

WORK PROGRAMME 2010

***Euratom for Nuclear Research and
Training Activities¹***

(European Commission C(2009) 5946 of 30 July 2009)

¹ In accordance with the Treaty establishing the European Atomic Energy Community and in particular Articles 7 and 10 as contextualised in the following decisions: Council Decision 2006/970/Euratom of 18 December 2006 concerning the Seventh Framework Programme of the European Atomic Energy Community (Euratom) for nuclear research and training activities (2007 to 2011) and Council Decision 2006/976/Euratom of 19 December 2006 concerning the Specific Programme Euratom for nuclear research and training activities (2007-2011)

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GENERALITIES

Following the adoption of the 7th Euratom Framework Programme (FP7) and the corresponding Specific Programme for 'Nuclear Research and Training Activities'² and 'Rules for Participation'³, the Commission adopts work programmes with the assistance of the programme committees for fission and fusion. This work programme (WP) constitutes a financing decision for 2010. It defines the technical scope of actions and provides information on the implementation arrangements.

Research and development activities in this work programme comprise two themes: Fusion Energy, and Nuclear Fission and Radiation Protection.

OBJECTIVES

In the priority theme of Fusion Energy, the overall objective is to develop the knowledge base for, and to realise ITER as the major step towards the creation of prototype reactors for nuclear fusion based power stations that are safe, sustainable, environmentally responsible and economically viable.

In the priority theme of Nuclear Fission and Radiation Protection, the overall objective is to establish a sound scientific and technical basis in order to accelerate practical developments for the safe management of long-lived radioactive waste, to enhance the safety performance, resource efficiency and cost-effectiveness of nuclear energy and to ensure a robust and socially acceptable system of protection of man and the environment against the effects of ionising radiation.

Euratom research, both fission and fusion, pays attention to the gender equality issue and participation of women is actively encouraged.

² Decision 2006/976/Euratom of the Council of 19 December 2006 (Euratom Specific Programme)

³ Regulation 1908/2006/Euratom of 19 December 2006

I. CONTEXT

I.1 Approach

Nuclear power is the principal low carbon source of base load electricity in the EU, totalling some 135GWe of installed capacity and accounting for one-third of current electricity generation. It therefore plays a key role in limiting the EU's emissions of greenhouse gases, and makes an important contribution to improving the Union's independence, security and diversity of energy supply.

Energy policy is a growing concern at the EU level, as demonstrated by the set of energy-related Communications and Regulations adopted by the Commission in 2007 and 2008. Following a process of extensive consultation and analysis, the European Council adopted in March 2008 conclusions on the proposal of the Commission for the Strategic Energy Technology Plan (SET-Plan). This plan is intended to accelerate the development of the technologies to achieve the targets and objectives set out in the EU Energy Policy Package. Nuclear energy technologies are among the options having the greatest potential for substantial contributions in reaching the energy and climate objectives both in the short and the longer term. The SET-Plan proposes changes in the way the energy research and innovation system operates in Europe. This is intrinsically linked to progress towards the construction of a 'European Energy Research Area'.

In the longer term, nuclear fusion offers the prospect of an almost limitless supply of clean energy, with ITER being the crucial next step in the progress towards this ultimate goal. The realisation of the ITER project therefore lies at the heart of the present EU strategy, though it must be accompanied by a strong and focused European R&D programme to prepare for the exploitation of ITER and to develop the technologies and knowledge base that will be needed during its operation and beyond.

The SET-Plan acknowledges that, in the field of nuclear fission, the key EU technology challenges for the next ten years are, in order to help meet the 2020 targets, to maintain the competitiveness in fission technologies together with long-term waste management solutions. In order to achieve the 2050 vision laid out in EU policy, key EU technology challenges for the next ten years include the completion of the preparations for the demonstration of a new generation (Generation-IV) of fission reactors for increased sustainability, and the successful completion of the ITER construction, together with an early involvement of industry in the preparation for demonstration actions. A fusion Demonstration Reactor (DEMO) constitutes a long term strategic goal of the EU fusion programme.

The SET-Plan also proposes the launch of specific 'European Industrial Initiatives', in particular one on 'sustainable nuclear fission' (development of Generation-IV technologies), which this and future Euratom work programmes will take into consideration.

In addition to this R&D on the potential of future systems, research on issues such as safety, waste and radiation protection will continue to figure prominently in the Euratom work programmes, as laid out in the Euratom Framework and Specific Programmes.

The annual work programme is established using a wide range of inputs to ensure that the activities supported maintain direct relevance to the evolving research needs of industry, the research community and EU policies in the nuclear field. Consultations with the two Consultative Committees for the Euratom programme (i.e. Programme Committees), the Euratom Scientific

and Technical Committee (STC), the Advisory Group on Energy (AGE), the concerned stakeholders involved in the frame of the preparations for the SET-Plan, as well as exchanges during project meetings, conferences, and the implementation of previous work programmes (especially the coverage following previous calls for proposals and evaluations, including call FP7-Fission-2009, which at the time of writing is still open with evaluation planned for May-June 2009), provide important input in areas of interest and elements of future topics. Specific forums, such as the European Strategy Forum on Research Infrastructures (ESFRI), may also provide the Commission with timely specific advice on opportunities and priorities with relevance to the Euratom research sector. For the fission part, increasingly important input comes from the Strategic Research Agendas of the Sustainable Nuclear Energy Technology Platform (SNE-TP, www.snetp.eu) and MELODI (Multidisciplinary European Low-Dose Initiative), a "joint programming" initiative in the area of risks of low and protracted doses of radiation launched by a High-Level Expert Group (HLEG, www.hleg.de) in early 2009. Following the ending of the FP6 Coordination Action CARD, current efforts are to establish a Technology Platform also in the field of geological disposal of radioactive waste (IGD-TP – Implementing Geological Disposal Technology Platform), and the expected Strategic Research Agenda will be an additional important source of input for the present Euratom fission work programme. Finally, the results of the latest meeting of the joint Euratom-ROSATOM Working Group on fission research, which took place in Russia in June 2008, has led to the emergence of subjects for co-funded research that have already been including in the currently open 2009 call. The present work programme for 2010 will extend this practice to other third countries (China in particular).

Following provisions of article 21(1) of the Implementing Rules of the Financial Regulation (Commission Regulation No. 2342/2002) as well as the Impact Assessment Guidelines (SEC(2009) 92), the Services of the Commission will prepare in 2010 an Impact Assessment of the proposal for a Council Decision extending for two years (2012-13) the Framework Programme of the European Atomic Energy Community (Euratom) for nuclear research and training activities and Specific Programmes on fusion energy research and indirect actions on nuclear fission and radiation protection and on covering the nuclear activities of the JRC. Preparatory studies for the Impact Assessment will be commissioned in 2010 from external experts and/or consultancies. In particular, the Commission will seek external expertise in analysis of the policy options for the prolongation of Euratom FP7 and evaluation of their likely impacts. External experts/consultancies might be also used to carry out public consultations. For this purpose appropriate experts or companies will be selected from the relevant database of the Commission or through the relevant procurement procedure.

In the theme of Fusion Energy the priority of the programme is the success of the ITER project which began construction in 2008 and will see in 2010 an acceleration of all activities. With the decision to site ITER at Cadarache in Southern France, the EU has taken the main responsibility for the project contributing up to 50% of its cost. In order to discharge the European obligations to the ITER project, a Joint Undertaking has been set up in Barcelona, Spain⁴.

This Joint Undertaking will also be responsible for providing the contribution of Euratom to Broader Approach activities with Japan for the rapid realisation of fusion energy and for the implementation of a programme of preparatory activities for the construction of DEMO and related facilities including the International Fusion Materials Irradiation Facility (IFMIF). The Broader Approach activities include contributing to the Engineering Validation, Engineering Design Activities (EVEDA) of IFMIF, to the upgrade of the tokamak JT60SA in Naka (Japan), and to the

⁴ Council Decision 2007/198/Euratom of 27 March 2007

International Fusion Energy Research Centre (IFERC) in Rokkasho (Japan), which will cover design and R&D activities for a demonstration fusion reactor, fusion computer simulation and ITER remote experimentation.

The Joint Undertaking will initiate the process for the procurement of major components for ITER and the Broader Approach activities. To prepare for the prompt implementation of the ITER experimental programme, the Euratom Associated laboratories will have a more focused research programme that will provide input to the preparation of ITER and the longer-term activities. An important cornerstone of this research programme is the use, under the European Fusion Development Agreement (EFDA), of the JET facilities where important enhancements are being made that will provide data for the ITER programme. EFDA, in its new form adapted to this new phase of the programme, will also coordinate the activities of the Euratom associated laboratories by way of topical groups, task forces and implementing arrangements. Another aspect of the Fusion programme is the investigations into alternative concepts notably with the construction of the W7-X stellarator in Greifswald, Germany.

A review of all the facilities in the fusion programme, examining the possibility of phasing out facilities, and considering the need for new devices in parallel with ITER exploitation, was carried out in 2008. Following discussions in the programme instances and bilaterally with the Euratom Associated laboratories, an adaptation of the activities in the programme will be implemented, starting in 2010. The review will be used as a basis for the possible support of existing/new or upgraded devices in order to ensure that the programme maintains a set of fusion facilities necessary to fulfil the overall objectives of the programme.

It is also necessary to maintain the expertise that has placed the EU fusion programme at the forefront of international research on fusion energy. This will also be provided through a programme of human resources, development, training, education and mobility.

The effort to stimulate the involvement of European industry in fusion for the long-term strategic interest of Europe will be extended in 2010. A framework for the management of knowledge in the fusion programme (protection and licensing of Intellectual Property, dissemination, technology transfer, etc) will be implemented.

In the theme Nuclear Fission and Radiation Protection, actions will be undertaken in five principal activities (management of radioactive waste, reactor systems, radiation protection, and horizontal aspects such as infrastructures and human resources), as described in the Specific Programme. Where relevant, links are made in the work programme between specific areas/topics and the SET-Plan objectives and the associated Generation-IV European Industrial Initiative. Important cross-cutting links exist throughout the Euratom programme and, to some extent, with other EC programmes.

I.2 Scope of Work

This Work Programme, financed from the 2010 budget, contributes to the implementation of the Euratom Specific Programme⁵.

⁵ Registration of legal entities in the Commission's Early Warning System (EWS) and Central Exclusion Database (CED). The Commission uses an internal information tool (EWS), as well as a database available to public authorities implementing EU funds (CED) to flag identified risks related to beneficiaries of centrally managed contracts and grants with a view to protecting the EU's financial interests. Prior Information of Candidates, Tenderers and Grant Applicants (Article 8 of Decision on the EWS and Article 13 of Regulation on the Central Exclusion Database):

I.3 International Cooperation

International cooperation is a key feature of the fusion research and training programme. The main fusion international cooperation frameworks are clearly the ITER Agreement among the seven parties EU, Japan, Russia, U.S., China, S.Korea and India, and the Broader Approach Agreement between Euratom and Japan.

The European Commission is representing the European Atomic Energy Community (Euratom). Furthermore, the "European Joint Undertaking for ITER and the Development of Fusion Energy" ('Fusion for Energy – F4E') is the Domestic Agency to provide Euratom's contribution to ITER, as well as the Implementing Agency to provide the contribution of Euratom to the Broader Approach projects. In this regard, F4E discharges the Euratom responsibilities towards the ITER Agreement and the Broader Approach activities.

The collaboration of third States in the integrated European programme can be presented as an extensive network of bilateral and multilateral cooperation activities. The funding of these activities proceeds through the Contracts of Association, EFDA and the Mobility Agreement.

Under the bilateral approach, the cooperation activities concern in particular the Broader Approach Agreement and the various bilateral fusion Cooperation Agreements in force between Euratom and several Third States. These bilateral fusion Cooperation Agreements are mainly aimed at developing cooperation on activities in support to or complementary to ITER. There are presently seven Agreements in force between Euratom and respectively Switzerland, Japan, U.S.DOE, Russia, Ukraine, Kazakhstan and S.Korea, while other similar agreements with India, Brazil and China are presently under different degree of negotiation.

There are also various multilateral cooperation frameworks in which Euratom is contributing to fusion related activities, i.e. the OECD International Energy Agency (IEA) frame in which the Fusion Power Coordinating Committee (FPCC) and the various Implementing Agreements are operating; the International Atomic Energy Agency (IAEA) frame with the International Fusion Research Council (IFRC); the International Tokamak Physics Activity (ITPA) under the auspices of ITER International Organisation; and the ISTC & STCU programmes.

In the fission area too, the international and global dimension is becoming increasingly important. Different mechanisms are available to foster this international cooperation – see (i)-(iv) below. The two main ones applicable to the fission programme are the direct participation of third country partners (persons or legal entities) in Euratom FP projects (with

Candidates, tenderers, grant applicants and, if they are legal entities, persons who have powers of representation, decision-making or control over them, are informed that, should they be in one of the situations mentioned in:

- the Commission Decision of 16.12.2008 on the Early Warning System (EWS) for the use of authorising officers of the Commission and the executive agencies (OJ, L 344, 20.12.2008, p. 125), or
- the Commission Regulation of 17.12.2008 on the Central Exclusion Database, CED (OJ L 344, 20.12.2008, p. 12),

their personal details (name, given name if natural person, address, legal form and name and given name of the persons with powers of representation, decision-making or control, if legal person) may be registered in the EWS only or both in the EWS and CED, and communicated to the persons and entities listed in the above-mentioned Decision and Regulation, in relation to the award or the execution of a procurement contract or a grant agreement or decision. More information on the EWS and CED, can be found here:

http://ec.europa.eu/budget/sound_fin_mgt/ews_en.htm

or without financial contribution from Euratom), and the ‘coordinated calls’ mechanism, which allows the development and implementation of joint or coordinated projects resulting from a structured dialogue with the third country concerned. Collaborative activities will be encompassed within bilateral fission-related Cooperation Agreements, when appropriate.

(i) Euratom FP7 is open, at the project level and subject to acceptance by the consortia concerned, to the participation of entities from third countries or of an international organisation, in addition to the requisite minimum number of participants from EU Member States and Euratom Associated Countries. The guiding principle for international cooperation is mutual benefit, which leads to sharing the cost of the cooperation. Exceptionally, an international organisation or a legal entity established in a third country may be granted a Euratom financial contribution, but only if at least one of the following conditions is satisfied:

- provision is made to that effect in the Specific Programme or this work programme;
- the participation is essential for carrying out the action;
- such funding is provided for in a bilateral Euratom agreement or any other relevant arrangement between the Community and the country in which the legal entity is established.

Several topics have been specifically highlighted as being research areas which are particularly well suited for international cooperation. For these topics, the active participation of a relevant third country partner or partners should add to the scientific and/or technological excellence of the project and/or lead to an increased impact of the research to be undertaken. These aspects will be considered specifically during the evaluation of all topics concerned by international cooperation.

(ii) A structured dialogue may be established to define areas and subjects of mutual interest that could lead to the organisation of coordinated calls. Again, the guiding principle in such cases is the sharing of costs of cooperation. This was considered the most appropriate mechanism to promote enhanced cooperation with Russia, and was used by the Euratom-ROSATOM Working Group on cooperation in nuclear fission research to select the subjects of mutual interest for inclusion in the 2009 call. Following the signature of a bilateral nuclear R&D cooperation agreement, a similar approach has been employed with China to identify topics for inclusion in this and later calls, and will possibly be used with other third countries in the future.

(iii) International cooperation activities could also cover the twinning of projects or, where appropriate, the invitation of third country representatives, on an ad hoc basis, to some projects meetings, conferences or training actions. This process may suit, in particular, those developing countries having declared an interest in recourse to nuclear power in the future and thereby help them build their science and education base. Limited funding for participation of representatives from these countries may be earmarked in the project budgets during the negotiation phase

(iv) Cooperation between Euratom and the OECD/NEA and IAEA in nuclear fission research and training should build on the established competences of these international organisations, in particular the accumulated historical knowledge tracking nuclear development over recent decades. The IAEA might also play an important support role in fostering cooperation between Euratom and countries not yet having a fully developed nuclear infrastructure.

I.4 Cross-Cutting Issues

Whenever possible, synergies will be exploited between fission and fusion research within the Euratom programme, as well as between the Euratom and EC Specific Programmes. Interactions between the different activities should be adequately accommodated. In particular, the proposed Energy Research Alliance introduced in the SET-Plan could be a platform to promote energy-enabling technologies.

I.5 Submitting a Proposal

There are significant differences between the management and funding of the two themes. In the theme Fusion Energy the main funding schemes are through Contracts of Association between Euratom and national research organisations or bodies and multilateral agreements. Within these contracts and agreements an annual work programme is agreed and implemented. For this part of the fusion energy research programme there are generally no calls for proposals.

The content of the programme is described in §II.1 and details of any calls are provided in §III.1.

For the theme Nuclear Fission and Radiation Protection, the details of the activities and topics are presented in §II.2, and §III.2 provides information on the corresponding call(s) for proposals.

Proposals should be submitted under the terms of a call(s) for proposals set out in §III. In order to submit a proposal, a proposer should consult the following:

- this work programme;
- the relevant call for proposals as published on the CORDIS website following the announcement of the publication in the *Official Journal of the European Communities*;
- the relevant Guide for Applicants.

These and a number of other useful texts, including the rules for participation, are available on the CORDIS Website <http://cordis.europa.eu>. The latter should be consulted to ensure that the documents being used are the most recent. Some may be revised during the programme lifetime and even during the time a particular call is open.

For the first time, participants will have the possibility to use flat rates to cover subsistence costs incurred by beneficiaries during travel carried out within grants for indirect actions.

I.6 Evaluation Criteria and Related Issues

The ‘Guidelines on Proposal Evaluation and Project Selection Procedures’ describe the basic procedures to be followed by all programmes under FP7. The set of criteria and thresholds applicable to this work programme are given in Annex 1 and is applicable to actions as a result of calls for proposals and grants to identified beneficiaries⁶, unless indicated otherwise. Any complementary criteria or thresholds, if applicable, are clearly stated in the relevant part of

⁶ According to Article 12 and Article 13 (a) of Regulation No 1908/2006 of the European Parliament and of the Council of 19 December 2006 laying down the rules for the participation of undertakings, research centres and universities in actions under the Seventh Framework Programme of the European Atomic Energy Community and for the dissemination of research results (2007-2011) OJ L400 of 30.12.2006.

this work programme at the topic level. Furthermore, the work programme, and consequently its call(s) for proposals, may specify and restrict the participation of legal entities in order to take into account specific objectives of the Framework Programme.

When evaluating proposals received in response to a call, the Commission may opt to send the proposals to external experts or make proposals available by electronic means, so that experts can carry out their examination at home or their place of work.

For the fission call of this work programme, §III.2 provides indicative budgets for activities defined in the Specific Programme, or for areas or combinations of activities/areas, and explains how the ranked/reserve lists will be constituted.

I.7 Ethical aspects

All research carried out under this work programme must respect fundamental ethical principles, and the requirements set out in the text of the Euratom Specific Programme and Rules for Participation. More information on the procedures for the review, where appropriate, of ethical aspects of submitted proposals is given in the 'Guidelines on Proposal Evaluation and Project Selection Procedures'.

II. CONTENT OF PROGRAMME AND CALL(S) IN 2010

II.1 Fusion Energy

The content of the Fusion Energy programme has several facets covering the full range of funding schemes. These are:

- *European Joint Undertaking for ITER and the Development of Fusion Energy ('Fusion for Energy')* to discharge the responsibilities of the European Union towards the ITER Agreement and the Broader Approach activities;
- *Contracts of Association* which are bilateral contracts between research organisations or bodies in all the Member States or Euratom Fully Associated Third States and the Community. Some Contracts of Association will include activities of research institutes in more than one Member State (transnational research Units);
- *European Fusion Development Agreement* between all the Associates (signatories of a Contract of Association) to fully exploit the JET Facilities and possibly other fusion devices and coordinate the research activities, including training, carried out under the Contract of Association;
- *Other multi-lateral agreements*, such as the Mobility Agreement, that promote the collaboration and mobility of researchers between the different research organisation and facilities;
- *Human resources, education and training* which are supported through training and career development fellowships via EFDA through the Contracts of Association.
- *Coordination and Support Actions* aimed at strengthening the interfaces of the fusion community with related scientific and industrial communities.
- *International agreements* including those covering the construction and exploitation of ITER and the implementation of Broader Approach Activities;

The Commission pursues the programmatic objectives of the European fusion programme through the Euratom participation in the various governance bodies of the above agreements and organisations.

II.1.1 Activity: ITER International Organisation

The ITER Agreement was signed by the Parties in Paris on 21 November 2006, together with the agreement on its provisional application, and entered into force on 24 October 2007. The resources for the construction phase will be provided predominantly by contributions in kind. The procurement of the components to be provided in kind will be under the responsibility of the Member of the Organisation providing that component, acting through its Domestic Agency (see §II.1.3). The ITER Organisation will also receive contributions in cash from its Members. The ITER Agreement contains specific provisions for the Host Party EURATOM to make available or cause to be made available to the ITER Organisation the site in defined initial conditions and the support required for the implementation of the ITER Project.

As a first action of the newly formed ITER Organization, the ITER Members charged the newly appointed management to carry out a project Design Review ("the Design Review") to confirm or redefine the physics basis and requirements for the project and to confirm or alter the design of the major machine components. The resolutions of a number of unresolved points resulting from the Review (endorsed by the ITER Council at its meeting in Cadarache on 27–28 November 2007) were the subject of intensive work of the ITER Organisation and of the

Domestic Agencies during 2008. This work and its assessment already allowed to approve the Project Specification in June 2008 and is expected to be finalized end 2009 with the approval by the ITER Council of the ITER Base line (scope, schedule and costs) including the Project Plan and Resource Estimates.

For the finalisation of the schedule and the costs, the ITER Council agreed that the ITER Parties, the ITER Organization and the Domestic Agencies should carry out further work on – the finalisation of the design, the ITER Organization's estimated needs for additional resources, an overall planning for minimising costs and risks for the project implementation; all reasonable measures to improve management of the ITER Organization.

At the same time a first re-assessment of the Community contribution for ITER construction (entirely managed through F4E) has indicated a substantial increase of the resources needed. Therefore, additional work is on going to explore all possibilities for reduction and containment of the costs while maintaining the risk at an acceptable level. To ensure the success of the ITER project in general and European participation in it in particular, an in-depth analysis to ensure the European contribution is managed in an efficient, cost increase sensitive, financially sound and transparent manner will be undertaken.

Expected finalisation of the Baseline the realisation of the ITER project should result in a substantial acceleration in 2010.

The Euratom participation in ITER includes contributions to the construction of equipment and installations, which are within the perimeter of the ITER site and necessary for its exploitation, as well as to the costs associated with the staffing and management of, and the support to be given to, the project during construction including making available human resource to the ITER Organisation.

The site preparation activities, such as the site leveling and the construction works of the so-called annex buildings, were launched in 2007 and construction works will continue until the end of 2011. Procurements related to the buildings construction should be fully engaged as soon as independent assessment allows proceeding with procurement them. While implementation work on other major items in the critical path will continue in 2010 in order to avoid unnecessary delay, all possible cost reduction and containment measures will be pursued.

The Commission promotes and steers the Euratom participation in the ITER Project, in particular through the Euratom representation in the governance bodies of the ITER Organization and the relation with the ITER Host State.

The Euratom contributions to the ITER Project will be provided through the European Joint Undertaking for ITER and the Development of Fusion Energy ('Fusion for Energy' – 'F4E') established under Articles 45 – 51 Euratom Treaty (see chapter III.1).

II.1.2 Activity: Broader Approach activities

The Agreement between the European Atomic Energy Community and the Government of Japan for the Joint Implementation of the Broader Approach Activities in the Field of Fusion Energy Research ('the Agreement') was signed on 5 February 2007 in Tokyo.

The Agreement entered into force on 1st of June 2007. It comprises three large research projects to be jointly implemented, aiming at supporting the ITER project and at an early realisation of fusion energy as a clean and sustainable source of energy for peaceful purposes, and will be open to participation of other ITER Parties.

The three projects are 1) the Engineering Validation and Engineering Design Activities for the International Fusion Materials Irradiation Facility (IFMIF/EVEDA), 2) the International Fusion Energy Research Centre (IFERC), and 3) the Satellite Tokamak Programme. The first two projects will be carried out at Rokkasho; the third project will be carried out at Naka.

The Euratom contribution to the Broader Approach activities consist mainly of in-kind resources provided voluntarily by Member States (presently France, Italy, Spain, and Germany) and also by Switzerland (a Euratom Fully Associated Third State) which are coordinated and transferred through the Joint Undertaking. These contributions are made in the form of in-kind equipment, and staff for project teams in Japan. The remaining part is provided directly by the Joint Undertaking.

The Commission promotes and steers the Euratom participation in the Broader Approach Projects, in particular through the Euratom representation in its governance bodies, and the relation with the Contributing Members.

II.1.3 Activity: Programmes of the Associations

Through the Contracts of Association⁷, the Commission and the Associates (Member States and Euratom Fully Associated Third States through their fusion research laboratories and institutes or these entities as entrusted by them) carry out jointly activities within the thematic area "fusion energy research" within the 7th Community (Euratom) Framework Programme. Such activities are detailed in the Annual Work Programmes of the Associations, following a multi-annual Work Plan annexed to each Contract. This work focuses on the objectives of FP7, with an increased emphasis on activities in physics and emerging technology coordinated under EFDA. The activities co-ordinated under EFDA which are part of the Annual Work Programmes of the Associations are defined in accordance with the EFDA Work Programme and the corresponding work is executed in accordance with the relevant provisions of the EFDA and its Implementing Agreements. The additional support foreseen in the provisions (Article 8.2 and Article II.4a of the General Conditions) of the Contracts of Association and under EFDA is used to support priority actions which are urgent, which would not otherwise be undertaken, and which increase the level of coordination of the scientific programmes of the Associations. The contribution of the Associations to the EFDA Work Programme will include the joint scientific exploitation of the JET facility, aimed at urgent tasks for ITER, as well as other ITER-relevant R&D. Facility upgrades will be eligible for priority support when they contribute to such activities and after recommendation through EFDA. The training and career development of scientific and technical personnel, the dissemination of results and the diffusion of information to the public will be an integral part of the activities of the Associations. This will include exchange of information through conferences, seminars, workshops, scientific and technical meetings, publications and other actions to promote technology transfer.

⁷ See Articles 51 and 52 of Chapter IV of the Euratom Rules for Participation.

The Associations' activities are programmed annually and the content of activities and facilities eligible for funding in 2010 will be adapted following the comprehensive review of facilities carried out in 2008. The recommendations of the review panel will be used as the basis for setting priorities, in particular with regard to the range of facilities which should continue to be supported. .

The changes will be incorporated in revised Work Plans in the Contracts of Association, which will reflect the need to focus on urgent R&D for ITER, with limited support for activities aimed at the longer term reactor and power plant issues.

II.1.4 Activity: Association Programme within the European Fusion Development Agreement (EFDA)

EFDA is a multilateral framework partnership agreement which coordinates, at European level, the research activities carried out under the bilateral Contracts of Association.

Following the conclusion by the Community of the ITER agreement and the establishment of the European Joint Undertaking for ITER and the Development of Fusion Energy ('Fusion for Energy'), the scope and procedures of EFDA have been adapted to the new international and European framework of the thematic area "Fusion energy research", as stated, in particular, in point 2 of the Annex to the Euratom Specific Programme. Under FP7 EFDA covers the following interrelated activities, which will complement those carried out by 'Fusion for Energy':

- I. Coordinated activities in physics and emerging technology;
- II. The collective use of the JET facilities through the JET Operation contract and the JET orders and notifications;
- III. Training and career development fellowships for researchers, promoting links to universities and carrying out support actions for the benefit of the thematic area of research "fusion energy";
- IV. The European contributions to international collaborations except those within the scope of the 'Fusion for Energy'.

These activities are further described in a multi annual Work Plan.

The dominant activity for JET in 2010 will be the completion of major enhancements of the JET machine, the most important of which is the installation of an "ITER-like" inner wall. Much of the work, supervised by the EFDA Close Support Unit, will be carried out by the JET Operator with contributions from a number of the fusion Associations. The High Performance Computer for Fusion, acquired with the aid of Community priority support, is a significant research infrastructure for the programme. It will be used collectively in 2010 by the Associations in pursuit of the objectives of the programme, under an Implementing Agreement managed by EFDA. This Agreement provides for access to the facility for all Associations. The funding constraints of the current Euratom Framework Programme necessitate careful examination of all possibilities for cost containment of the JET programme, including an analysis of its funding scheme with due regard to the scientific objectives. In this respect the fusion Associates will also be called upon to consider a greater contribution to the exploitation of the upgraded JET machine.

Activities I to III are mirrored, as regards their implementation, in specific provisions of the bilateral Contracts of Association. The scope and volume of work on DEMO technologies is expected to be gradually increased, once the ITER construction programme is well underway.

In 2010, the EFDA Work Programme will identify priority areas where joint training actions will be launched. Up to 40 trainees (ppy/year) will be trained over three years. This training will receive up to 40% Community contribution via the Contracts of Association.

To provide encouragement for excellence and career development fellowships, up to 10 exceptional candidates and research topics per year will be identified via the appropriate EFDA procedures. These candidates will be eligible for Community support as defined in §III.1 via the Contracts of Association for a period of 2 years per researcher.

A Support Action under EFDA for the provision of essential services relating to the “Fusion Expo”, an itinerant exhibition presenting various aspects of fusion research, will be renewed in 2010. Another Support Action under EFDA will be launched for the provision of essential services to the Integrated Tokamak Modelling task force (ITM-TF), in particular for the support and development of its simulation infrastructure.

The activities supported under EFDA during 2010 are further defined in the EFDA Work Programme.

II.1.5 Activity: Mobility of researchers

The Mobility Agreement sets the framework for supporting the mobility of the researchers and trainees from the organisations participating in the programme, in order to promote enhanced coordination and integration of the programme, and to foster international cooperation. Synergy and complementarity with other themes will be highlighted. The Mobility Agreement will be used to support:

- cooperative work of the Associations;
- participation in EFDA coordinated activities;
- participation in activities in support of ITER and the Broader Approach projects;
- promotion of European contributions to international cooperations.

The Mobility Agreement, amended in 2009 to provide clearer focus on coordinated activities and international cooperation, will cover the remainder of the Framework Programme.

II.1.6 Activity: Training and career development fellowships and support actions

These activities are included in the Work Programmes of the Associations as activities to be carried out under EFDA (§ II.1.4 above).

II.1.7 Activity: Other activities

The effort to stimulate the involvement of European industry in fusion for the long-term strategic interest of Europe will be extended in 2010. A framework for the management of knowledge in the fusion programme (protection and licensing of Intellectual Property, dissemination, technology transfer, etc), developed in 2009, will be implemented.

II.2 Nuclear Fission and Radiation Protection

The activities, areas and topics are presented and described so as to better reflect the strategic orientations of the research and training actions to be funded, as defined by the Strategic Research Agendas of SNE-TP (Sustainable Nuclear Energy Technology Platform), MELODI (Multidisciplinary European Low Dose Initiative, as laid out by the 'High Level Expert Group on Low Dose Risk Research' – HLEG) and IGD-TP (Implementing Geological Disposal Technology Platform), and the objectives of the SET-Plan and associated European Industrial Initiative in sustainable nuclear fission (generation-IV), where these are consistent with, and complement those in, the Euratom Specific Programme. At the time of preparing this work programme 2010, the results of the call and evaluation 2009 are not yet known. It may therefore become necessary to amend the present work programme in autumn 2009, before publication of the call in November, in order to better reflect priorities following the 2009 evaluations and other important events and developments expected during the intervening months (outcomes from the FISA2009 conference, priorities emerging from processes within SNE-TP or the EERA, further discussions with Chinese partners regarding cooperation activities, etc.).

Depending on the strategic nature of the research and training actions, the *expected impact* may be defined at the level of the activity, area or specific topic. Usually a maximum of one project will be considered for funding per topic. Where more than one project per topic may be considered for funding, the *funding scheme(s)* for that topic is/are indicated in the plural; in such cases, the number of possible funded projects may be limited (i.e. a maximum greater than one is specified for that topic).

Note: Limits on the EC financial contribution apply in all topics. These are implemented strictly as formal eligibility criteria. The limits are either specific and indicated at the level of the topic, or generic and mentioned in the call fiche (section III.2, 'Eligibility conditions').

II.2.1 Activity: Management of Radioactive Waste

II.2.1.1: Geological disposal

- ***Expected impact:*** Contribution to the progress towards the implementing of geological disposal in line with the Vision Report and initial roadmaps of IGD-TP and the 2020 objectives of the SET-Plan, together with significant advances in the treatment and/or understanding of key remaining issues. In particular, this should lead to demonstrable improvements in robustness of associated performance and safety analyses, and ultimately to increased confidence in the safety case as it relates to specific scientific/technical fields or physical components of a repository system, and/or foster the necessary cooperation and joint strategic planning necessary to bring about such advances.

Topic: Fission-2010-1.1.1: In-situ demonstration of repository concepts and technologies in Underground Research Laboratories. The aim is to demonstrate in situ in host rock formations the technical feasibility of one or more disposal concepts in compliance with the long-term functional and safety requirements. Focus should be on testing and improving methods, equipment, technologies, processes or operability related to the construction, operation or closure of a repository system (e.g. excavation and associated lining and supporting techniques; methods, technologies or equipment for emplacement of waste, engineered barriers, backfill or sealing systems). In particular with a view towards confidence

building among decision makers and the public, wide dissemination of information should be foreseen, including critical and integrated analyses of the achievements and results for the chosen concept(s) (approach, methods, and technologies per host rock). A common strategy for dissemination to and communication with key stakeholders (political, governmental, regulators, media, NGOs, public) should be developed and implemented. The organisation of at least one international workshop or conference with publication of proceedings is a requirement. **Funding scheme:** Maximum one large-scale and/or up to three small or medium-scale Collaborative Project(s). If the large-scale Collaborative Project includes three or more distinct disposal concepts, the maximum Euratom contribution could be raised to EUR 9 million. A maximum of three projects in total will be funded; if two or more are funded, measures will be imposed during negotiation to ensure effective clustering.

Topic: Fission-2010-1.1.2: Research activities in support of implementation of geological disposal. In line with the requirements of the SET-Plan, the Vision Report and/or Strategic Research Agenda (SRA) of the embryonic Implementing Geological Disposal Technology Platform (IGD-TP), or key issues identified at the Euradwaste'08 conference, support will be provided for activities addressing topics on the critical path for the implementation of geological disposal in Europe (either technical or non-technical, providing within scope of the Specific Programme). The most advanced national programmes are not the only to be targeted, and proposals are equally welcome that address the needs of less advanced programmes providing there is still an implementation focus. Proposals will not be welcome in areas already considered adequately covered by past or on-going research, or by actions funded following the 2009 call. Demonstration proposals should be submitted under topic Fission-2010-1.1.1. It is viewed that the active participation of relevant partners from third countries should add to the scientific and/or technological excellence of some projects and/or lead to an increased impact of the research to be undertaken; this will be considered by the evaluators. **Funding scheme:** Small or medium scale Collaborative Projects and/or Coordination and Support Actions (coordinating or supporting).

II.2.1.2: Partitioning and transmutation

In this work programme, actions in this area are within scope of topic Fission-2010-2.3.1.

II.2.2 Activity: Reactor Systems

II.2.2.1: Safety and competitiveness of existing and future nuclear installations

- **Expected impact:** Actions must help the EU to take a leading harmonised position in residual lifetime prediction, in order to assist decision making in this area regarding both existing and future reactors. Ultimately, this should lead to the development of common approaches and practices for plant safety and lifetime management at EU level in line with the overall strategy being developed within NULIFE and SNE-TP, and in order to contribute to the 2020 objectives as outlined in the SET-Plan. Actions are expected to contribute to the competitiveness of European industry in this field.

Topic: Fission-2010-2.1.1: Ageing of non-metallic NPP components. The aim of this action is a better understanding of the ageing of non-metallic components, the assessment of the impact of this ageing on lifetime assessment and the elaboration of remedial actions or solutions in the perspective of lifetime management. Proposals can cover one or more types of component/material, e.g. concrete, cables, polymers, I&C in general, etc. Significant participation of and contribution by industrial partners and utilities will be required. It is viewed that the active

participation of relevant partners from third countries should add to the scientific and/or technological excellence of the project and/or lead to an increased impact of the research to be undertaken; this will be considered by the evaluators. **Funding scheme:** Maximum one small or medium-scale Collaborative Project.

II.2.2.2: Advanced nuclear systems for increased sustainability

In this work programme, actions in this area are within scope of topic Fission-2010-2.3.1.

II.2.2.3: Cross-cutting aspects for nuclear systems

- ***Expected impact:*** In line with the Strategic Research Agenda / Deployment Strategy of SNE-TP, demonstrable progress towards improved safety and competitiveness of existing and future nuclear installations, or towards development of advanced nuclear systems for increased sustainability / non-electrical uses of nuclear energy. Actions are also expected to contribute to the competitiveness of European industry in these fields, in particular as part of efforts coordinated under the SET-Plan.

Topic: Fission-2010-2.3.1: R&D activities in support of the implementation of the Strategic Research Agenda of SNE-TP⁸. R&D activities to initiate, design and develop ideas, projects or programmes, or to perform supporting research, in line with the Strategic Research Agenda (SRA) of SNE-TP (www.snetp.eu) published in early 2009 and, if possible, according to the prioritisation in the allied Deployment Strategy or other agreed SNE-TP strategy statement. All subjects within scope of both the SRA and the Specific Programme can be proposed, except those for which a specific topic exists in the current work programme or considered adequately covered in past or on-going Euratom research (but see also comments in II.2.2.4). In this context, cross-cutting refers either to the nature of the research (i.e. applicable to more than one nuclear system) or to the interest from a broad range of stakeholders and national programmes; in any case, priority will be given to those areas most amenable to a genuine collaborative effort within Europe. Significant participation of national and/or industrial stakeholders is expected. It is viewed that the active participation of relevant partners from third countries should add to the scientific and/or technological excellence of some projects and/or lead to an increased impact of the research to be undertaken; this will be considered by the evaluators. **Funding scheme:** Collaborative Projects (either small or medium-scale, or large-scale).

Topic: Fission-2010-2.3.2: Coordination and support of Euratom contribution to GIF. As part of Euratom involvement in GIF (Generation-IV International Forum), coordination of Euratom stakeholders/contributors and GIF contributions is required, as well as support towards the participation of these contributors in the range of GIF meetings and events (where no other source of funding is available and/or appropriate). Close cooperation with Euratom's GIF Implementing Agent is necessary. **Funding scheme:** Maximum one Coordination and Support Action (coordinating or supporting; small-scale action only).

⁸ Within the framework of the Generation IV International Forum (GIF), Euratom and the other GIF members are committed to providing scientific contributions to the various GIF Project Arrangements set up under the six selected GIF systems. Euratom FP projects are potential major Euratom contributors to GIF, and projects concerned should therefore identify deliverables that can form part of this contribution. Individual project contributions should be agreed during the negotiation phase and made available to Euratom, through the terms of the Grant Agreement, in order that JRC, the Euratom Implementing Agent for GIF, can fulfil its obligations.

Topic: Fission-2010-2.3.3: Materials research. The European Energy Research Alliance (EERA), set up under the Community Strategic Energy Technology Plan (SET-Plan) intends to launch a Joint Programming Action on (nuclear) materials. Support will be provided to coordinate this activity in order to optimise its effectiveness and efficiency. Participation of involved EERA institutions is essential, together with any other key stakeholders in the development/qualification of materials for nuclear energy applications. In the event that, by the time the present call is opened, the EERA initiative is advanced enough and areas where European action necessary to assure critical mass have already been identified, then proposals would be welcome that include support for actual R&D activities in these areas providing that the coordinating function is maintained. **Funding scheme:** Maximum one Coordination and Support Action (coordinating) or one Collaborative Project (either small or medium-scale, or large-scale) with a significant networking component.

II.2.2.4: Advanced systems for non-electrical uses of nuclear energy

In this work programme, actions in this area are within scope of topic Fission-2010-2.3.1. Only generic or cross-cutting V/HTR-related issues, such as interface of nuclear with conventional plant, helium technology etc., would be welcome in the present call. An action consolidating/reinforcing the European contribution towards international demonstration could also be proposed provided that the required international consensus exists. Depending on the outcome of the EUROPAIRS Coordination Action, a call for a dedicated project may be included in a subsequent work programme.

II.2.3 Activity: Radiation Protection

II.2.3.1: Quantification of risks for low and protracted exposures⁹

- **Expected impact:** Significant optimisation of the protection afforded to the workforce and public as a result of improvements to regulatory regimes following the resolution of one or more key identified issues in radiation protection research.

Topic: Fission-2010-3.1.1: Contribution to low-dose risk research in Europe. The 'High Level Expert Group on Low Dose Risk Research' (HLEG, www.hleg.de) has identified a number of key issues, for example the shape of dose-response relationships and tissue sensitivity for cancer, individual variability in radiation sensitivity, health effects of different radiation quality types, risks from internal exposure to radiation, and non-cancer effects of radiation. Research should focus on those areas/directions identified and prioritised by the HLEG as the most promising in terms of addressing/resolving key policy questions. A multi-disciplinary approach will be required aiming to assess health effects through integration of radiobiological research and epidemiological studies of groups exposed to low doses in order to better substantiate conceptual/computational modelling assumptions. It is essential to include interfaces with the broader (i.e. non-radiation) biological and epidemiological communities that can bring new ideas or methodologies to radiation protection research. Any successful proposal will strictly avoid duplication of past and on-going research. **Funding scheme:** Maximum one large-scale or two small or medium-scale Collaborative Project(s).

⁹ This is to be interpreted as exposures typically encountered in the workplace, the environment and in the use of radiation in medicine for diagnostic purposes.

II.2.3.2: Medical uses of radiation

- ***Expected impact:*** The optimisation of doses to patients (in particular paediatric) in clinical practice through improving knowledge and perfecting imaging practices and techniques, including in nuclear medicine.

Topic: Fission-2010-3.2.1: Optimisation of doses from new technologies in medical imaging. With the development of new imaging technologies (CT, PET, SPECT or combinations), the European population is exposed to increasing doses of ionising radiation. Though these are still in the range of low doses, repeated procedures may lead to significant cumulative doses to patients. This is of particular concern in paediatric radiology. There is a need to assess the related risk from the use of such imaging technologies and balance it with the expected benefits. This increased knowledge on radiation doses during medical examinations and related risks is a topic identified as a priority by the 'High Level Expert Group on Low Dose Risk Research' (HLEG, www.hleg.de). Involvement of clinicians, manufacturers, epidemiologists, dosimetrists, biologists and radiobiologists is essential in order to better substantiate the conceptual models that may ultimately be used for dose optimisation. Any successful proposal will strictly avoid duplication of past and ongoing research. It is viewed that the active participation of relevant partners from third countries should add to the scientific and/or technological excellence of the project and/or lead to an increased impact of the research to be undertaken; this will be considered by the evaluators. **Funding scheme:** Maximum one small or medium-scale Collaborative Project.

II.2.3.3: Emergency management and rehabilitation

- ***Expected impact:*** More efficient and effective emergency response through the establishment of a sustainable operational framework on emergency and post-accident preparedness and management that includes all concerned parties, ensures appropriate and timely information exchange and raises awareness amongst these stakeholders of the measures and reporting infrastructure in place, thereby increasing general confidence.

Topic: Fission-2010-3.3.1: European platform on emergency and post-accident preparedness and management. Major improvements have been achieved in emergency and post-accident management in Europe in recent years, in particular in decision support tools and in methods for information and data exchange. In parallel, participative governance processes have been initiated in several countries to foster cooperation between national and international experts and local stakeholders to develop and support territorial projects related to emergency preparedness and post-accident management. The project will support the creation of a European platform on emergency preparedness and post-accident management with two objectives. The first is to establish a network to achieve a critical mass to further improve current national approaches, to minimise duplication of effort between countries, to address new and emerging challenges, including the new approach of ICRP with regard to the management of emergency and existing exposure situations introducing reference levels, and to maintain an international programme. The second is to address urgent needs in information exchange through the development of a Web-based tool that allows the exchange of information between national authorities by coupling the ECURIE early warning system with a European Decision Support System to improve their assessment capabilities. To carry out calculations for any location inside or outside Europe (i.e. not limited to nuclear installations), it is also necessary to develop a model chain ranging from global weather data, which are freely available, to local weather data. **Funding scheme:** If only the first objective above is

addressed, maximum one Coordination and Support Action (coordinating), if both objectives are addressed, maximum one small or medium-scale Collaborative Project (maximum Euratom contribution EUR 1.5 million) with a significant networking component.

II.2.3.4: Malevolent uses of radiation or radioactive material

No topics in 2010 call.

II.2.3.5: Other topics: national research activities in other areas

- ***Expected impact:*** Sustainable integration of organisations and institutes involved in radioecology research, including a more efficient and effective integration of resources and capacities at European level thus contributing to the establishment of a true European Research Area in this field, and more effective treatment of the related challenges, thereby providing the scientific support for key regulatory and political questions identified by the 'High Level Expert Group on Low Dose Risk Research' (HLEG, www.hleg.de).

Topic: Fission-2010-3.5.1: An integrated approach to radioecology research in Europe.

Maintaining and enhancing competences in radioecology at the European level is a necessity in order to keep a high level of expertise in the field of the assessment of the impact of radioactivity on man and the environment, in particular as a result of the renewed interest in nuclear power. The project should implement a joint programme of activities (JPA) covering: (i) a programme of research activities focused on improving the understanding of mechanisms and processes affecting the behaviour of radionuclides in ecosystems, populations and organisms, thereby closing gaps in current knowledge regarding effects of low doses on the environment and making the important bridge with the overall research effort looking at the effects on man; (ii) the joint use and development of (new) infrastructures; (iii) a shared strategy for long-term training & mobility and its implementation; and (iv) advanced tools for the dissemination of knowledge. An effective management and governance structure will be essential. The successful proposal will require effective links with research teams in biology, radiobiology and ecology in order to enable conceptual and numerical models to be substantiated that will ultimately be used for dose reduction and increased protection of the environment and, ultimately, man. **Funding scheme:** Maximum one Network of Excellence (maximum Euratom contribution EUR 4.0 million).

II.2.4 Activity: Infrastructures

II.2.4.1 Supporting infrastructures

No topics in 2010 call.

II.2.4.2 Access to infrastructures

- ***Expected impact:*** Optimised use of existing nuclear research infrastructures in Europe in all activities of the programme and facilitated access to these infrastructures by researchers throughout Europe and from 3rd countries.

Topic: Fission-2010-4.2.1: Transnational access to large infrastructures. Community support will be provided to cover costs of Transnational Access to Large Infrastructures (TALI) for researchers from Member States and Associated States, other than the state where the infrastructure is established, in order to promote access for researchers to infrastructures

that provide essential and unique services to the European research community. Access to researchers from 3rd countries could also be envisaged, where such access is part of the promotion of broader international cooperation with the countries concerned. The active participation of major infrastructure operators and potential users will be required to achieve the objectives. **Funding Scheme:** Coordination and Support Actions (supporting).

II.2.5 Activity: Human Resources, Mobility and Training

II.2.5.1: Training & mobility of research workers

A significant part of the support for human resources, mobility and training will be implemented by encouraging the embedding of this support within the Networks of Excellence, Collaborative Projects and, where appropriate, other actions. It is considered that 5% of the total project budget should be dedicated to these activities. Projects in all areas are therefore encouraged to develop a comprehensive ‘training and (trans-national) mobility’ package. Proposals for large Collaborative Projects and Networks of Excellence will in particular foresee a dedicated budget for:

- The development and delivery of training courses in the subject matter of the project. These courses will be widely announced (preferably posted on the ENEN Website) and open also to non-participating organisations, including, where appropriate, from 3rd countries as an element of international cooperation (see section I.3). This might take place in collaboration with the IAEA. A fee may be requested for attendance. A limited budget, however, should be foreseen to support the attendance costs (fee and travel) for participants from developing countries. This will be organised with the help of Commission services
- The exchange of research workers aiming at improving synergies between private and public research organisations at international level. A part of the research undertaken in the project will be executed by researchers preparing a doctoral thesis or employed on a post-doctoral position. More use should be made of the funding instruments provided by national and international programmes (e.g. Erasmus Mundus of the Education, Audiovisual and Culture Executive Agency EACEA).

In addition to the above embedded training and mobility activities, proposals for dedicated *Euratom Fission Training Schemes* (EFTS) can be submitted under the following topic, in particular in areas where a shortage of skilled professionals is identified. An EFTS is aimed at structuring research training and career development across the EU, targeting research workers at post-graduate or equivalent level, e.g. from doctoral students to senior visiting scientists, and is a long-term and ambitious programme spread over many years.

- ***Expected impact:*** Through effective coordination at Community level, EU added value as a result of: the establishing of public-private partnerships recognised as international scientific references and training schemes and/or doctoral schools spread over many years and many countries; maximising the transfer of higher-level knowledge and information on technology catering for young as well as experienced research workers; increasing the attractiveness of nuclear research careers across the EU and strengthening links with other Community policies and training networks outside the EU.

Topic: Fission-2010.5.1.1: Euratom Fission Training Schemes (EFTS) in nuclear energy and radiation protection. An EFTS should encourage the involvement of young researchers, address life-long learning and career development of experienced researchers, maximise

transfer of higher-level knowledge and technology with emphasis on multi-disciplinarity, trans-national and inter-sectoral mobility of trainees as well as trainers (e.g. industry-academia partnerships across the EU), use a systematic approach to higher-level training (e.g. analysis, design, development, implementation and evaluation) and develop best practice guidelines on the basis of the lessons learned. The ENEN approach, relying on the principles of (i) modularity of courses and common qualification criteria, (ii) common mutual recognition system, (iii) facilitation of mobility for trainers and trainees across the EU, and (iv) feedback from the ‘future employers’ from public or private sectors, should also apply to EFTS. For this purpose, a *European Passport for Continuous Professional Development* should be developed. Proposals for EFTS should be submitted by networks of (host) organisations, consisting of academia and ‘future employers’. ‘Think tank’ activities should be organised (for instance in line with the strategy of SNE-TP, IGD-TP or MELODI) with the aim to anticipate future training needs and to support policies for the creation of an ‘internal market’ of nuclear research workers. An EFTS should consist of a mix of collective and/or individual courses and internships addressing a variety of profiles as appropriate (from young recruits to top managers). The drafting and co-funding of co-authored textbooks at higher education level should take place under the control of an international review committee. It is viewed that the active participation of relevant partners from third countries or international organisations should add to the scientific and/or technological excellence of the project and/or lead to an increased impact of the research to be undertaken; this will be considered by the evaluators. Any applied or basic science theme within scope of Euratom FP7 (fission and radiation protection) can be proposed provided it is not already the subject of an EFTS from the 2008 or 2009 call. Euratom funding will principally be for the coordination and networking aspects, i.e. scientific secretariat, implementation of joint training programmes, organisation of training events (for example, on the occasion of international conferences), mobility of trainers and trainees, access to research and training facilities, etc. Other funding sources should be used to pay the grants for individual fellowships (e.g. governmental actions at regional, national and international level, including other Community policy actions). The active participation and contribution of ‘future employers’, i.e. representatives of system suppliers, energy providers, safety authorities and TSOs, users of ionising radiation in medicine and industry, waste management agencies, etc., is essential. **Funding scheme:** Maximum of three Coordination and Support Actions (coordinating).

II.2.6 Activity: Cross-Cutting Actions

- ***Expected impact:*** To help fulfil strategic objectives of the programme (dissemination, ERA, future actions) through support for bottom-up actions.

Topic: Fission-2010-6.0.1: Actions supporting programme implementation and other activities. The topic covers the promoting and facilitating of communication and dissemination, contributing to achievement of strategic objectives (e.g. pilot initiatives on benchmarking, mapping, networking, etc.) and preparation of possible future Community actions (e.g. prospective studies, exploratory measures, pilot actions, etc.). Events such as annual workshops and conferences are not covered if they would take place anyway without Commission support and the action does not demonstrably serve strategic objectives. **Funding Scheme:** Coordination and Support Actions (supporting).

II.2.7 Activity: Cooperation with Third Countries

A structured dialogue has been established with China under the auspices of a Euratom-China bilateral agreement on nuclear R&D cooperation, including the setting-up of a Working

Group on fission / radiation protection R&D.

At the Euratom-China stakeholder seminar held in China in February 2009, a number of subjects were identified as suitable for possible enhanced cooperation on the basis of mutual interest and benefit. A number of avenues exist for furthering this cooperation, depending on the particular subject of interest. In those subjects in which Euratom projects are currently in progress, Chinese partners are encouraged to join either the existing consortia or, where appropriate, the end-user groups established within the Euratom projects. In either case, the decision on whether to admit Chinese partners rests with the existing consortia. For those subjects covered by topics in sections II.2.1-II.2.5 of the current work programme 2010, cooperation with Chinese organisations is welcome but not obligatory; topics of particular interest are listed under case A below. For those subjects not covered by topics in these previous sections, a number of additional topics are listed under case B below; for these topics cooperation with China is obligatory and constitutes an eligibility criterion. In both cases A and B, Chinese organisations would be welcome to join the Euratom consortia as full project partners (normally at zero cost to Euratom unless the appropriate case can be made for reimbursement of costs of 3rd country partners), or alternatively two administratively separate projects ('coordinated' or 'parallel' projects) could be established, each set up according to the respective rules and procedures, but strongly coupled via a Coordination Agreement (based on the format of a Consortium Agreement) to be signed by all partners engaged in the cooperative action. Euratom will only reimburse costs of partners in the Euratom project. The implementation will be monitored by the Euratom-China Working Group.

In the case of coordinated projects, the Coordination Agreement should deal with issues such as IPR arising between the partners of the two projects, in an analogous way to the functioning of the Consortium Agreement in the case of a normal Euratom project. With the aid of specific legal advice if necessary, the EC services will also examine any underlying generic issues.

During the preparation of the Euratom proposals to be submitted under the current call, it is the responsibility of the Euratom proposal coordinators to make contact with the appropriate Chinese organisations. In the event that coordinated projects are chosen as the most appropriate mechanism, the Euratom partners will work with their Chinese counterparts to develop the separate Euratom and Chinese proposals, as well as the coordination mechanism. In such cases, the Euratom proposals should contain information on the scope of work to be carried out in the corresponding Chinese project and on the coordination mechanism to be used. This information will be taken into consideration by the Euratom experts when evaluating the Euratom proposals, under evaluation criterion 1 (S/T quality – in assessing the scope of the work) and under evaluation criterion 2 (Management – in assessing the effectiveness of the coordination mechanism).

All translations will be the responsibility of the projects, and this should be taken into account in the preparation of proposals. All activities will be monitored by the Euratom-China Working Group, which will also consider actions for inclusion in subsequent Euratom work programmes.

- **Expected impact:** Added value in terms of better use of resources, a deeper understanding of shared problems, more effective cross-fertilisation, the development of common modes

of work and the agreement on common basis approaches to safety and design.

A) Subjects in which cooperation is welcome

In the following subjects, cooperation may be included as an element of the proposals replying to the thematic topics indicated. If such cooperation activities are included, either as part of a single Euratom action (for instance as a separate work package), or as 'coordinated projects' (see above), then due consideration will be taken of the above additional expected impact. However, proposals will not be penalised during the evaluation if no such cooperation activities are included.

- **Research activities in support of implementation of geological disposal:** See Fission-2010-1.1.2
- **Ageing of non-metallic NPP components:** See Fission-2010-2.1.1
- **Optimisation of doses from new technologies in medical imaging:** See Fission-2010-3.2.1
- **Transnational access to large infrastructures:** See Fission-2010-4.2.1
- **Euratom Fission Training Schemes (EFTS) in nuclear energy and radiation protection:** See Fission-2010.5.1.1 (and also Fission-2010-7.0.1 below)

B) Topics for which cooperation is essential (eligibility criterion)

Topic: Fission-2010-7.0.1: Cooperation in nuclear education and training. Development of common ground for cooperation in nuclear education, training and knowledge management. The purpose is to define a common basis to allow effective cooperation on nuclear education and training between the European network (e.g. ENEN) and a Chinese network, preferably containing a maximum of nuclear fission organisations. The work should start by analysis of the present situation on both sides, define opportunities and barriers for cooperation, test solutions through pilot exercises and define a roadmap for expansion of the cooperation. **Funding scheme:** Maximum one Coordination and Support Action (coordinating; maximum Euratom contribution EUR 0.5 million).

Topic: Fission-2010-7.0.2: Reliability of programming for automation. Software reliability and verification and validation (V&V) of safety-related software of Gen-II and Gen-III NPPs. The objective is to quantify the reliability of safety-related software, set up the procedures for the architecture, design, development, testing, acquisition, use, and maintenance of this software, and establish the guidelines for V&V. **Funding scheme:** Maximum one small or medium-scale Collaborative Project (maximum Euratom contribution EUR 1.0 million).

Topic: Fission-2010-7.0.3: SCWR fuel qualification test¹⁰. In the area of fuel for a supercritical water reactor, the objective of this action is to make significant progress towards the design, analysis and licensing of a fuel assembly cooled with supercritical water in a research reactor. **Funding scheme:** Maximum one small or medium-scale Collaborative Project (maximum Euratom contribution EUR 1.5 million).

¹⁰ The footnote in topic Fission-2010-2.3.1 concerning GIF-related proposals may apply.

III. IMPLEMENTATION OF PROGRAMME AND CALL(S) IN 2010

III.1 Fusion

Activities under the thematic area 'Fusion energy research' will be implemented on the basis of procedures and rules for dissemination and use set out in the following funding schemes with the indicative budget shown in the table "Euratom Budgetary Overview 2010".

International agreements

International agreements relate to cooperation with third countries, or any legal entity which may be established by such an agreement, in particular the ITER Agreement.

Contributions to that ITER project and to the Broader Approach projects will be provided by 'Fusion for Energy' as domestic agency for the contribution of Euratom to ITER and as implementing agency for the contribution of Euratom to Broader Approach projects.

International cooperation will also continue for existing bilateral Cooperation Agreements in force between Euratom and Switzerland, Japan, U.S.DOE, Russia, Ukraine, Kazakhstan and South Korea. Further to the collaborative activities of Fusion Associations and EFDA with entities from the aforesaid third States, also other collaborations on specific programmes and projects will be carried out on a bilateral basis, so that the Euratom Cooperation Agreements will integrate all those activities.

In this respect, those Euratom Cooperation Agreements represent the framework encompassing all cooperative activities between Euratom and fusion entities from third States, and will continue to be an important instrument to facilitate the decision-making process at international level.

The focused objective of the Euratom Cooperation Agreements is to develop co-operation on activities in support of or complementary to ITER. In this line, with the start of new agreements to be concluded in 2009 (with Brazil, China and India), Euratom will have bilateral Co-operation Agreements with all the ITER Parties.

Multilateral cooperation will include participation in the IEA, IAEA and ITPA frameworks, as well as in other frameworks referred in section I.3. The funding of these activities will be through the Contracts of Association, EFDA and the Mobility Agreement.

The European Joint Undertaking for ITER and the Development of Fusion Energy 'Fusion for Energy'

Following the expected finalisation by the end 2009 of a new ITER Base Line, in 2010 the Procurement Arrangements for most of the major components will be signed between the ITER International Organisation and the Joint Undertaking. This will initiate the process for the related calls for tender for major procurements together with the launching of major R&D activities to finalize design of components on the critical path.

In 2009 the activities of the Joint Undertaking 'Fusion for Energy' (F4E) are mainly focused on providing support (through specific R&D and design tasks) to the ITER Organisation for the finalisation of the ITER design and on the launching of the calls for tender for the initial

steps (design, purchase of materials) to implement the first 3 procurement arrangements signed in 2008 (the Toroidal Field (TF) conductors, the TF Coils, the Poloidal Field (PF) Coil winding building). In 2010 the finalization of calls for tender for the construction of components for the implementation of these first 3 procurement arrangements will continue and, as the remaining procurement arrangements (12 in total) should be finalized by end 2009, the following new major calls for tender will be launched:

- 1) PF Coils: PF No. 2 to PF No. 6 - tooling and fabrication;
- 2) Vacuum Vessel – Start of sectors fabrication;
- 3) Divertor – fabrication of the Inner Vertical Target Prototype;
- 4) Remote Handling - DTP2 extension and upgrades with new prototypes and test facility for the In-Vessel Viewing systems;
- 5) Diagnostics - Complete Design of port plug based Diagnostics and Irradiation and post-irradiation testing of diagnostic components and assemblies;
- 6) Building and site – fabrication of the PF Coil Fabrication Building and excavation and drainage of the Tokamak Complex Foundations. The call for tender related to the main construction works of the Tokamak building is expected to be launched at the end of 2010.

Following the signature in 2009, by the Joint Undertaking and the Japanese Implementing Agency, for procurement arrangements under the responsibility of the EU, the procurement in Europe of some major components for Broader Approach activities will take place in 2010.

For the JT60SA project 2010 will be a key year as the procurement of the Toroidal Field Magnet will be in place. In addition the procurement of some power supplies as well as the procurement for the cryogenic system and the cryostat body will be started.

For IFMIF the manufacture of the radio-frequency quadrupole of the accelerator components is planned to start in 2010, and the IFMIF outline design report will be issued.

For IFERC the building hosting the IFERC Super Computer will be ready in 2010 and the procurement of major auxiliaries for the Super Computer (cooling, power supply) will be launched.

The Commission pursues the fulfilment of the Euratom obligations and of the programmatic objectives of the European fusion programme through the Euratom participation in the various governance bodies of the Joint Undertaking.

Contracts of Association

The Contracts of Association renewed under FP7 between the Community and Member States or Euratom Fully Associated Third States or legal entities within Member States or Euratom Fully Associated Third States have an indicative budget that comprises financing of baseline support, with additional support for priority projects, training and career development fellowships and support actions; the total amount for these activities is shown in the table “Euratom Budgetary Overview 2010”.

For career development fellowships (with a duration of 2 years), the maximum Community

contribution will be up to EUR 54 300 per year and per researcher as a living allowance, up to EUR 6000 per year and per researcher for expenses related to the participation to research and training activities (meeting and conference attendance, participation in training actions, research costs, etc), with an additional 3% of the direct costs for management activities and 10% of direct costs as contributions to overheads, excluding costs for subcontracting. The use of the mobility agreement to support mobility of the participants for their training actions, etc will ensure the pan-European nature of the joint training actions. To ensure continuity of employment of the researchers and retention of the best candidates, the start date of the fellowships may be fixed as the date which is the deadline for the Associations to make their proposals.

European Fusion Development Agreement

The European Fusion Development Agreement (EFDA), concluded between the Community and organisations in, or acting for, Member States or Euratom Fully Associated Third States, was renewed under FP7. The Community support covers research co-ordination activities, training and career development fellowships, support actions, JET S/T Orders implemented under the Contracts of Association, the JET Implementing Agreement (JIA), the JET Operation Contract and the EFDA Host Support Agreement, secondment and assignment of staff.

The global indicative budget for EFDA, (including Host support, JET Operational Contract and JET activities) is shown in the table “Euratom Budgetary Overview 2010”.

Mobility Agreement and other multilateral agreement

The indicative expenditure for the Mobility Agreement and any other multilateral agreement concluded between the Community and associated organisations is shown in the table “Euratom Budgetary Overview 2010”.

III.2 Nuclear Fission and Radiation Protection

- **Call Identifier:** FP7-Fission-2010
- **Date of publication:** 13th November, 2009¹¹, at 17:00 Brussels local time
- **Deadline:** 08 April 2010, at 17.00.00, Brussels local time¹²
- **Indicative budget:** c. EUR 49 799 000 from 2010 budget

The table below provides indicative 2010 budgets for activities defined in the Specific Programme and/or in this work programme:

Group	Activities	Indicative budget repartition (EUR million)
1	Fission-1	12
2	Fission-2	18
3	Fission-3	13
4	Fission-4, 5, 6 & 7	6.799
	Total	49.799

All budgetary figures in this work programme are indicative under the condition that the appropriations foreseen in the preliminary draft budget for 2010 are adopted without modifications by the budgetary authority. Following the evaluation of the proposals, the final budget awarded to actions implemented through calls for proposals may vary:

- by up to 10% of the total value of the indicated budget for each call; and
- any repartition of the call budget may also vary by up to 10% of the total value of the indicated call budget.

- **Topics called:**

Usually a maximum of one project will be considered for funding per topic (indicated by a singular under *funding scheme*). Where more than one project per topic could be considered for funding, this is clearly indicated (by a plural) under *funding scheme*. In such cases, the number of possible funded projects may be limited (i.e. a maximum greater than one is specified for that topic).

Activity/Area	Topic	Funding Scheme
Management of Radioactive Waste:	Fission-1	
<i>Geological disposal</i>	<i>Fission-1.1</i>	

¹¹ The Director-General responsible for the call may publish it up to one month prior to or after the envisaged date of publication.

¹² The Director-General responsible may delay this deadline by up to two months

	Fission-2010-1.1.1: In-situ demonstration of repository concepts and technologies in Underground Research Laboratories	Large-scale (possible max. Euratom contribution up to EUR 9 million if certain conditions fulfilled) and/or up to 3 small or medium-scale Collaborative Project(s). Max. of 3 projects in total to be funded.
	Fission-2010-1.1.2: Research activities in support of implementation of geological disposal	Small or medium-scale Collaborative Project(s) and/or Coordination and Support Action(s) (coordinating or supporting)
<i>Partitioning and transmutation</i>	<i>Fission-1.2 (refer to Fission-2010-2.3.1)</i>	
Reactor Systems:	Fission-2	
<i>Safety and competitiveness of existing and future nuclear installations</i>	<i>Fission-2.1</i>	
	Fission-2010-2.1.1: Ageing of non-metallic NPP components	Small or medium-scale Collaborative Project
<i>Advanced nuclear systems for increased sustainability</i>	<i>Fission-2.2 (refer to Fission-2010-2.3.1)</i>	
<i>Cross-cutting aspects for nuclear systems</i>	<i>Fission-2.3</i>	
	Fission-2010-2.3.1: R&D activities in support of the implementation of the Strategic Research Agenda of SNE-TP	Small or medium-scale or large-scale Collaborative Project(s)
	Fission-2010-2.3.2: Coordination of Euratom contribution to GIF	Coordination and Support Action (coordinating or supporting)
	Fission-2010-2.3.3: Materials research	Coordination and Support Action (coordinating) or small or medium-scale or large-scale Collaborative Project
<i>Advanced systems for non-electrical uses of nuclear energy</i>	<i>Fission-2.4 (refer to Fission-2010-2.3.1)</i>	
Radiation Protection:	Fission-3	
<i>Quantification of risks for low and protracted exposures</i>	<i>Fission-3.1</i>	
	Fission-2010-3.1.1: Contribution to low-dose risk research in Europe	Large scale Collaborative Project or max. 2 small or medium-scale Collaborative Projects
<i>Medical uses of radiation</i>	<i>Fission-3.2</i>	
	Fission-2010-3.2.1: Optimisation of doses from new technologies in medical imaging	Small or medium-scale Collaborative Project
<i>Emergency management and rehabilitation</i>	<i>Fission-3.3</i>	

	Fission-2010-3.3.1: European platform on emergency and post-accident preparedness and management	Coordination and Support Action (coordinating) or small or medium-scale Collaborative Project (max. Euratom contribution EUR 1.5 million – CP only)
Malevolent uses of radiation or radioactive material	<i>Fission-3.4 (no actions in 2010)</i>	
Other topics	<i>Fission-3.5</i>	
	Fission-2010-3.5.1: An integrated approach to radioecology research in Europe	Network of Excellence (max. Euratom contribution EUR 4.0 million)
Infrastructures:	Fission-4	
Supporting infrastructures	<i>Fission-4.1 (no actions in 2010)</i>	
Access to infrastructures	<i>Fission-4.2</i>	
	Fission-2010-4.2.1: Transnational access to large infrastructures	Coordination and Support Actions (supporting)
Human Resources, Mobility and Training:	Fission-5	
<i>Training & mobility of research workers</i>	<i>Fission-5.1</i>	
	Fission-2010-5.1.1: Euratom Fission Training Schemes (EFTS) in nuclear energy and radiation protection	Max. of 3 Coordination and Support Action(s) (coordinating)
Cross-cutting Actions:	Fission-6	
Cross-cutting actions	Fission-2010-6.0.1 Actions supporting programme implementation and other activities	Coordination and Support Actions (supporting)
Cooperation with Third Countries:	Fission-7	
<i>(Cooperation with China is an eligibility criterion)</i>	Fission-2010-7.0.1: Cooperation in nuclear education and training	Coordination and Support Action (coordinating) (max. Euratom contribution EUR 0.5 million)
	Fission-2010-7.0.2: Reliability of programming for automation	Small or medium-scale Collaborative Project (max. Euratom contribution EUR 1.0 million)
	Fission-2010-7.0.3: SCWR fuel qualification test	Small or medium-scale Collaborative Project (max. Euratom contribution EUR 1.5 million)

- **Eligibility conditions:**

- The general eligibility criteria are set out in Annex 1 and in the guide for applicants. Please note that the completeness criterion also includes that part B of the proposal shall be readable, accessible and printable.

- Minimum number of participants¹³ as set out in the Rules for Participation:

Funding scheme	Minimum conditions
Collaborative project (also applicable for a combination of a CP with another funding scheme) and Network of Excellence	At least 3 independent legal entities, each of which is established in a MS or AC, and no two of which are established in the same MS or AC.
Coordination and support action (coordinating type)	At least 3 independent legal entities, each of which is established in a MS or AC, and no two of which are established in the same MS or AC.
Coordination and support action (supporting type)	At least 1 independent legal entity

- Eligibility criteria for Euratom contribution limits differing from the generic ones in Annex 1 are given in the call text at the level of individual topics (and in the table under 'Topics called' above) and override the generic limits in Annex 1. cooperation with China as specified in II.2.7 (Part B), is also an eligibility criterion.
- Only information provided in part A of the proposal will be used to determine whether the proposal is eligible with respect to budget thresholds and/or minimum number of eligible participants.

Proposals that do not conform to the eligibility criteria will be rejected at the eligibility stage and not be further evaluated.

• **Evaluation Procedure:**

- The evaluation criteria (including any weights and thresholds) and sub-criteria together with the eligibility, selection and award criteria for the different funding schemes are set out in Annex 1 to this work programme.
- Proposal page limits: Applicants must ensure that proposals conform to the page limits and layout given in the Guide for Applicants, and in the proposal part B template available through the EPSS. The Commission will instruct the experts to disregard any pages exceeding these limits.
- The evaluation will follow a single stage procedure.
- Proposals will not be evaluated anonymously.
- Proposals may be evaluated remotely.
- At the end of the evaluation process, proposals will be ranked within their indicative budget group (see table above) and funded until the indicative budget for this group is exhausted. The budget repartition in this table is indicative and may be varied. Hence there will be competition between topics in the same indicative budget group, and some topics may end up not being supported if proposals fail to reach a high enough standard (even though proposals in other groups with lower overall scores may be funded) or if this work programme limits the maximum number of proposals that may be funded under one single topic. Proposals scoring above all evaluation thresholds, but for which sufficient funding is not available, will be put on a common reserve list for the whole call, from which proposals will be considered for funding if additional funds become available from any part of the call. In the ranked lists per group and the reserve list, all funding schemes have the same weight, the priority order being determined by total score. To separate tied proposals, the score for criterion 1 may be given priority, followed by that for criterion 3,

¹³ MS = Euratom (EU) Member State; AC = Associated country. Where the minimum conditions for an indirect action are satisfied by a number of legal entities, which together form one legal entity, the latter may be the sole participant, provided that it is established in a Member State or Associated country

except if otherwise decided and justified by the evaluation panels. Proposals on the reserve list are not carried over for funding from next year's budget. Depending on the strategic nature of the topic in question, the Commission may, in such cases, decide to reinsert the topic in next year's work programme.

- **Indicative evaluation and contractual timetable:** Evaluation: spring 2010; contract negotiation and signature: autumn 2010.
- **Consortia Agreements:** Required for all projects where there is more than one partner. In the case of coordinated projects foreseen in II.2.7 (Part B), a Coordination Agreement between the Euratom and Chinese projects, signed by all partners, will also be required.
- **Particular requirements for participation, evaluation and implementation:** None beyond the standard rules and guidelines. The forms of grant and maximum reimbursement rates which will be offered are specified in Annex 2.
- **Use of flat rates for subsistence costs:**

In accordance with Annex 3 of this work programme, this call provides for the possibility to use flat rates to cover subsistence costs incurred by beneficiaries during travel carried out within grants for indirect actions. For further information, see the relevant Guides for Applicants for this call. The applicable flat rates are available at the following website: http://cordis.europa.eu/fp7/find-doc_en.html under 'Guidance documents/Flat rates for daily allowances'.

IV. OTHER ACTIONS FOR 2010

Secretariat for the Generation IV International Forum (GIF)

USA, UK, France, Brazil, Japan, Korea, South Africa, Argentina and Canada signed the Generation IV International Forum (GIF) Charter in July 2001, with the purpose of developing concepts for one or more nuclear energy systems that can be operated in a manner that will provide a competitive and reliable supply of energy, while satisfactorily addressing nuclear safety, waste, proliferation and public perception concerns. Switzerland signed the GIF charter in February 2002. Euratom signed the Charter on 30 July 2003 by a decision of the Commission pursuant to Article 101(3) of the Euratom Treaty. The Russian Federation and the People's Republic of China signed in November 2006. A Framework Agreement (FA) for collaboration on R&D of Generation IV systems, setting the framework conditions for subsequent system and project arrangements, has also been concluded and the majority of Charter signatories have acceded to it. The FA depository is the OECD/NEA. 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 NEA's GIF technical secretariat activities. The level of this funding from each signatory was established by the GIF Policy Group at its meeting in Beijing, China, 23-24 October 2008, and revise at its meeting in San Diego, USA, 4-5 March 2009.

Funding scheme: Subscription The present contribution (in the form of a 'subscription' according to Article 108(2)(d) of the Financial Regulation and Article 160a of its Implementing Rules) is to fulfil Euratom's obligations in this respect, and covers arrears for the year 2009 as well as provisions for year 2010.

Organisation for Economic Co-operation and Development (Nuclear Energy Agency) - (Le Seine – Saint Germain / 12 boulevard des Iles / F – 92130 Issy-les-Moulineaux / France). Euratom contribution is EUR 200 000 for operation of the Secretariat from beginning 2009 to the end 2010.

Other studies

Initiating output assessment studies to measure and evaluate level of awareness of Euratom research activities in Europe and possible impact of Euratom's communication campaigns.

EURATOM BUDGETARY OVERVIEW 2010

		Year 2010¹⁴
Calls	Call FP7 Fission	49 799 000
Experts, Evaluators	Evaluation of proposals, Project review	200.000
Other	European JU for ITER (*)	343 340 000
	COA ('baseline support, and additional support under EFDA outside JET')	35 104 000 ¹⁵
	Implementation of Fusion itinerant expo	530 000
	EFDA Support action (ITM-TF)	240 000
	EFDA ('JOC and JET orders')	PM ¹⁶
	Mobility and other agreements	5.000.000
	GIF technical secretariat subscription	200.000
	Studies in support of the Ex-ante evaluation (impact assessment) of the Commission proposal for the Euratom Framework Programme	60.000
	Studies on public awareness on Euratom initiatives	60 000
Estimated Total Budget Allocation		434 533 000

(*) The JU 2010 Work Programme and annual budget, to be adopted by the Governing Board by the end of 2009, will detail the implementation of the Euratom and of the other JU members contribution

All budgetary figures in this work programme are indicative and are limited to the preliminary draft budget for 2010. The 2010 Work Programme needs updating as soon as the final 2010 Third Party Income is available.

Following the evaluation of the proposals the final budget awarded to actions implemented through calls for proposals may vary:

- by up to 10% of the total value of the indicated budget for each call; and

¹⁴ Under the condition that the preliminary draft budget for 2010 is adopted without modifications by the budgetary authority. This indicative budget does not include Contributions of Associated Countries and JET Joint Fund Contributions.

¹⁵ The funding includes up to EUR 4.3 Million for coordinated activities under EFDA, up to EUR 5 Million for training actions, up to EUR 1.3 Million for career development fellowships.

¹⁶ The available budget for JET suffers from the ITER requirements. An update of the WP 2010 should be foreseen

- any repartition of the call budget may also vary by up to 10% of the total value of the indicated budget

The final budgets for evaluation, monitoring and review may vary by up to 20% of the indicated budgets for these actions. The final budget awarded for actions in the fission theme, not implemented through calls for proposals, may vary by up to 10% of the indicated budgets for these actions.

V. INDICATIVE PRIORITIES FOR FUTURE WPs AND CALLS

This section provides an indication of the definition of possible future actions to be included in the Euratom Work Programme for 2011 or later. No guarantee can be given at this time of inclusion in a future programme.

V.1 Fusion

The objective of the Fusion programme in the near term is the successful realisation of the ITER project and preparations for the earliest possible start of the experimental activities. The Euratom work programme for the thematic priority Fusion Energy in 2011 will continue to concentrate on the following activities:

- providing support for the ITER project through the activities of the 'Fusion for Energy';
- providing support for the Broader Approach projects through the activities of the 'Fusion for Energy';
- coordination of the work programmes in the Contracts of Association through the activities of EFDA;
- support for enhanced collaborations through the Mobility Agreement;
- support for specific support actions and activities in favour of training and career development fellowships for researchers;
- representing Euratom in the ITER Organisation, the Joint Undertaking and their governance bodies and as well in the steering committees of international agreements.

V.2 Nuclear Fission and Radiation Protection

The setting of priorities will take into account, *inter alia*, the Strategic Energy Technology Plan and the research agendas established by SNE-TP (www.snetp.eu), MELODI (www.hleg.de) and the Implementing Geological Disposal Technology Platform (IGD-TP). Other specific initiatives may be considered in the context of fostering enhanced cooperation with third countries.

In the area of geological disposal, support will be considered for regulatory authorities faced with specific research needs (i.e. as distinct from those of the implementer) in their assessment of licence applications.

Initiatives may emerge from the ENEF (European Nuclear Energy Forum) process that are amenable to support via the Euratom FP. If necessary, suitable topic(s) will be included in the appropriate section(s) of the 2011 work programme.

Following agreement between Euratom and the CEA regarding Community support to the JHR (Jules Horowitz Reactor – a material testing research reactor under construction at Cadarache), Euratom will pay up to €12.5M (2005 economic conditions) via the programme of Indirect Actions before the end of 2011. This will ensure appropriate access rights for Euratom researchers to this important research infrastructure. A part of this sum has already been provided through an on-going collaborative project (JHR-CP). The balance will be provided via a named beneficiary action to be included in the 2011 work programme. An appropriate special clause is being approved for inclusion in the associated Grant Agreement.

LIST OF ANNEXES

- 1) Eligibility and Evaluation Criteria for Proposals
- 2) Table for Forms of Grants and Maximum Reimbursement Rates for Projects Funded through the Euratom Work Programme

Annex 1: FP7 Evaluation Criteria

Eligibility and Evaluation Criteria for Proposals

Eligibility criteria

A proposal will only be considered eligible if it meets all of the following conditions:

- It is received by the Commission before the deadline given in the call text.
- It involves at least the minimum number of participants given in the call text.
- It is complete (i.e. both the requested administrative forms and the proposal description are present)
- The content of the proposal relates to the topic(s) and funding scheme(s), including any special conditions, set out in those parts of the relevant work programme
- Collaborative projects are subdivided into (i) large-scale (i.e. integrating) projects and (ii) small or medium-scale (i.e. focused) research projects. The generic fixed threshold (in terms of the Euratom financial contribution) between the two types of collaborative projects in this Work Programme is EUR 3.0 million. This is an eligibility criterion. In the case of large-scale integrating Collaborative Projects, the Euratom contribution is limited in this work programme to a generic maximum of EUR 6.0 million. This is an eligibility criterion.
- The Euratom contribution to Networks of Excellence is limited in this work programme to a generic maximum of EUR 6.0 million. This is an eligibility criterion.
- The Euratom contribution to combinations of Collaborative Project and Coordination Action (Integrated Infrastructure Initiative or I3 scheme) is limited in this work programme to a generic maximum of EUR 3.0 million. This is an eligibility criterion.
- The Euratom contribution to Coordination and Support Actions is limited to a maximum of EUR 1.0 million. This is an eligibility criterion.
- Other eligibility criteria (in terms of Euratom contribution limits) may be given in the work programme at the level of individual topics (see also the table under III.2), in which case they override the generic limits above. This applies for topics Fission-2010-1.1.1 (subject to certain conditions), Fission-2010-3.3.1 (only if Collaborative Project), Fission-2010-3.5.1, Fission-2010-7.0.1, Fission-2010-7.0.2 and Fission-2010-7.0.3.
- For topics Fission-2010-7.0.1, Fission-2010-7.0.2 and Fission-2010-7.0.3, cooperation with China is an eligibility criterion.

Evaluation criteria

The evaluation criteria against which proposals will be judged are set out in articles 14 and 15 of the Rules for Participation. For the 'Euratom' specific programme these are:

- scientific and/or technological excellence;

- relevance to the objectives of these specific programmes¹⁷;
- the potential impact through the development, dissemination and use of project results;
- the quality and efficiency of the implementation and management.

Within this framework, the work programmes will specify the evaluation and selection criteria and may add additional requirements, weightings and thresholds, or set out further details on the application of the criteria.

The purpose of this annex is to set out such specifications. Unless otherwise indicated in the relevant parts of this work programme, the criteria, weightings and thresholds given here will apply to all calls for proposals.

Proposals will be evaluated in line with the Commission ‘Rules on Submission of Proposals and the Related Evaluation, Selection and Award Procedures’.

A proposal which contravenes fundamental ethical principles, fails to comply with the relevant security procedures, or which does not fulfil any other of the conditions set out in the specific programme, the work programme or in the call for proposals shall not be selected. Such a proposal may be excluded from the evaluation, selection and award procedures at any time. Details of the procedure to be followed are given in the Commission rules mentioned above.

The arrangements for a particular call will be set out in the relevant Guide for Applicants.

¹⁷ **Relevance:** A proposal may be **partially relevant** if it addresses only marginally the topic(s) of the call, or if only part of the proposal addresses them. Such conditions will be reflected in the evaluation of the first criterion (‘S/T excellence’). The degree to which a proposal is relevant to the objectives of a call will be reflected in the evaluation of the third criterion (‘impact’). Proposals that are clearly not relevant to a call (‘out of scope’) will be rejected on eligibility grounds before the evaluation.

Evaluation criteria →		1. Scientific and/or technological excellence (relevant to the topics addressed by the call) (award)	2. Quality and efficiency of the implementation and the management (selection)	3. The potential impact through the development, dissemination and use of project results (award)
Funding scheme ↓				
All funding schemes		<ul style="list-style-type: none"> • <i>Soundness of concept, and quality of objectives</i> 	<ul style="list-style-type: none"> • Appropriateness of the management structure and procedures • <u>Quality and relevant experience of the individual participants</u> 	<ul style="list-style-type: none"> • <i>Contribution, at the European [and/or international level], to the expected impacts listed in the work programme under relevant topic/activity</i>
Collaborative Projects		<ul style="list-style-type: none"> • <i>Progress beyond the state-of-the-art</i> • Quality and effectiveness of the S/T methodology and associated work plan 	<ul style="list-style-type: none"> • <u>Quality of the consortium as a whole (including complementarity, balance)</u> • Appropriateness of the allocation and justification of the resources to be committed (staff, equipment) 	<ul style="list-style-type: none"> • Appropriateness of measures for the dissemination and/or exploitation of project results, and management of intellectual property.
Networks of Excellence		<ul style="list-style-type: none"> • <i>Contribution to long-term integration of high quality S/T research</i> • Quality and effectiveness of the joint programme of activities and associated work plan 	<ul style="list-style-type: none"> • <u>Quality of the consortium as a whole (including ability to tackle fragmentation of the research field, and commitment towards a deep and durable integration)</u> • Adequacy of resources for successfully carrying out the joint programme of activities 	<ul style="list-style-type: none"> • Appropriateness of measures for spreading excellence, exploiting results, and disseminating knowledge, through engagement with stakeholders and the public at large.
Co-ordination & Support Actions	CA	<ul style="list-style-type: none"> • Contribution to the co-ordination of high quality research • Quality and effective-ness of the co-ordination mechanisms, and associated work plan 	<ul style="list-style-type: none"> • <u>Quality of the consortium as a whole (including complementarity, balance) [for SA: only if relevant]</u> • Appropriateness of the allocation and justification of the resources to be committed (staff, equipment) 	<ul style="list-style-type: none"> • Appropriateness of measures for spreading excellence, exploiting results, and dissemination knowledge, through engagement with stakeholders, and the public at large.
	SA	<ul style="list-style-type: none"> • Quality and effectiveness of the support action mechanisms, and associated work plan 		

Notes:

1. Evaluation scores will be awarded for each of the three criteria, and not for the sub-criteria. Each criterion will be scored out of 5. No weightings will apply. The threshold for individual criteria will be 3. The overall threshold, applying to the sum of the three individual scores, will be 10.
2. The second column corresponds to the **selection criteria** in the meaning of the financial regulation¹⁸ (article 115) and its implementing rules¹⁹ (article 176 and 177). They also will be the basis for assessing the ‘operational capacity’ of participants. The other two criteria correspond to the **award criteria**.
3. For the evaluation of first-stage proposals under a two-stage submission procedure, only the sub-criteria in italics apply.

¹⁸ OJ L248 16.9.2002, p1

¹⁹ OJ L357 31.12.2002, p1

If the topic requires a funding scheme which is a **combination of a Collaborative Project and a Coordination Action** (covering integration, networking, transnational access and joint research, along the lines of the FP6 I3 – Integrated Infrastructures Initiatives), the evaluation criteria, taken from the EC FP7 Capacities Programme, are:

<i>Evaluation criteria applicable to Integrated Infrastructure Initiative project proposals (I3)</i>		
1. S/T QUALITY ‘Scientific and/or technological excellence (relevant to the topics addressed by the call)’	2. IMPLEMENTATION ‘Quality and efficiency of the implementation and the management’	3. IMPACT ‘Potential impact through the development, dissemination and use of project results’
<ul style="list-style-type: none"> • Clarity of the objectives and quality of the concept. • Contribution of the overall project to the provision of integrated services and to the co-ordination of high quality research. • Quality and effectiveness of the Transnational Access and Services, and associated work plan: The extent to which the activities will offer high quality services, access to state-of-the-art infrastructures, and will enable users to conduct high quality research. • Quality and effectiveness of the Joint Research Activities and associated work plan: The extent to which the activities will contribute to quantitative and qualitative improvements of the services provided by the infrastructures. • Quality and effectiveness of the co-ordination mechanisms and associated work plan: The extent to which the Networking Activities will foster a culture of co-operation between the participants, and enhance the services to the users. 	<ul style="list-style-type: none"> • Appropriateness of the management structure, the management procedures, and the implementation plan to achieve the objectives of the project. Quality and relevant experience of the individual participants and quality of the consortium as a whole (including complementarity, balance, critical mass). • Appropriate allocation and justification of the resources to be committed (, staff, equipment), by task and participant. 	<ul style="list-style-type: none"> • Contribution at the European level of the access and service activities towards an improved access to - and use of - the pool of research infrastructures and new opportunities of access and use for researchers from across the EU. • Contribution at the European level of the Joint Research Activities towards an optimum development of research infrastructures. • Contribution at the European level of the collaborative arrangements put into place and the perspectives for their long-term sustainability, towards a structuring impact on the pool of research infrastructures in Europe. • Appropriateness of measures envisaged for the management of intellectual property and for the dissemination and/or exploitation of project results among operators/users of research infrastructures.

The second column corresponds to the selection criteria in the meaning of article 115 of the financial regulation (see previous table).

Annex 2: Table for Forms of Grant and Maximum Reimbursement Rates for Projects Funded through the Euratom Work Programme

Forms of Grant

The FP7 'Rules for Participation' propose three potential forms of grant for the Community financial contribution: reimbursement of eligible costs, flat rate financing including scale of unit costs, and lump sum financing. In this work programme, for all funding schemes, the reimbursement of eligible costs (including the different options for flat rates on indirect costs as established in Article 32 of the Rules for Participation) will be the only form of grant used²⁰.

Maximum Reimbursement Rates

The upper limits foreseen in the Rules for Participation (Article 32) for the Community financial contribution are summarised in the following table.

	Secondary and higher education establishments and SMEs ²¹	All other organisations
Research and technological development activities	75%	50%
Demonstration activities	50%	50%
Coordination and support actions and actions for the training and career development of researchers	100%	100%
Management, audit certificates and other activities ²²	100%	100%

²⁰ This annex does not apply to the funding schemes listed under section III.1 (fusion energy), except where the activities are implemented through calls for proposals.

²¹ For the purposes of this call, and in order to maximise the potential of the limited funds of the Euratom Programme in Fission, the upper limit of 75% for RTD activities applies only for educational establishments and SMEs. For other entities mentioned specifically in the Rules for Participation, an upper limit of 50% will be applied.

²² Including, inter alia training in actions that do not fall under the funding schemes for training and career development of researchers, coordination, networking and dissemination (as set out in Article 32(4) of the Rules for Participation).