existing severe accident management guidelines. It will improve the availability and reliability of dose projection caused by atmospheric releases following a nuclear accident and respond to the need identified as a priority following the Fukushima accident. In the long term, it is also expected that this research will lead to a further exchange of approaches in this domain at EU level and to the reinforcing of EU leadership in reactor safety technology and nuclear emergency management.

Type of action: Research and innovation actions.

Additional information: The Commission considers that proposals requesting a contribution from the Euratom of between EUR 2 and 4 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

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

NFRP 3 – 2014: New innovative approaches to reactor safety

Specific challenge: Some very innovative reactor safety concepts are investigated, which could become breakthrough options if their scientific and practical maturity is demonstrated. The Euratom research, with its focus on safety and reliability and optimal waste management, should also consider such possible breakthrough options.

Scope: The aim will be to allow promising designs to move from the Technology Readiness Level (TRL) 1 to TRL 3, or from TRL 2 to TRL 3 as defined in Annex to this work programme. Focus will be on the proof of concept regarding safety (e.g. passive safety systems and new approaches to severe accidents management), reliability and quality assurance (e.g. industrial standards). Advanced experimental and numerical simulation tools to evaluate the viability and performance should support this research. It should be undertaken in close cooperation with industry and regulators whose involvement is indispensable at an early stage of design. International cooperation could be beneficial in this area.

Expected impact: This action will offer top-level scientists a level playing field for highly innovative ideas enabling them to demonstrate the feasibility of advanced safety concepts. It will open-up new avenues towards reactor safety design. In the medium / long term, this action should lead to new orientation and breakthrough in nuclear safety.

Type of action: Research and innovation actions.

Additional information: The Commission considers that proposals requesting a contribution from the Euratom of between EUR 2 and 4 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

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

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

NFRP 4 – 2014: EU concerted development of Member State research on radioactive waste management

Specific Challenge: The Radioactive Waste Management Directive (2011/70/Euratom), which was adopted in 2011, requires each Member State to *inter alia* carry out research activities. Member States' research in this field is aligned with national timeframes to implementing technical solutions for geological disposal facilities. The immediate challenge is to address uncertainties about the safety of such facilities, to build a sound safety case, special attention being paid to stakeholders' concerns regarding all ultimate radioactive waste materials to be disposed of. It is also necessary to maintain scientific competence to demonstrate the safe operation of facilities. Taking into account the scope of IGDTP, this action should exploit synergies between industry, implementers, Technical Safety Organisations (TSO), policy makers and the research community.

Scope: The aim is to develop synergies and increase coordination of national research programmes in the field of management of spent fuel and radioactive waste. This action includes the reviewing of all strategic aspects linked to a stepwise move to joint programming in this field. For this purpose, it should seek to involve as many entities as possible that are active in the management and disposal of radioactive waste, notably most relevant public or industry-funded research programmes, industry, implementers, TSO and policy makers while not confusing their respective roles.

Expected impact: This action will lead to the further integration of the concerned research community and hence help maintaining and developing EU leadership in knowledge and expertise for innovative and publicly acceptable radioactive waste management solutions. Moreover, it will further reinforce and make more effective the interaction at EU level between industry, implementers, TSO, policy makers and the research community, which is of particular importance for the implementing of solutions for the final disposal of radioactive waste.

Type of action: Coordination and Support Actions.

Additional information: The Commission considers that proposals requesting a contribution from the Euratom of between EUR 0,7 and 1.5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

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

NFRP 5 – 2015: Supporting the licensing of geological repositories

Specific challenge: Interaction between regulatory authorities, their TSO and national radioactive waste management organisations is essential in the context of the licensing process of underground repositories. These interactions are aimed at developing a common understanding on reviews of license applications. They also are aimed at identifying and developing the necessary scientific competence for actors in this field to fulfil their respective roles.

Scope: While recognising independence and distinct responsibilities of the various actors above mentioned, their interactions should be further deepened for the identification of research priorities. This action would include exchange on criteria and guidance on the review of licence application and the interpretation of standards. Due account should be taken of existing and planned initiatives at international level. Outreach activities of main findings should also be part of the activity.

Expected impact: This action will lead to exchange of regulatory review methods and competence in regulatory functions, thereby easing and accelerating the licensing process. This work will also help consolidating the knowledge base and stimulate its sharing amongst all stakeholders including the public at large, which is central to the implementing of solutions for the long-term safety of geological repositories.

Type of action: Coordination and Support Actions.

Additional information: The Commission considers that proposals requesting a contribution from the Euratom of between EUR 0,8 and 1,2 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

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

NFRP 6 – 2014: Supporting the implementation of the first-of-the-kind geological repositories

Specific challenge: Substantial progress has been made over the last decades in RD&D for the management and disposal of radioactive waste in Europe. The EU has established a world-wide leading position in the field. By 2015, three Member States (Finland, Sweden, possibly also France) should have submitted an application for authorisation to build and operate an underground repository, in particular for high level and long-lived radioactive waste and spent fuel. In view of the operation of these facilities planned by 2025, it is essential to address the remaining key technical and scientific issues of common interest. In particular, research should improve the knowledge base for the safety case including the development of monitoring strategies, also taking into account stakeholder's concerns.

Scope: Priority topics of IGD-TP¹¹ should be considered as well as those of public waste management oriented research programmes. EU funding will be dedicated to topics where national programme priorities converge and where European added value is obvious and maximised. The joint implementation of this research at pan-European level would help develop and maintain the necessary competences. The involvement of non-technical stakeholders and socio-economic experts is required notably in view of extensive communication with and dissemination towards the public and all stakeholders. Interaction with non-EU organisations active in the field could be beneficial.

Expected impact: This research and development work shall contribute to resolve the key remaining technical issues for the actual implementation of the planned geological disposal projects in the EU. Hence it will demonstrate the EU leadership in this domain. The involvement of countries with programmes in their initial state alongside the three most advanced ones should stimulate and foster the cooperation amongst EU Member States at large and facilitate steps towards decision making and implementation of underground repositories, in particular for high level and long-lived radioactive waste and spent fuel in more Member States.

Type of action: Research and innovation actions.

Additional information: The Commission considers that proposals requesting a contribution from the Euratom of between EUR 3 and 6 million would allow this specific challenge to be

¹¹ Implementing Geological Disposal Technology Platform

addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

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

C - Foster Radiation Protection

NFRP 7 – 2015: Integrating radiation research in the European Union

Specific Challenge: Radiation protection aims at protecting people and the environment from the potentially harmful effects of ionising radiation. It is of particular interest in the context of the rehabilitation of contaminated territories following an accident, as well as the protection of people and the environment during normal operation. The deep understanding of the effects of ionising radiations is also necessary for drawing maximum benefits from the adequate use of these in medical and industrial applications. Contrary to high dose, the risks from low dose of radiation, including its interaction with other risk factors, are poorly understood. A reinforced multidisciplinary approach to research and innovation is considered as essential to further develop the knowledge base in this field. This approach should encompass a number of basic scientific disciplines besides the specific disciplines pertaining to radiation protection so far, such as emergency preparedness, radioecology or the medical use of ionising radiation. It will require cooperation of the entire European research community concerned with a view to exploit to the best extend the synergistic aspects amongst these different disciplines.

Scope: This activity will build on the Strategic Research Agendas of MELODI¹², NERIS¹³ and ALLIANCE¹⁴, while also making use of other existing expertise in Europe, notably regarding dosimetry (EURADOS¹⁵) and the medical use of ionising radiation. EU funding will specifically be devoted to supporting the further integration, at EU level, of radiation protection research, with due attention to the interaction and synergies to be established between the various areas of expertise, in particular biology, biophysics, epidemiology, dosimetry and modelling. These disciplines are pivotal for research on medical exposures and the optimisation of the use of, and protection from ionising radiation in this field. Attention should also be paid to the development of advanced knowledge on the biology and bio-kinetics of medical radioisotopes and to the understanding of the effects of naturally occurring radiation (and the optimisation of the protection thereof), which also contribute to radiation protection basic science. This activity will also address the improvement of knowledge on the effects of ionising radiation on living beings (radioecology) both during the normal operation of nuclear installations and after an accident, which would be needed to further develop mutually compatible European tools and innovative approaches on nuclear emergency management and

¹² Multidisciplinary European Low Dose Initiative

¹³ European Platform on preparedness for nuclear and radiological emergency response and recovery, <http://www.eu-neris.net/>

¹⁴ European Radioecology Alliance <http://www.er-alliance.org/about-us/alliance-activities/>

¹⁵ European Radiation Dosimetry Group, <http://www.eurados.org/>

environmental remediation. Due attention will be paid to research and innovation necessary for supporting the successful transposition and implementation of the revised European Basic Safety Standards¹⁶, which will require changes in national regulations and practices that should be done in a co-ordinated manner in order to optimise protection and avoid duplication. Euratom funding should benefit all European institutes involved in the research on radiation protection related issues. Finally, this activity will also aim at accelerating and improving the developing of competences in radiation protection with a special focus on radiation protection culture and at addressing the challenge of communicating results in radiation protection to non-specialist audiences such as policy decision makers and the public at large. Considerations such as gender and age are of relevance in this field of activity and will have to be addressed, notably as part of research on individual sensitivity to radiation. Moreover, gender and age balance in the composition of project teams should be sought. International cooperation could be beneficial in this area.

Expected Impact: This action will lead to the better integrating of the radiation protection scientific community at EU level, leading to a better coordination of research efforts and the provision of more consolidated and robust science-based policy recommendations to decision makers in this area. In the long term, these efforts will translate into additional or improved practical measures in view of the effective protection of people and the environment.

Type of action: Programme Co-fund Action (European Joint Programme).. Financial support to third parties may be one of the main objectives of the action. General details on the form of funding are provided in Annex 1.D.

Evaluation Criteria: The standard evaluation criteria for a European Joint Programme (Programme co-fund action) apply. For the details see Annex 1.D and 1.G

Additional information: In line with the nature of the action as a proposed European Joint Programme, the Commission considers that proposals requesting a contribution from the Euratom of between EUR 18,5 and 19,5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

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

D – Cross-cutting aspects for Nuclear Fission and Radiation Protection

NFRP 8 – 2015: High density uranium fuel and targets for the production of medical radioisotopes

Specific Challenge: A shortage of Molybdenum-99 has occurred mainly as a result of the low availability of research reactor facility and of the extensive replacement of highly enriched

¹⁶ Commission proposal for a Council directive laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation, COM (2012)242 final

uranium fuel by low enriched one to address nuclear proliferation concerns. This has been at the origin of the European Observatory on the Supply of Medical Radioisotopes¹⁷, created in order to organise the availability of this essential radiopharmaceutical product.

Research and innovation should be undertaken to support the replacement of highly enriched uranium fuel and targets by low enriched and high density ones. The issue for the fuel is the sufficient performance and safe operation of the reactor, notably for preserving the fuel elements from meltdown, e.g. in using an appropriate conditioning. The issue for the targets is to achieve a sufficient number of fission reactions that produce Molybdenum-99 and to get a high quality pharmaceutical product.

Scope: This research and innovation will focus on developing new kinds of high density uranium fuel and targets bearing in mind their thermal, mechanical and chemical behaviour and their suitability for use in different research reactors. This will involve *inter alia* the investigation of heat resistance, preserved microstructure, reduced oxidation and thermal fatigue of high density fuel and targets by appropriate coating. Fuel and target fabrication will be studied in view of testing their properties under thermal stress before and after irradiation. International cooperation could be beneficial in this area.

Impact: The cost effective supply of high density and low enriched uranium fuel and targets will allow the more efficient use of research reactors in Europe for the purpose of energy research 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.

Type of action: Research and innovation actions.

Additional information: The Commission considers that proposals requesting a contribution from the 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.

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

NFRP 9 – 2015: Transmutation of minor actinides (Towards industrial application)

Specific Challenge: The elimination or transmutation of minor actinides is a key to the sustainability of the back-end of the fuel cycle. Further research is needed in order to demonstrate the feasibility of transmutation of high-level waste at industrial scale. Advanced experimental tests as well as numerical simulation tools will be required to conduct this interdisciplinary research encompassing basic as well as applied sciences. The technological and economic performance of transmutation in a fast neutron facility should also take into

¹⁷ http://ec.europa.eu/energy/nuclear/radiation_protection/medical/doc/observatory_mission.pdf

account the other possible uses of the equipment, e.g. for the production of radioisotopes or material testing for nuclear fission and fusion applications.

Scope: This research should contribute to the further development of state-of-the-art critical or sub-critical fast neutron installations for transmutation. Due consideration should be given to the actual effectiveness of the transmutation process, as for example by using accelerator driven systems, as well as the safety and reliability of the facility and the demonstration of the industrial feasibility of the process. The development of innovative fuel and targets for the transmutation of minor actinides should also be considered in this proposal, as well as the development of advanced experiments and numerical simulation tools. Full advantage should be taken of existing knowledge and competence. International cooperation could be beneficial in this area.

Expected impact: Even if a final repository would still be needed, the partitioning and transmutation would drastically reduce the radiotoxicity, the heat production and package volume of high-level radioactive wastes, thereby easing the long-term safety of a final repository. This research will allow pursuing this objective by using state-of-the-art technology, notably in terms of efficiency and safety of the process.

Type of action: Research and innovation actions.

Additional information: The Commission considers that proposals requesting a contribution from the Euratom of between EUR 7 and 9 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

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

E - Support the development of nuclear competences at Union level and socio-economic aspects

NFRP 10 – 2014: Education and training (Bologna and Copenhagen processes)

Specific challenge: One of the main goals of Euratom from its inception in developing research and training programmes is to maintain nuclear expertise by generating knowledge (research) and developing competences (training). A key concern of industry and policy makers (in particular, regulators) world-wide is that human resources could be at risk, especially because of high retirement expectations and low renewal rates in countries with a tradition of nuclear installations and a strong need for further specialised training in emerging nuclear energy countries. More specifically, within the EU, the nuclear education and training community is faced with the challenges of lifelong learning and cross border mobility. This action should be undertaken under the umbrella of the Technology Platforms and other authoritative expert bodies concerned.

Scope: Special attention is to be devoted to the further implementation, in the nuclear and relevant medical and industrial sectors, of the EU policies stemming from the Bologna and

Copenhagen processes¹⁸. Education and training organisations (notably at university or equivalent level) are invited to submit proposals in close collaboration with the “end-users”, i.e. industry, research and regulatory organisations. A special effort should be devoted to the development of European Masters and summer schools for the continuous professional development of researchers and other private/public actors. The implementation of the action will need coordination involving research and educational institutions, practitioners in the respective area, regulators, equipment manufacturers and stakeholders from different Member States. Particular attention shall be paid to gender balance in the composition of project teams.

Expected impact: This activity will accelerate and optimise the development of competences in the nuclear area with a special focus on nuclear safety culture and radioactive waste management. It will contribute to the creation and transfer not only of knowledge but also of skills and competences in a well-focused and practical manner. In the long term, it will contribute to improving the safety and radiation protection culture and hence, the safety of nuclear installations in the EU.

Type of action: Coordination and Support Actions.

Additional information: The Commission considers that proposals requesting a contribution from the Euratom of between EUR 1 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.

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

NFRP 11 – 2015: Modelling and analysing the energy system, its transformation and impacts.

This action is addressed under the item LCE 21 - 2015 of the Horizon 2020 – Energy Challenge Work Programme 2014-2015 'Social, environmental and economic aspects of the energy system'. Applications should be submitted to that programme. The deadline for submitting project proposals under this topic may differ from the deadline for the Euratom Work Programme 2014-2015, and is indicated in the Energy Challenge Work Programme 2014-2015.

NFRP 12 – 2014: Nuclear developments and interaction with society

Specific Challenge:

Perception by and engagement with civil society regarding nuclear applications is a challenging issue. This has been highlighted particularly in the interdisciplinary study and the

¹⁸ Bologna process (1999) for academic education (European Credit Transfer and accumulation System/ ECTS), providing a robust basis for Euromaster programmes and doctoral schools, the Copenhagen process (2002) for Vocational Education and Training (European Credit System for VET/ECVET), fostering the synergy between the worlds of education / training and of work / industry

symposium on "Benefits and Limitations of Nuclear Fission for a Low Carbon Economy". A large body of knowledge of past successes and failures in interacting with civil society in the implementing of nuclear projects exist in the form of books and studies, press articles, government reports, radio and TV broadcasts, the memory of projects stakeholders, etc. The aim of this activity is to exploit to the best extent this information in view of shedding light on the last sixty years of developments of nuclear in Europe and a number of other major nuclear stakeholder countries, clarifying the context within which certain decisions were made, identifying the factors which influenced projects' success or failure in gaining engagement of the civil society and ultimately, help improving communication and interaction with civil society for the benefit of all public and private stakeholders concerned.

Scope:

This research shall be composed of a coherent and representative set of “case studies” regarding nuclear developments and projects, over the last sixty years, in the EU and abroad (USA, Russia, Ukraine, Japan) and related international cooperation where appropriate. These cases shall be examined also taking account of the broader context (economic, political, institutional...) within which decisions were taken regarding the main energy sources for electricity production. The focus shall be on nuclear energy applications but a number of case studies shall also be selected outside the power sector, i.e. in relation to medical and industrial (e.g. agri-business) applications.

In a first phase, historians shall provide the core facts and figures, based on available documents and other sources of information, complemented as appropriate by field investigations, notably interviews of major players with regard to the selected developments and projects. This should result in a well-organised and documented database and historical record.

The second phase shall bring-in additional experts, i.e. communication specialists, sociologists or psychologists of organisations, philosophers and other such specialists in order to analyse and interpret this information from the perspective of furthering the understanding of the mechanisms for effective interaction with civil society regarding nuclear applications and projects, including the factors underlying perception, participation and engagement.

In the third and last phase, the results shall be presented and discussed with industry, associations, policy makers and representatives of the civil society.

The research team will need to demonstrate the absence of conflict of interest and its ability to conduct this study in complete independence from developments in the nuclear domain. The team will however need to demonstrate the appropriate breadth of expertise and experience needed in view of conducting such type of investigation. A fully detailed work plan of the desk and fieldwork, established and agreed with all main performers involved in the project, will have to be presented to the EC for approval within the first eight months of the project.

Expected impact: This research should contribute to the understanding of factors triggering the societal engagement with nuclear energy and other nuclear applications and provide insights to decision makers and other stakeholders regarding interaction with civil society. This should

help the implementing of future nuclear projects, primarily in energy production, but similarly in areas such as food processing, nuclear medicine, emergency management or radioactive waste management. It should also reinforce the links between the nuclear research community and the social sciences and humanities, and help with the disseminating and understanding of nuclear research and knowledge.

Type of action: Research and innovation actions.

Additional information: The Commission considers that proposals requesting a contribution from the 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.

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

NFRP 13 – 2015: Fostering the network of National Contact Points

Specific challenge: Facilitate trans-national co-operation between National Contact Points (NCPs) on Nuclear Fission and Radiation Protection with a view to identifying and sharing good practices and raising the general standard of support to programme applicants, taking into account the diversity of actors that make up the constituency of this Programme.

Scope: Support will be given to a consortium of formally nominated NCPs in the area of Nuclear Fission Safety and Radiation Protection (Euratom). The activities will be tailored according to the nature of the area, and the priorities of the NCPs concerned. Various mechanisms may be included, such as benchmarking, joint workshops, enhanced cross-border brokerage events, specific training linked to this field as well as to gender dimension of Research and Innovation, and twinning schemes. Special attention will be given to enhance the competence of NCPs, including helping less experienced NCPs rapidly acquire the know-how accumulated in other countries.

The focus throughout should be on issues specific to Nuclear fission and radiation protection, and should not duplicate actions foreseen in the NCP network for quality standards and horizontal issues under ‘Science with and for Society’.

Only NCPs from EU Member States, Associated Countries which have been officially appointed by the relevant national authorities are eligible to participate in and receive funding for this action.

The consortium should have a good representation of experienced and less experienced NCPs.

Submission of a single proposal is encouraged. NCPs from EU Member States or Associated Countries choosing not to participate as a member of the consortium should be identified and the reason explained in the proposal. These NCPs are nevertheless invited and encouraged to participate in the project activities (e.g. workshops), and the costs incurred by the consortium for such participation (e.g. travel costs paid by the consortium) may be included in the estimated budget and be eligible for funding by the Commission.

The Commission will only fund one proposal under this topic.

Expected impact:

- An improved and professionalised NCP service across Europe, thereby helping simplify access to Euratom fission 2014-2018 calls, lowering the entry barriers for newcomers, and raising the average quality of proposals submitted.
- A more consistent level of NCP support services across Europe.

Type of action: Coordination and support action

Additional information: The Commission considers that proposals requesting a contribution from the Euratom of between EUR 0,3 and 0,5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

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

NFRP 14 – 2014: Regional initiative aiming at nuclear research and training capacity building

Specific challenge: Maintaining competence in fission safety remains of interest for a number of Member States especially in the Baltic and Eastern European region. Discussions have started at these various regional levels with the aim to develop jointly sustainable applications of fission for e.g. new and safer research reactor technology, radioactive waste management and training and education in these fields.

Scope: The aim is to support the exchange of scientific staff and the sharing of equipment, knowledge and competences between private and/or public research laboratories within the region and with similar organisations in other EU Member States. This action should take advantage of and develop synergies with on-going and future Euratom projects in particular those offering access to research infrastructures in conjunction with education and training. A strong involvement of appropriate public bodies from the Member States concerned is essential, as well as links with relevant platforms such as SNETP and IGD-TP. This action should also aim at examining how Structural Funds could possibly be mobilised to further develop regional cooperation in the area.

Expected impact: The capacity building at regional level for nuclear research and training through cooperation and networking will reduce regional disparity in the European Union. Such effort will reinforce the EU excellence in fission relevant applications and in particular in nuclear safety and radioactive waste management.

Type of action: Coordination and Support Actions.

Additional information: In line with the nature of the action, the Commission considers that proposals requesting a contribution from the Euratom of between EUR 1 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.

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

NFRP 15 – 2015: Specific support to the work of the Sustainable Nuclear Energy Technology Platform

Specific challenge: The Sustainable Nuclear Energy Technology Platform (SNETP) has been recognised as a European Technology Platform (ETP) by the European Commission in the context of the upcoming "Strategy for European Technology Platforms: ETP 2020". SNETP rests on three main pillars: (i) the NUGENIA association addressing the safety of existing light-water reactors; (ii) ESNII (European Sustainable Nuclear Industrial Initiative) dealing with the safety of fast reactors with associated strategies of spent nuclear fuel management and waste minimization, and (iii) nuclear safety of plants not restricted to electricity production. The major challenge of SNETP is to continue to integrate the R&I in nuclear safety at European Level in the global context taking due account of the various stakeholders' concerns

Scope: The Euratom funding will be devoted to specific studies, data collection and analysis activities and workshops for the further development of technology roadmaps, implementation plans and deployment strategies as well as to the dissemination of the platform activities to the various stakeholders. Due attention is to be paid in this regard to the recent SET Plan initiatives for integrating the different energy roadmaps (nuclear and non-nuclear). Activities should aim at fostering collaboration between ETPs to address cross-sectorial challenges between fission, fusion and non-nuclear energy sources as put forward at SET Plan level, notably on materials and education and training. Euratom will not cover secretariat and other running costs of the platform as it should be self-financed for these needs.

Expected impact: This action will help SNETP to further structure – content-wise - its activities. It will also help better situating the development of nuclear energy in the broader context of the relevant Horizon 2020 societal challenges, and hence help disseminating the platform's activities to the policy-makers and stakeholders.

Type of action: Coordination and Support Actions.

Additional information: In line with the nature of the action, the Commission considers that proposals requesting a contribution from the Euratom of between EUR 0,4 and 0,6 million would allow this specific support action to be undertaken appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

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

NFRP 16 – 2015: Supporting the licensing of Western nuclear fuel for reactors of VVER design operating in the EU.

SPECIFIC CHALLENGE: Attempts were made to diversify the nuclear fuel supply for Russian pressurized water reactors (VVER). Although successful at some nuclear power plants

operated in the EU it was abandoned for different reasons. As many as 16 VVERs are operating in the EU (essentially in the new Member States) and another 15 in Ukraine where feedback is also available on the potential safety issues. The diversification of fuel supply in EU VVER plants would be relevant for greater security of energy supply. However, the licensing in the EU of VVER reactor fuel assemblies manufactured by a new supplier requires a full range of safety evaluations for which R&D is to be carried out at EU level, involving industrial and regulatory (or TSO) experts.

SCOPE: This activity will build on the experience gained in different VVER plants in the EU and on well-documented irradiation campaign results (either past or on-going). It should aim at establishing all necessary safety analyses, tests and procedures in view of the further licensing of VVER fuel manufactured by Western suppliers, with due consideration to international safety standards. This would involve the assessment of accident safety cases produced by operators and their evaluation by regulatory authorities with the help of their TSOs. A strong cooperation between countries with experience in such adaptation of fuel type and other countries concerned shall be established. This cooperation initiative should allow reinforcing as quickly as possible the European capabilities in this domain. This activity to be fully relevant should consider different Western fuel sources.

EXPECTED IMPACT: This action contributes to the security of supply of nuclear fuel for VVER reactors operating in the EU by supporting the diversification of fuel sources in the short / medium term in full compliance with nuclear safety standards.

TYPE OF ACTION: Research and Innovation action

ADDITIONAL INFORMATION: In line with the nature of the action, the Commission considers that proposals requesting a contribution of between EUR 1 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.

Conditions for the call

Opening date(s)¹⁹: 11/12/2013 for topics NFRP 1-15,
25/07/2014 for topic NFRP 16

Deadline(s)²⁰:

Topics NFRP 1-15	17/09/2014 at 17.00.00 Brussels time
Topic NFRP 16	20/11/2014 at 17.00.00 Brussels time

Indicative budget:

EUR 48.46 million from the 2014 budget
EUR 39.41 million from the 2015 budget²¹

Topics	2014 EUR million	2015 EUR million
NFRP 1	18.80	
NFRP 2	3.00	
NFRP 3	6.00	
NFRP 4	1.10	
NFRP 5		1.00
NFRP 6	14.60	
NFRP 7		19.00
NFRP 8		5.00
NFRP 9		8.00
NFRP 10		4.00
NFRP 12	2.50	
NFRP 13		0,37
NFRP 14	2.00	
NFRP 15		0.50
NFRP 16	0.46	1.54

All topics - single stage procedure

Eligibility and admissibility conditions: The conditions are described in parts B and C of the Annex 1 to the work programme, with the following exceptions:

NFRP 7	Please read carefully the provisions under Annex 1.D (European Joint Programme (EJP) Co-fund Action).
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¹⁹ The Director-General responsible may decide to open the call up to one month prior to or after the envisaged date of opening

²⁰ The Director-General responsible may delay this deadline by up to two months.

²¹ The budget amounts for 2015 are subject to the availability of the appropriations provided for in the draft budget for 2015 after the adoption of the budget for 2015 by the budgetary authority or if the budget is not adopted as provided for in the system of provisional twelfths.

Evaluation criteria, scoring and threshold: The criteria, scoring and threshold are described in part G of the Annex 1 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 Annexes.

The full evaluation procedure is described in the relevant guide²² published on the Participant Portal.

Indicative timetable for evaluation and grant agreement:

	Information on the outcome of the evaluation (<i>single stage</i>)	Indicative date for the signing of grant agreements
All topics	Maximum 5 months from the final date for submission	Maximum 3 months from the date of informing applicants

Consortia agreements: In line with the Rules for Participation and the Model Grant Agreement, participants in Research and Innovation Actions or in Innovation Actions are required to conclude a consortium agreement prior to grant agreement.

²² See: http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/pse/h2020-guide-pse_en.pdf

SECTION B: OTHER ACTIONS^{23, 24}**B.1: Fusion Joint Programme**

Specific challenge: The ultimate challenge of fusion research is the realisation of electricity generation from magnetic confinement fusion within a reasonable time horizon. Though the challenge of fusion electricity is considerable, the present consensus in Europe is that a DEMO device could be generating electricity for the grid around the middle of this Century. On the critical path towards this achievement is the successful demonstration in ITER of ‘burning fusion plasmas’ at reactor scale, which is expected towards the end of the 2020s. The fusion research effort must therefore be focused on the success of ITER and enabling Europe to be in a position to exploit the results of ITER in order to progress to the next stage of actual electricity production in a DEMO facility. The various activities and missions that are needed in this effort are presented in the EFDA roadmap. The EFDA members (national fusion laboratories) have defined a joint programme of activities to fulfil the missions in the roadmap. The research builds on the efforts supported under previous Euratom Framework Programmes, including the related cooperation with international organisations and third countries. In this regard, all opportunities offered by international cooperation, such as the pooling of resources and sharing of risks, should continue to be pursued. In the spirit of joint programming, increased cooperation and exchange of information between EU Member States regarding their international activities would enable the establishing of a fully coherent European strategy on international cooperation founded on the main European assets and aligned to the objectives and missions of the EFDA roadmap.

Scope: The Commission invites the consortium of national labs to submit a proposal for a joint programme implementing the EFDA roadmap over the years 2014-18. The proposal for the joint programme should include details as described in Annex 1.D (European Joint Programme). All current EFDA members (plus prospective member from Croatia, as a new Member State) should have the opportunity to be partners in the consortium. Special attention should be paid to ensuring the broadest possible participation of labs, in particular smaller ones, commensurate with their available competencies and the requirements of the roadmap. An appropriate governance structure should be established to ensure effective implementation of the joint programme in line with the roadmap. This should involve centralised management and coordination functions, and similar arrangements to those in place under EFDA may be considered, in particular a Programme Manager and supporting unit (separate from the administrative effort required by the consortium coordinator). The supporting unit may be constituted at one or more locations, though an appropriate secondment scheme should be established that can attract suitably qualified staff from the consortium partners. The issue of education and training is crucial for the further development of fusion, and the proposal should

²³ The budget amounts for 2014 are subject to the availability of the appropriations provided for in the draft budget for 2014 after the adoption of the budget for 2014 by the budgetary authority or if the budget is not adopted as provided for in the system of provisional twelfths.

²⁴ The budget amounts for 2015 are indicative and will be subject to a separate financing decision to cover the amounts to be allocated for 2015.

clearly lay out the vision for these activities and allocate appropriate resources. The FuseNet Association, which has emerged from an action supported under Euratom Seventh Framework Programme, brings together a range of stakeholders, not only national labs and universities but also industry, and could play an important part in shaping the future education & training landscape in fusion. Under the Euratom 2013 fusion research programme, the Commission launched FUTTA, a pilot project to investigate the requirements for the establishment of a fusion technology transfer office. Recommendations from this project should be addressed under the new joint programme as part of the innovation aspects of the consortium's activities and mentioned in the plan for the exploitation and dissemination of results. In the past, public information and awareness-raising activities in the field of fusion energy and related research was an important part of the European effort, and this should be maintained in the new joint programme. In view of the recognised importance of the mobility of researchers in the fusion programme, the proposal should foresee support to mobility to cover the cost of travel and subsistence under the new programme. Rules similar to those in force under the current Mobility Agreement between EFDA Members may be adopted by the consortium. The scientific exploitation of JET should be fully included in the work programme/plan presented in the proposal, though the operation of JET will be funded via a separate bilateral operation contract between the Commission and CCFE. As part of the joint programme, support for other facilities can be included if the activities are necessary for the implementation of the roadmap. The full cost of purchasing equipment (the "durable equipment") to be specifically used as additions to JET and not in the control of the purchasing or contributing beneficiary, may be eligible under the conditions set out in the grant agreement. In particular, the durable equipment to be purchased under these conditions shall be included in Annex 1 and in the Annual Work Plan of the action and shall be purchased in accordance with Article 10 of the Model Grant Agreement.

Early involvement of industry in the implementation of the roadmap is considered essential and the appropriate interaction with industry and integration of industrial activities should be part of the proposal. For this, appropriate contacts with the Fusion Industry Innovation Forum (FIIF) should be ensured. In view of the expiry of EFDA at the end of 2013, the proposal should indicate how the previous records, reports and IT servers/systems will be maintained and kept accessible by the consortium partners and the Commission for a period of at least 5 years (related costs can be eligible costs under the Grant Agreement for the co-fund action). In this regard, and during the transition phase, the new supporting unit would be expected also to deal with legacy EFDA tasks that are currently managed by the EFDA Close Support Unit (CSU). The proposal should describe how the crucial issue of international cooperation, where relevant to the objectives of the roadmap, will be addressed in the joint programme. Efficient and effective cooperation between all European actors in the fusion area, including F4E, must be clearly addressed by the consortium. Support to third parties will be an important part of the action and will be necessary to achieve the objectives of the action. The proposal should also address the other issues mentioned in the general guidance for proposal submission.

Expected impact: The joint programme will be an unprecedented research effort focused on the key challenges towards exploitation of fusion as an energy source. It dispels the myth that

fusion energy is always ‘50 years away’ and represents a concerted and effective cooperative initiative between national fusion laboratories at the cutting edge of science and technology. The co-fund action will enable significant Euratom funding to be contributed to this effort, and in doing so continue to leverage the national support for fusion that has been the hallmark of the Euratom fusion programme to date. This effort is long term, building on many years of successful European research in this field and will be typified by incremental but significant progress in a wide range of specific research activities over the period of Horizon 2020 and beyond. The fundamental guiding document is the roadmap to fusion electricity, which will also need updating and revising at regular intervals, at the same time reinforcing the integrated nature of this joint effort, both at the level of fusion labs and Member States. The most important impact over the next five years will be the contribution to the success of ITER, which is the single critical path in the roadmap and the focus of the majority of the resources in the joint programme. In the longer term, progress towards DEMO and eventual power plants will represent important opportunities for European industry in general, and current activities under the roadmap will also have clear impacts in these areas, with the new structure of the fusion programme enabling all relevant actors to position themselves accordingly. Impacts must be tangible, and maintaining the goal-oriented philosophy of the roadmap, with clear milestones, is crucial in this respect. Furthermore, as the fusion effort moves from one of fundamental science to more applied and engineering sciences, the possibilities for spin-off applications and technologies is increasing and will also represent a significant additional impact by the end of Horizon 2020 – there are already concrete examples of such spin-offs, and the FUTTA project mentioned above could be an important precursor needed to support and promote the expected future growth.

Type of action: Grant to identified beneficiaries - Programme co-fund action (European Joint Programme).

Activities to be funded: see Annex 1.D

Beneficiary: The beneficiaries for this grant are: see Annex 2.

Rate of co-financing: The Euratom contribution will be limited to a maximum of 55%²⁵ of the total eligible costs of the action. Reimbursement of the eligible costs related to the action, in accordance with the conditions set out in the grant agreement, including reimbursement of actually incurred costs, lump sums, unit costs or flat rates, as the case may be, in accordance with the relevant Commission decisions²⁶.

Indicative budget: EUR 457.77 million committed in annual instalments over the 5 years, 2014-18 (EUR 77.36 million from the 2014 budget).

Eligibility conditions: The standard eligibility conditions for a European Joint Programme (Programme co-fund action) apply. For the details see Annex 1.C and 1.D.

²⁵ The precise co-fund rate will be mentioned in the Grant Agreement

²⁶ Commission Decision (C(2013)8201) for authorising the reimbursement of unit costs for the Fusion Programme Co-Fund Action under the Research and Training Programme of Euratom (2014-2018) complementing Horizon 2020.

Evaluation criteria: The standard evaluation criteria for a European Joint Programme (Programme co-fund action) apply. For the details see Annex 1.G.

Submission and evaluation procedure: The proposal can be submitted between 1 January 2014 (10:00 Brussels local time) and 31 March 2014 (17:00 Brussels local time). No proposal page limits are imposed. The evaluation will be performed within 3 months of the submission of the proposal. A panel of independent experts will be used, including from outside Europe. In view of the unique nature of this evaluation, and in line with the provisions of Rules for Participation, individuals with the appropriate expertise may be selected from outside the database.

Indicative time to inform: Maximum 5 months from the final date for submission

Indicative time to grant: Maximum 3 months from the date of informing applicants

Start date of the action and eligibility of costs: In view of the necessity to maintain continuity following the activities programmed under the Euratom Framework Programme 2012-2013, the action is expected to start on 1 January 2014. In accordance with Council Regulation on the Research and Training Programme of the European Atomic Energy Community (2014-2018) costs incurred in implementation of the action will be eligible as from 1 January 2014 even if the relevant proposal is submitted after that date.

Consortium agreement: All partners must sign a Consortium Agreement establishing the roles and responsibilities of the partners and the governance structure for the joint programme.

B.2: External expertise

B.2.1: 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, and for the ex-post evaluation of the Euratom Seventh Framework Programme (2007-2011) and the Euratom Framework Programme (2012-2013), in accordance with Article 6(2) of the Council decision (2012/93/Euratom) of 19 December 2011 concerning the Framework Programme of the European Atomic Energy Community for nuclear and training activities (2012-13).

Type of action: Expert contracts

Indicative timetable: First Quarter of 2014 – fourth Quarter of 2015

Indicative budget: EUR 0.43 million from the 2014 budget (2/3 for fission, 1/3 for fusion).

B.2.2: This action will support the use of appointed experts for assisting the Commission with the design of the Euratom fission research programme with respect to issues such as the safety aspects of nuclear fuel supply, equipment and related know-how, energy interdependencies and the management of spent nuclear fuel.

Type of action: Expert contracts

Indicative timetable: Third Quarter of 2014 – fourth Quarter of 2015

Indicative budget: EUR 0.15 million from the 2014 budget for fission and EUR 0.15 million from the 2015 budget for fission.

B.3: Supporting access to Jules Horowitz reactor

Specific Challenge: One of the roles of the Euratom Framework Programme is to facilitate access to the key research infrastructures for Euratom researchers. One of the key types of infrastructures in the area of nuclear science and technology is the Materials Testing Reactor (MTR), such as the Jules Horowitz Reactor (JHR). The JHR is expected to start operating in 2017 and has advanced material testing capabilities (high neutron flux irradiation, on-line instrumentation, flexibility of operation conditions) that are consistent with the current state-of-the-art experimental and numerical simulation techniques, including in relation to fusion. It also has the high level of safety that is mandatory for state of the art research reactors.

Scope: The objective is to acquire additional reserved and secure access rights to JHR in order to ensure future Euratom projects have ready access to this unique irradiation facility when in operation and for a period of 30 years. These access rights are intended to be used in particular by any European laboratory/organisation located in a Member State and/or in Associated Countries. The distribution of these rights to deserving projects or laboratories will be the responsibility of Euratom through its participation in the JHR Consortium Governing Board.

Expected impact: This effort will first of all secure access to Euratom researchers to the most up-to-date MTR in the EU. More generally speaking, it will enable Euratom to fulfil several of its key objectives in nuclear safety and nuclear systems, notably material testing, research and education and training in this area.

Type of action: Public procurement - service contract.

Indicative timetable: Third quarter of 2015

Indicative budget: EUR 15 million from the 2015 budget

B.4: Prize - Innovation SOFT

Specific challenge: Within energy research, fusion encompasses innovation in the domains of physics and technology in a wide variety of specialisations. The researchers in Europe are constantly challenging the science 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 European society. A fundamental basis of the Euratom Programme complementing Horizon 2020 is to support innovation. In this context the researcher plays a critical role. This prize is being offered to highlight and reward the excellence in innovation that can be found in the fusion research programme as well as the quality of the researchers and industries involved.

Scope: There are no specific categories for this prize. The participant(s) is free to submit an application concerning any physics or technology innovation that has been or is being developed in the European fusion research programme and that has a market potential or has been taken up (or recognised) by industry to be further developed for the market. The Jury evaluating submissions will consist of a group of independent experts appointed by the Commission knowledgeable in innovative processes and technology transfer from business and academia. The Jury will submit to the Commission the selected 1st, 2nd and 3rd placed

winners who will receive 15,000, 10,000 and 5,000 Euros respectively. The winners will be announced at the SOFT conference in September 2014.

Expected impact: By awarding the 'European Prize for Innovation in fusion research' the Commission will showcase innovations in this research sector and give visibility to the most dynamic, forward-looking and innovative researchers, research teams or industrial participants. This visibility will provide the greater potential for valorisation with the subsequent rewards that this brings to the EU both economically and socially. Furthermore, presenting these awards will stimulate the research community to develop a stronger innovation and entrepreneur culture in the European fusion programme.

Type of action: The form of funding will be through prizes to a total value of EUR 0.030 million.

Eligibility criteria:

- The contestant must be a researcher, research team or industrial participant benefitting from Euratom financial support, and be resident in an EU Member State or a Euratom Associated Country. Example of proof: details of a specific contract associated to the Euratom fusion research programme; copy of any official document of identification (passport, driving licence etc.). If you are not an EU citizen, you must present a document proving your residency in the EU or an Associated Country (e.g. a copy of your visa or work permit).
- The researcher, research team or industrial participant has acquired permission from the owner of the intellectual property rights to submit an application. The owner of the IPR should comment on the state of the IPR: free or contractually embedded, and name of eventual contractor/s.
- The contestant's submission will consist of a complete application for the 'European Prize for Innovation in fusion research' including:
 - a technical description of the innovation;
 - a state of the art assessment of the innovation (using publically available patent data base such as the EPO Espacenet);
 - an account, in general terms, of the market potential for the exploitation of the innovation;
 - the contribution that the prize could provide for the exploitation of the innovation.

For the detailed information on the general conditions, applicable law, exclusion criteria, please refer to the Rules of Contest for prizes in Annex 1.

Contestants can at any time be required to submit official proof to support claims made under any of the above eligibility criteria.

Award criteria:

- The originality and replicability: the idea is innovative and the result of lateral thinking and proves to be original and first-of-a-kind used in the industry or in the domain of application.

- Technical analysis applied: the application will need to include patent information on the state of the art in the associated technology field (using publically available patent data base such as the EPO Espacenet).
- Clarity: the concept must be clear, logical and well-illustrated.
- The planned use of the prize money: the application should present an awareness of all relevant innovation aspects and include identification of the market needs and business opportunities and where this prize could contribute to the successful exploitation and further development of the innovation.

Funding scheme: Prize - 1st prize: EUR 0.015 million, 2nd prize: EUR 0.010 million and 3rd prize: EUR 0.005 million from the 2014 budget.

Date of publication of the contest: 1 January 2014, 12:00:00 Brussels local time

Date of opening of the contest: 1 January 2014, 12:00:00 Brussels local time

Deadline to submit applications: 16 April 2014, 17:00:00 Brussels local time

Announcement of winners: September 2014

Evaluation procedure: The evaluation of the application is carried out by the Commission with the assistance of up to 4 independent experts.

In a first step a committee of Commission staff will carry out a pre-screening of all received applications. Each application will be evaluated against the eligibility and award criteria outlined in the Euratom 2014/2015 Work Programme.

In a second step, independent experts perform the evaluation on a personal basis, not as representatives of their employer, their country or any other entity. They sign an expert contract, including a declaration of confidentiality and absence of conflict of interest before starting their work. Confidentiality rules must be adhered to at all times, before, during and after the evaluation.

The Commission reserves the right not to select a winner if no suitable entries are received or proposed by the jury.

The Commission allocates the applications to individual experts, taking account of the fields of expertise of the experts, and the absence of conflicts of interest.

At the beginning of the evaluation, the experts will be briefed by the Commission on the evaluation procedure, the experts' responsibilities, the issues involved in the particular area/objective, and other relevant matters.

B.5: Contract for the operation of JET

Specific challenge: After a comprehensive assessment of the JET programme and future contribution by an independent committee of experts, it was recommended that a full characterisation of the 'ITER-like wall' should be undertaken, including final tritium experiments, in order to support the operation and licensing activities in ITER. To this end, the reference scenario for the operation of JET is exploitation until 2017, with closure during 2018.

The main role of JET will be to mitigate the risk of delays in ITER by providing comprehensive knowledge about the start-up plasma regimes and the necessary operating techniques and diagnostics that will ensure safe operation and high performance.

Scope: JET will be operated through a bilateral contract between the Commission and the Culham Centre for Fusion Energy (CCFE). CCFE will be responsible for the operation and maintenance of the JET facilities on behalf of the Commission. The Commission will then provide the JET facilities as an in-kind contribution to the consortium of EFDA members who will in turn manage and implement the experimental programme that will be defined in the annual work programme of the consortium in line with the European fusion roadmap. In this respect, it is the responsibility of the consortium to decide which experiments should be carried out, and the related costs eligible for reimbursement under the co-fund action.

Expected impact: The JET programme is dedicated to the support of ITER physics, technology and licensing activities. Its current programme of characterisation and validation of the ITER-like wall and the future tritium experiments are expected to ensure a smooth start-up to ITER operation as well as facilitating the ITER licensing process thereby minimising risks of costly delays in reaching ultimate objectives.

Type of action: This action requires the continued operation of the JET facilities and depends on the technical and administrative competence of CCFE. A bilateral contract between the Commission and CCFE under Article 10 of the Euratom Treaty will be concluded to provide the Commission support. In accordance with the provisions of the Euratom Research and Training Programme 2014-18 (refer to footnote 1) this may include the secondment of Commission staff.

Indicative date of signature: 1st quarter 2014

Indicative budget: EUR 250 million committed in annual instalments over the 5 years, 2014-18 (EUR 63.00 million from the 2014 budget).

B.6: Contribution to the Organisation for Economic Co-operation and Development (Nuclear Energy Agency) / Secretariat for the GIF

USA, UK, France, Brazil, Japan, Korea, South Africa, Argentina and Canada signed the Charter of the Generation-IV International Forum (GIF) in July 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. Switzerland, the Russian Federation and the People's Republic of China signed later on. A Framework Agreement (FA) for collaboration on R&D, setting the framework conditions for subsequent system and project arrangements, has been concluded subsequently. The Charter was originally for duration of 10 years, and in 2011 the signatories unanimously prolonged this duration indefinitely. 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 NEA. The level of this funding from each

signatory was established by the GIF Policy Group (PG) at its meeting in Beijing, China, 23-24 October 2008, and revised recently at the GIF PG meeting in Beijing, 16-17 May 2013.

Type of action: Subscription for operation of the GIF Secretariat for the years 2014- 2015, 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 timetable: First half of 2014

Indicative budget: EUR 0.3 million from the 2014 budget.

SECTION C: BUDGET OVERVIEW

Item	2014 Budget EUR million	2015 Budget ²⁷ EUR million
Calls		
Call H2020-NFRP-2014/2015 Nuclear Fission and Radiation Protection	48.46 <i>from 08.030102</i>	39.41 <i>From 08.030102</i>
Other Actions		
B.1 Fusion Joint Programme	77.36 <i>of which 65.94 from 08.030101 and 11.42 from 08.035001</i>	72.15 <i>from 08.030101</i>
B.2 External expertise	0.58 <i>of which 0.10 from 08.030102, 0.05 from 08.030101 and 0.43 from 08.035001</i>	0.15 <i>from 08.030102</i>
B.3 Supporting access to Jules Horowitz Reactor		15.00 <i>from 08.030102</i>
B.4 Prize – Innovation SOFT	0.03 <i>from 08.035001</i>	
B.5 Contract for operation of JET	63.00 <i>of which 43.74 from 08.030102 and 19.26 from 08.035001</i>	50.00 <i>from 08.030101</i>
B.6 Secretariat for the GIF	0.30 <i>from 08.030102</i>	
Estimated total budget	189.73	176.71

²⁷ The budget amounts for 2015 are subject to the availability of the appropriations provided for in the draft budget for 2015 after the adoption of the budget for 2015 by the budgetary authority or if the budget is not adopted as provided for in the system of provisional twelfths.

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.						
Item	2014 Budget (EUR million)	2015 Budget (EUR million)	2016 Budget (EUR million)	2017 Budget (EUR million)	2018 Budget (EUR million)	TOTAL
Fusion Joint Programme	77.36	72.15	82.00	101.56	124.63	457.70
Contract for operation of JET	63.00	50.00	50.00	50.00	37.00	250
TOTAL	140.36	122.15	132.00	151.56	161.63	707.70

ANNEXES

Annex 1: General Conditions

- A. List of countries, and applicable rules for funding
- B. Standard admissibility conditions for grant proposals, and related requirements
- C. Standard eligibility criteria
- D. Types of action: specific provisions and funding rates
- E. Technology readiness levels (TRL)
- F. Rules of Contest (RoC) for Prizes
- G. Evaluation
- H. Budget flexibility.
- I. Classified Information
- J. Financial support to third parties

Annex 2: Consortium members for fusion programme co-fund grant

Annex 1: General Conditions

A. List of countries, and applicable rules for funding

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:

- The Member States of the European Atomic Energy Community, including their overseas departments;
- The Overseas Countries and Territories (OCT) linked to the Member States²⁸:
 - Anguilla, Aruba, Bermuda, Bonaire, British Virgin Islands, Cayman Islands, Curaçao, Falkland Islands, French Polynesia, Greenland, Montserrat, New Caledonia, Pitcairn Islands, Saba, Saint Barthélemy, Saint Helena, Saint Pierre and Miquelon, Sint Eustatius, Sint Maarten, Turks and Caicos Islands, Wallis and Futuna.
- The Countries associated to the Euratom Research and Training Programme (2014-18) complementing Horizon 2020²⁹: the latest information on which countries are associated, or in the process of association, to the Euratom Research and Training Programme complementing Horizon 2020 can be found in the Online Manual³⁰.

Legal entities established in countries not listed above will be eligible for funding when such funding is explicitly foreseen in the relevant call text.

International European interest organisations³¹ will also be eligible to receive funding from the Euratom Research and Training Programme (2014-18) complementing Horizon 2020.

In addition, legal entities established in countries not listed above and international organisations will be eligible for funding:

- When funding for such participants is provided for under a bilateral scientific and technological agreement or any other arrangement between the Union and an international organisation or a third country:
- When the Commission deems participation of the entity essential for carrying out the action funded through the Euratom Research and Training Programme (2014-18) complementing Horizon 2020.

²⁸ 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

²⁹ Signed an agreement with the Euratom as identified in the Council Regulation on the Euratom Research and Training Programme complementing Horizon 2020.

³⁰ http://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/international-cooperation_en.htm

³¹ 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.

B. Standard admissibility conditions for grant proposals, and related requirements

1. To be considered admissible, a proposal 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 may be considered inadmissible. This includes the requested administrative data, the proposal description, and any supporting documents specified in the call. The following supporting documents will be required to determine the operational capacity, unless otherwise specified:

- 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 or 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)

3. Proposals shall 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.

4. Page limits will apply to proposals. The limits will be clearly set out in the electronic submission system. If a submitted proposal exceeds the limits, the applicant will receive an automatic warning, and will be advised to re-submit a version that conforms. After the relevant call deadline, excess pages in any over-long proposals will be automatically overprinted with a “watermark”. Expert evaluators will be instructed to disregard these excess pages.

No page limits will apply to proposals for European Joint Programme (EJP) Co-fund actions.

C. Standard eligibility criteria

All proposals must conform to the conditions set out in the Rules for Participation.

Furthermore, in this work programme, the following conditions apply unless they are supplemented or modified in the call conditions.

A proposal will only be considered eligible if:

- (a) its content corresponds, wholly or in part, to the topic description against which it is submitted, in the relevant work programme part;
- (b) it complies with the eligibility conditions set out below, depending on the type of action.

	Eligibility conditions ^{32, 33, 34}
Research & innovation action	At least three legal entities. Each of the three shall be established in a different Member State or associated country. All three legal entities shall be independent of each other.
Innovation action	At least three legal entities. Each of the three shall be established in a different Member State or associated country. All three legal entities shall be independent of each other
Coordination & support action	At least one legal entity established in a Member State or associated country.
European Joint Programme (EJP) Co-fund action	At least five legal entities. Each of the five shall be established in a different Member State or associated country. All five legal entities shall be independent of each other. ³⁵ Eligible participants in EJP Co-fund actions are legal entities owning or mandated to manage national research and innovation programmes ³⁶ .

³² The eligibility criteria formulated in Commission notice Nr. 2013/C 205/05 (OJEU C 205 of 19.07.2013, pp.9-11) shall apply for all actions under this Work Programme, including with respect to third parties receiving financial support in the cases where the respective action involves financial support to third parties by grant beneficiaries in accordance with Article 137 of the EU's Financial Regulation, notably Programme Co-Fund actions.

³³ Some entities from third countries are covered by the Council sanctions in place and are not eligible to participate in the Euratom Research and Training Programme (2014-18) complementing Horizon 2020. 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

³⁴ 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 respective 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 EU's Financial Regulation. Should the illegal annexation of the Autonomous Republic of Crimea and the City of Sevastopol end, this Work Programme shall be revised.

³⁵ EJP co-fund actions support coordinated national research and innovation programmes. In line with the objective of transnational integration through a critical mass of resources, the required minimum number of participants is higher than the one provided in the Horizon 2020 Rules for Participation.

³⁶ It is appropriate that core participation in EJP co-fund actions is limited to entities that can fully participate through their contribution of national and regional programmes: programme owners, typically national ministries/regional authorities responsible for defining, financing or managing programmes carried out at national or regional level or 'programme managers' (such as research councils or funding agencies) or other entities that implement national or regional research and innovation programmes under the mandate of the programme owners. Beyond the minimum participants, other legal entities may participate if justified by the

Note:

In the case of Programme Co-fund Actions (European Joint Programmes), sole participants formed by several legal entities (e.g. European Economic Interest Grouping, associations) are eligible if the above-mentioned minimum conditions are satisfied by the legal entities forming together the sole participant.

nature of the action, in particular entities created to coordinate or integrate transnational research efforts, grouping funding from public and private sources.

D. Types of action: specific provisions and funding rates^{37,38}

Research and innovation actions

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

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 innovation³⁹ 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 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 maximum rate of 100% applies)

Coordination and support actions

Description: Actions consisting primarily of accompanying measures such as standardisation, dissemination, awareness-raising and communication, networking, coordination or support services,

³⁷ Eligible costs for all types of action are in accordance with the Financial Regulation and the Rules for Participation. 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 the Euratom funding:

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

³⁸ Participants may ask for a lower rate.

³⁹ A new or improved technology, product, design, process, service or solution.

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%

European Joint Programme (EJP) Co-fund Action

The “programme co-fund action” aims at supplementing individual calls or programmes funded by entities, other than Union bodies, managing research and innovation programmes. The following types of programme co-fund actions are supported in the Euratom Work Programme 2014-15:

- European Joint Programme ('EJP'): co-funding of coordinated national research and innovation programmes.

The specific features applicable to the EJP are described below.

European Joint Programme

The European Joint Programme ('EJP') under Horizon 2020 is a co-fund action designed to support coordinated national research and innovation programmes. The EJP aims at attracting and pooling a critical mass of national resources on objectives and challenges of Horizon 2020 and at achieving significant economies of scales by adding related Horizon 2020 resources to a joint effort.

The EJP does not promote types of activities or forms of coordination, but relies on modalities and processes agreed by the coordinated national programmes and related actors.

Eligibility

The minimum number of participants in EJPs is five independent legal entities from different Member States or associated countries owning or managing national research and innovation programmes:

- a) Programme owners, typically national ministries/regional authorities responsible for defining, financing or managing programmes carried out at national or regional level.
- b) Programme 'managers' (such as research councils or funding agencies) or other entities that implement national or regional research and innovation programmes under the supervision of the programme owners.

The participation of programme managers has to be mandated by the national/regional authorities in charge.

In addition to the minimum conditions, other legal entities may participate if justified by the nature of the action, in particular entities created to coordinate or integrate transnational research efforts, grouping funding from both national and private sources.

Sole participants may be eligible if the above-mentioned specific conditions for eligible EJP partners are satisfied. A sole participant forming a sole legal entity shall explicitly indicate which of its 'members' are either programme owners or programme managers in the proposed action, and indicate for these members the respective national/regional programmes which are at the disposal of the proposed EJP action.

Justification for additional eligibility criteria: In line of the objective of transnational integration through a critical mass of resources, the required minimum number of participants is higher than the one provided in the Horizon 2020 Rules for Participation. In addition, such participants must be established in different Member States or associated countries in order to further establish an appropriate level of cooperation and integration. Finally, EJP actions support coordination and future integration of national

research and innovation programmes. It is appropriate that core participation in these actions is limited to entities that can fully participate through their contribution of national and regional programmes.

Activities funded

The main activity of the action is the implementation of a joint programme of activities to attain objectives common to Horizon 2020, ranging from research to coordination and networking activities, including training activities, demonstration and dissemination activities, support to third parties etc.

The Euratom funding can be used to enhance and expand the activities of existing coordinated programmes or create new ones, provided they aim at attaining the objectives of a European transnational joint-programme established by the EJP consortium.

The EJP will identify the objectives, work and the schedules of activities to be carried out in this context. It will be necessary to provide a detailed description of these activities for the initial and each successive twelve-month periods of the EJP, as the joint programme develops in line with the initial objectives. An Annual Work Programme, combined with a progress report on previous achievements will be a key deliverable for the implementation of the EJP on a rolling basis. It will be submitted and approved by the Commission prior to commencement of activities for each reporting period:

- Initial Proposal Submission: Description of overall objectives and schedule of proposed activities, together with 1st Annual Work Programme;
- Periodic Reporting: an update to the Annual Work Programme will be submitted three months before the end of the relevant reporting period – after evaluation and possible revision further to Commission comments, the Annual Work Programme will be agreed prior to the start of the next reporting period.

The Euratom contribution takes the form of a grant consisting of a reimbursement of the eligible costs related to the action, in accordance with the conditions set out in the grant agreement and relevant Commission decisions, including reimbursement of actually incurred costs, lump sums, unit costs or flat rates⁴⁰. Financial support provided to third parties as part of the joint programme implementation, for example through calls for proposals or under otherwise defined conditions (cascade grants), is also eligible for reimbursement.

In accordance with the Decisions concerning Horizon 2020 and the Regulation laying down the rules for the participation and dissemination in Horizon 2020, the provisions of Article 137(1 (c)) of the Regulation no 966/2012 of the European Parliament and of the Council on the financial rules applicable to the general budget of the Union and Article 210a of the Commission Delegated Regulation no. 1268/2012, shall not be applicable with regard to the financial support provided by the participants in the EJP to third parties participating in actions selected following calls for proposals launched under the EJP when the financial support to third parties is a primary aim of the action or necessary to achieve its objectives.

⁴⁰ Commission Decision (C(2013)8201) for authorising the reimbursement of unit costs for the Fusion Programme Co-Fund Action under the Research and Training Programme of Euratom (2014-2018) complementing Horizon 2020.

The Euratom contribution will be limited to 70% of the total eligible costs of the action, unless otherwise specified in the work programme, in line with the objective of achieving a balanced funding of the EJP from the Euratom and participating public programmes.

Evaluation

The standard evaluation criteria of excellence, impact, and quality and efficiency of the implementation apply, as set out in the Horizon 2020 Rules for Participation and indicated in Annex 1.G to this work programme.

The level of ambition in the collaboration and commitment of the participants in the proposed action to pool national resources and coordinate their national/regional research programmes will be assessed under the excellence criterion.

Critical mass in terms of proposed overall budget, maturity and degree of integration in the proposed research area as well as consistency of activities with the development of the European Joint Programme towards a joint undertaking or other permanent structure in the proposed research area will be evaluated under the impact criterion.

Duration of the action

The total duration of the action should normally not exceed 5 years.

E. 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
- TRL 6 – technology demonstrated in relevant environment
- 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)

F. Model Rules of Contest (RoC) for Prizes

This annex provides a model for the Rules of Contest that will be published for Prizes under this Work Programme.

1. Objectives pursued

As already specified in the Work Programme.

2. Expected results

As already specified in the Work Programme.

3. Award criteria

As already specified in the Work Programme, or, if the Work Programme only provides essential award criteria, then specific award criteria detailing the essential award criteria shall be provided.

4. Arrangements and final dates for the registration of contestants, if required, and arrangements and final dates for the submission of entries

Required entry forms and deadlines for submission. Registration of contestants can apply only to inducement prizes.

5. Amount of prize(s) including specific amount for each prize, if applicable

6. Arrangement for the payment of the prize to the winner after its award

7. Conditions for cancellation of the contest, if any

The Commission has to right to terminate the contest before its closing date without any obligation to indemnify contestants in case the objective of the contest has been achieved by a non-registered or non-eligible contestants.

The Commission has the right to decide not to award any prize if no entries are received or if no entries are to be awarded by the contest jury.

8. Conditions for participation

The contestant must not have received any other Union prize before that is the subject of the current contest.

All information given by the contestant in the entry must be correct and complete.

8.1. Eligibility criteria

As already specified in the Work Programme, or, if the Work Programme only provides essential eligibility criteria, then specific eligibility criteria detailing the essential eligibility criteria shall be provided.

8.2. Exclusion criteria

Contestants will be excluded from participating in the contest if they fall under any of the following situations⁴¹:

The contestant:

- a) is bankrupt or being wound up, is having its affairs administered by the courts, has entered into an arrangement with creditors, has suspended business activities, is the subject of proceedings concerning those matters, or is in any analogous situation arising from a similar procedure provided for in national legislation or regulations;
- b) has 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;
- c) has been guilty of grave professional misconduct proven by any means which the European Union bodies can justify including by decisions of the European Investment Bank and international organisations;
- d) is not in compliance with all its obligations relating to the payment of social security contributions and the payment of taxes in accordance with the legal provisions of the country in which it is established, with those of the country of the authorising officer responsible and those of the country where the activity is to be implemented;
- e) has 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, where such activity is detrimental to the Union's financial interests;
- f) is subject to an administrative penalty for being guilty of misrepresenting the information required as a condition of participation in a procurement procedure or another grant award procedure or failing to supply this information, or having been declared to be in serious breach of its obligations under contracts or agreements covered by the Union's budget.

Natural person with power of representation, decision-making or control over one of the contestants that are legal entities, must not be in the situations referred to in b) and e) above:

Contestants must:

- g) have no conflict of interests in connection with the prize; a conflict of interests could arise in particular as a result of economic interests, political or national affinity, family, emotional life or any other shared interest;
- h) inform the European Commission, without delay, of any situation considered a conflict of interests or which could give rise to a conflict of interests;
- i) have not been granted and will not grant, have not sought and will not seek, have not attempted and will not attempt to obtain, and have not accepted and will not accept any advantage, financial or in kind, to or from any party whatsoever, where such advantage constitutes an illegal practice or involves

⁴¹ Contestants which are in one of the situations referred to in Article 106(1) and Articles 107, 108 and 109 of the Financial Regulation are excluded from participating in the contest.

corruption, either directly or indirectly, inasmuch as it is an incentive or reward relating to the award of the prize;

In case of award of a prize, the following evidence shall be provided upon request and within the time limit set by the European Commission:

For situations described in (a), (b) and (e), production of a recent extract from the judicial record is required or, failing that, a recent equivalent document issued by a judicial or administrative authority in the country of origin or provenance showing that those requirements are satisfied. Where the contestant is a legal person and the national legislation of the country in which the contestant is established does not allow the provision of such documents for legal persons, the documents should be provided for natural persons, such as the company directors or any person with powers of representation, decision making or control in relation to the contestant.

For the situation described in point (d) above, recent certificates or letters issued by the competent authorities of the State concerned are required. These documents must provide evidence covering all taxes and social security contributions for which the contestant is liable, including for example, VAT, income tax (natural persons only), company tax (legal persons only) and social security contributions.

For any of the situations (a), (b), (d) or (e), where any document described in the two paragraphs above is not issued in the country concerned, it may be replaced by a sworn or, failing that, a solemn statement made by the interested party before a judicial or administrative authority, a notary or a qualified professional body in his country of origin or provenance.

If the contestant is a legal person, information on the natural persons with power of representation, decision making or control over the legal person shall be provided only upon request by the European Commission.

8.3 Sole liability of contestants

The Commission may not be held responsible for any claim relating to the activities carried out in the framework of the contest by the contestant. The Commission shall not be held liable for any damage caused or sustained by any of the contestants, including any damage caused to third parties as a consequence of or during the implementation of the activities related to the contest.

8.4. Checks and audits

The contestants accept that, if they are awarded a prize, the Commission, OLAF and the Court of Auditors may carry out checks and audits in relation to the contest and the received prize.

8.5. Publicity

8.5.1. Publicity by the winner of the prize

The contestants accept, if they are awarded a prize, to 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 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 prize [name of the prize] from the Euratom Research and Training Programme”.

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

For the purposes of its obligations, the winner of the prize may use the EU emblem without first obtaining approval from the Commission. This does not, however, give it the right to exclusive use. Moreover, the winner of the prize may not appropriate the EU emblem or any similar trademark or logo, either by registration or by any other means.

8.5.2. Publicity by the Commission

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

The Commission will publish the name of the winner, its locality, the amount of the prize and its nature and purpose and that the contestant may request the Commission to waive such publication if disclosure risks threatening its security and safety or harm its commercial interest.

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

8.6 Processing of personal data

Registration and submission of entry shall be made in writing, which implies by letter or by electronic means (as specified in the rules of the contest), provided that they are non-discriminatory in nature and ensure integrity, confidentiality and protection of personal data. All personal data contained in the entry shall be processed in accordance with Regulation (EC) No 45/2001 of the European Parliament and of the Council (OJ L8 of 12.01.2001, p1) 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. Such data shall be processed by the Controller solely in connection with the implementation and follow-up of the entry of the winner, without prejudice to a possible transmission to the bodies in charge of a monitoring or inspection task in accordance with European Community and European Union legislation.

Contestants may, on written request, gain access to their personal data and correct any information that is inaccurate or incomplete. They should address any questions regarding the processing of their personal data to the Controller, via the contact person announced in the rules of the contest. Please send in addition a scanned copy of your letter to the email address announced in the rules of the contest.

Contestants may, at any time, lodge a complaint against the processing of their personal data with the European Data Protection Supervisor.

The Commission shall be authorised to publish, in whatever form and on or by whatever medium, the following information:

- The name of winner(s);
- The locality of winner(s);
- The general purpose of the activities of the winner(s) in relation to the award of the prize, in the form of the summary provided by the winner(s);
- The amount of the prize awarded.

8.7 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.

If international organisations are eligible, this general rule may be complemented by the special conditions proposed in the model grant agreement on dispute settlement - arbitration and applicable law.

8.8 Applicability of penalties

By virtue of Article 212 of Commission Delegated Regulation (EU) No 1268/2012 of 29 October 2012 on the rules of application of 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 with due regard to the principle of proportionality, a contestant which has committed irregularities or fraud, has made false declarations shall be liable to:

- (a) administrative penalties consisting of exclusion from all contracts, grants and contests financed by the Union budget for a maximum of five years from the date on which the infringement is established and confirmed following a contradictory procedure with the contestant; and/or
- (b) financial penalties of 2% to 10% of the value of the prize.

In the event of another infringement within five years following the establishment of the first infringement, the period of exclusion under point (a) may be extended to 10 years and the range of the rate referred to in point (b) may be increased to 4% to 20%.

8.9. Dissemination and exploitation obligations

Obligations regarding dissemination of results laid down in Title III of the rules for participation and dissemination in Horizon 2020 (Regulation 1290/2013) apply as well as any additional rules provided in the Work Programme.

G. Evaluation

Selection Criteria

- a) *Financial capacity*: In line with the Financial Regulation and the Rules for Participation. At the proposal stage, coordinators will be invited to complete a self-assessment using an on-line tool.
- b) *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 meet the selection criterion related to operational capacity, to carry out the proposed work, based on the competence and experience of the individual participant(s).

Award criteria

Experts will evaluate on the basis of the criteria ‘excellence’, impact and quality and efficiency of the implementation’. 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.

Type of action	Excellence	Impact	Quality and efficiency of the implementation
All types of action	<p>The following aspects will be taken into account, to the extent that the proposed work corresponds to the topic/other action description in the work programme/call for proposals:</p> <p>Clarity and pertinence of the objectives;</p> <p>Credibility of the proposed approach</p>	<p>The extent to which the outputs of the project should contribute at the European and/or International level to:</p> <p>The expected impacts listed in the work programme under the relevant topic</p>	<p>The following aspects will be taken into account:</p> <p>Coherence and effectiveness of the work plan, including appropriateness of the allocation of tasks and resources;</p> <p>Complementarity of the participants within the consortium (when relevant);</p> <p>Appropriateness of the management structures and procedures, including risk and innovation management.</p>

<p>Research and innovation; Innovation</p>	<p>Soundness of the concept, including trans-disciplinary considerations, where relevant;</p> <p>Extent that proposed work is ambitious, has innovation potential, and is beyond the state of the art (e.g. ground-breaking objectives, novel concepts and approaches);</p>	<p>Enhancing innovation capacity and integration of new knowledge;</p> <p>Strengthening the competitiveness and growth of companies by developing innovations meeting the needs of European and global markets; and, where relevant, by delivering such innovations to the markets;</p> <p>Any other environmental and socially important impacts (not already covered above);</p> <p>Effectiveness of the proposed measures to exploit and disseminate the project results (including management of IPR), to communicate the project, and to manage research data where relevant.</p>	
<p>Coordination & support actions</p>	<p>Soundness of the concept;</p> <p>Quality of the proposed coordination and/or support measures</p>	<p>Effectiveness of the proposed measures to exploit and disseminate the project results (including management of IPR), to communicate the project, disseminate and to manage research data where relevant</p>	
<p>EJP Co-fund</p>	<p>Level of ambition in the collaboration and commitment of the participants in the proposed action to pool national resources and coordinate their national/regional research programmes.</p>	<p>Critical mass in terms of proposed overall budget, maturity and degree of integration in the proposed research area as well as consistency of proposed activities with the development of a European Joint Programme towards a joint undertaking or other permanent structure in the proposed research area.</p> <p>Effectiveness of the proposed measures to exploit and disseminate the programme's results and to communicate the programme</p>	

Note

Unless otherwise specified in the call conditions:

(a) 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.

(b) For Innovation actions, to determine the ranking, the score for the criterion ‘impact’ will be given a weight of 1.5.

(c) For the evaluation of first-stage proposals under a two-stage submission procedure, only the criteria ‘excellence’ and ‘impact’ will be evaluated. Within these criteria, only the aspects in bold will be considered. The threshold for both individual criteria will be 4.

Priority order for proposals with the same score

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

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.

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:

(i) Proposals that address topics not otherwise covered by more highly-ranked proposals, will be considered to have the highest priority.

(ii) These proposals 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 Horizon 2020 in general. These factors will be documented in the report of the Panel.

(iii) The method described in (ii) will then be applied to the remaining *ex aequos* in the group.

H. Budget flexibility

Budgetary figures given in this work programme are indicative. Unless otherwise stated, final budgets may vary following the evaluation of proposals. The final figures may vary by up to 20% with respect to those indicated in this work programme for the following budgeted activities:

- Total expenditure for each call for proposals;
- Any repartition of the call budget 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;
- Each other individual action not implemented through calls for proposals

I. Classified Information

In the case of actions involving security-related activities special provisions for classified information (as defined in Commission Decision 2001/844/EC, ECSC, Euratom) 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 ('Foreground') 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/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.

Topics in the work programme that are most likely to lead to classified projects include the following reference:

“Projects addressing this topic may involve the use of classified background information (EU or national) or the production of security sensitive foreground information. As such, certain project deliverables may require security classification. The final decision on the classification of projects is subject to the security evaluation.”

This applies primarily to the Secure Societies challenge, but the provisions may appear in other parts. These references do not however preclude a different assessment following the security scrutiny. To that effect positively evaluated proposals involving sensitive or classified information will be flagged to the members of the Secure Societies Programme Committee configuration and dealt with according to its Rules for Procedure.

J. Financial support to third parties

Where this possibility is indicated under the relevant topic, proposals which foresee a financial support to third parties⁴² shall clearly detail the objectives and the results to be obtained and include at least the following elements:

- a closed list of the different types of activities that qualify for financial support,
- 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)

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

In such case proposals shall clearly detail at least the following elements:

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

Further boundary conditions regarding the above listed elements or other elements may be laid down in the relevant call allowing a financial support to third parties.

The grant beneficiary must ensure that recipients of the financial support allow the Commission, the European Anti-fraud Office 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.

⁴² Art 137 of the Financial Regulation

Annex 2: Consortium members for fusion programme co-fund grant

List of legal entities nominated by Member States or Associated countries to participate in the Fusion Joint Programme in accordance with Annex 1, point (i) of the Council Regulation on the Research and Training Programme (2014-18) of the European Atomic Energy Community (2014-2018) complementing the Horizon 2020 - The Framework programme for Research and Innovation. This list may be amended in the grant agreement if a Member State or Associated country decides to designate a different participant.

Member state and Associated state	Address of participating entity
Austria	Österreichische Akademie der Wissenschaften, Kegelgasse 27/13, 1030 Wien
Belgium	Ecole Royale Militaire, Laboratoire de Physique des Plasmas, 30, Avenue de la Renaissance, B - 1000 Bruxelles (to be confirmed)
Bulgaria	Institute for Nuclear Research and Nuclear Energy - Bulgarian Academy of Science, Boul. Tzarigradsko Chaussee 72 BG - 1784 Sofia
Croatia	"Ruder Boskovic" Institute Bijenicka 54, HR-10000 Zagreb, Croatia
Cyprus	Dept. of Mechanical and Manufacturing Engineering, University of Cyprus Kallipoleos St., PO Box 20537 CY -1678 Nicosia
Czech Republic	Institute of Plasma Physics, Academy of Sciences of the Czech Republic Za Slovankou 3, CR-182 00 Praha 8
Denmark	Technical University of Denmark, Department of Physics DTU Risø Campus Frederiksborgvej 399, P.O. Box 49 Building 129, DK-4000 Roskilde
Estonia	University of Tartu, Institute of Physics 142 Riia Street, EE - 51014 Tartu

EURATOM – WORK PROGRAMME 2014-2015

Finland	Tekes, Finnish Funding Agency for Technology and Innovation Kyllikinportti 2, Helsinki P.O. Box 69 FIN-00101 HELSINKI
France	Institut de Recherche sur la Fusion par confinement Magnétique (IRFM), CEA - Cadarache F - 13108 Saint Paul Lez Durance CEDEX
Germany	Forschungszentrum Jülich GmbH, Institut für Plasmaphysik Postfach 1913, D - 52425 Jülich
	Karlsruhe Institute of Technology, Campus Nord Hermann-von-Helmholtz-Platz 1, D – 76344 Eggenstein-Leopoldshafen
	The Max-Planck Institut für Plasmaphysik, Boltzmannstrasse 2 85 748 Garching (Coordinator of the consortium)
Greece	National Technical University of Athens School of Electrical and Computer Engineering 9, Iroon, Polytechniou St. GR – 157 73 Zografou - Athens
Hungary	Hungarian Academy of Sciences Wigner Research Centre for Physics P.O. Box 49 HU-1525 Budapest
Ireland	Plasma Research Laboratory, Dublin City University – DCU, Glasnevin EI - Dublib
Italy	ENEA - C.R.E. Frascati, Via Enrico Fermi 45, C.P. 65 I - 00044 Frascati (Roma)
Latvia	Institute of Solid State Physics, University of Latvia 8 Kengaraga Str., LV - 1063 Riga
Lithuania	Lithuanian Energy Institute 3 Breslaujos str., LT-44403 Kaunas
Luxembourg	GRADEL S.A., 38 route de Luxembourg, L-8440, Steinfort
Malta	
Netherlands	DIFFER – Dutch Institute for Fundamental Energy Research Edisonbaan 14, Postbus 1207 NL - 3430 BE Nieuwegein
Poland	The Institute of Plasma Physics and Laser Microfusion IPPLM 23 Hery street, 01-497 Warszawa
Portugal	Instituto de Plasmas e Fusão Nuclear, Instituto Superior Técnico Av. Rovisco Pais, 1049-001 Lisboa

EURATOM – WORK PROGRAMME 2014-2015

Romania	National Institute for Laser, Plasma and Radiation Physics Atomistilor, No. 409, PO Box MG-36, 077125 Magurele, Bucharest,
Slovakia	Faculty of Mathematics and Physics Comenius University Mlynska dolina F-2 SK - 842 15 Bratislava
Slovenia	Jozef Stefan Institute Jamova 39, SL - 1000 Ljubljana
Spain	Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT) Avenida Complutense 40 E - 28040 Madrid
Sweden	Vetenskapsrådet Klarabergsviadukten 3 Box 1035, SE-101 38 Stockholm
The Swiss Confederation	Ecole Polytechnique Fédérale de Lausanne EPFL CRPP Bâtiment PPB Station 13 CH CH - 1015 Lausanne
United Kingdom	The United Kingdom Atomic Energy Authority Culham Centre for Fusion Energy, Culham Science Centre GB - Abingdon, OX14 3DB