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**COMMUNICATION FROM THE COMMISSION  
TO THE EUROPEAN PARLIAMENT AND THE COUNCIL**

**ITER status and possible way forward**

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# COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL

## ITER status and possible way forward

### 1. INTRODUCTION

This Communication responds to the request of the Council of 16 November 2009 that the European Commission examine and address the financing gap and related governance conditions concerning ITER. The purpose of this communication is to set out the governance and financial conditions under which the Union could support its partners in placing ITER on a sound and sustainable financial footing.

**ITER**<sup>1</sup> is a global project to build and operate an experimental reactor with the aim of demonstrating the scientific and technological feasibility of fusion energy for peaceful purposes. Its successful accomplishment would establish whether fusion can become a major sustainable energy source contributing to the EU's strategy for the long term security in the supply of energy. The process of nuclear fusion offers the prospect of producing an essentially limitless source of safe and clean energy with no CO<sub>2</sub> emission. The ITER project should be followed by a demonstration reactor on the path towards the commercial exploitation of fusion power.

ITER is a uniquely global cooperation - a pioneering initiative seeking to demonstrate shared technological solutions to global problems. The project is conducted under the terms of an International Agreement<sup>2</sup> between the European Atomic Energy Community (EURATOM) and 6 other Parties - China, India, Japan, Korea, Russia, and the USA, which was signed in Paris in November 2006 and which entered into force in October 2007. The agreement established the ITER Organization (IO) with full international legal personality, to be responsible for the joint implementation of the ITER project. The Agreement has an initial duration of 35 years in order to construct (10 years), operate (20 years), and de-activate (5 years) the ITER facilities.

With strong backing of the Council, the Commission successfully negotiated with international partners on behalf of the Community and succeeded to fix the site for building ITER in Europe at Cadarache, France. In addition to the linked opportunities, this agreement specifies that Europe's financial responsibilities to deliver buildings and a machine arise at the outset - the construction phase. This also means that other ITER contributors are dependent on the timely completion of Europe's contribution.

The EURATOM contribution for ITER is managed through the European Joint Undertaking for ITER – "Fusion For Energy" (F4E), established as the European Domestic Agency<sup>3</sup> by the

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<sup>1</sup> Originally denoted "International Thermonuclear Experimental Reactor".

<sup>2</sup> OJ L 358, 16.12.2006, p. 62–80.

<sup>3</sup> Under the ITER Agreement each Member has its own "Domestic Agency" responsible for managing its contribution, and especially for procuring the various components needed to build ITER and to be provided to ITER Organization as contributions in kind.

Council in March 2007<sup>4</sup> and based in Barcelona. The Members of F4E, EURATOM, the 27 Member States plus Switzerland, are all represented in its governance. The EU contribution to ITER construction mainly consists of major systems and components for ITER procured by F4E and provided "in kind" to the ITER Organization. The European Parliament is responsible for giving budgetary discharge to the European Joint Undertaking for ITER.

The construction of ITER is technically extremely challenging in its scale and complexity. It will represent a major engineering undertaking on the scale of the construction of a very large commercial power plant with large-scale industrial contributions in civil, mechanical, electrical and nuclear engineering combined in unprecedented conditions.

The launch of the ITER project marked an important milestone in the development of world-wide big science collaboration. For Europe the project is emblematic of the EU's capacity to take a leading role at the global level in science and technology. The ITER Organization presents a possible model for future large scale international collaborative infrastructure projects. Implementation of ITER is therefore a test case for future EU - international scientific collaboration on large-scale projects.

The cost of the project has significantly exceeded the original estimates on which the EU budget commitment was based. In order for the EU to meet these onerous responsibilities, it must address the need to find the additional resources to frame a sound and sustainable financial solution for the duration of the project, not just for the next two to three years but until the end of the project life. Therefore the budgetary authorities need to provide additional means for this important project and to deal with any future cost overruns.

## **2. CURRENT CONTEXT**

On 29 May 2009, the Commission presented to the Council a summary of the status of the ITER project, the challenges faced and the actions taken. The Commission also set out a number of "boundary conditions" that it considers pre-requisite to be met in order to ensure the success of the project at acceptable cost and reasonable risks. These include credible cost assessment and cost containment policies, realistic timetable and sound management of the project at all levels.

At its meeting of 16 November 2009<sup>5</sup>, the Council confirmed its unanimous support to the ITER project, understanding that the construction cost of ITER would be substantially higher than initially planned, and "provided that the boundary conditions elaborated by the Commission in the end can be met". The Council also concluded that the "Baseline"<sup>6</sup> (scope, schedule and cost) for ITER must build upon these boundary conditions. It called for action to be taken on necessary management changes and a strong policy to be applied on cost reduction and cost containment.

In addition, the Council invited the Commission to explore possibilities for providing the increased funding needed during the current Financial Perspectives, including advantages and disadvantages of a loan from the European Investment Bank (EIB) and a reprioritization of

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<sup>4</sup> OJ L 90, 30.3.2007, p. 58.

<sup>5</sup> Documents 15815/09 RECH 401 ATO 136 + ADD 1 RESTREINT UE.

<sup>6</sup> The Baseline refers to the inter-related elements of scope (specifications of the machine to build), the schedule (time table for construction) and the cost.

funds within the current EU budget, and to present possible solution(s) to the Council as soon as possible.

At the international level, the immediate critical step for the construction phase is for ITER international partners to agree on the Baseline at the currently foreseen mid-June ITER Council in China. The Commission has insisted on meeting the Boundary conditions and has so far declined to adopt the proposed schedule as foreseen in November 2009. The EU now needs to define its position for the meeting of the ITER Council.

### 3. ITER COST

During the construction phase EURATOM contributes a value of 5/11 (around 45%) of the total, of which 80% is funded from EURATOM and 20% from France, the rest being equally divided among the other 6 ITER Parties (1/11 or around ~9% each)<sup>7</sup>. During the subsequent operation and deactivation phases, EURATOM will contribute 34% of the total costs:

The 2001 cost estimated the total ITER construction at EUR 5.9 billion (5896 million in 2008 value). The EURATOM contribution, amounted to EUR 2.7 billion (around 45%, 2680 million in 2008 value), corresponding to EUR 1 735 million for the components/systems to be provided "in kind", and EUR 945 million to be provided "in cash" to the ITER Organization. Each Party has committed to provide the agreed contributions in kind independently of the final cost of procuring and delivering those components.

The F4E current cost estimates for the construction period (cost for Europe only), updated according to the proposed schedule (2007-2020) and presented to the F4E Governing Board in March 2010, amount to EUR 7.2 billion (7253 million in 2008 value): EUR 6.6 billion<sup>8</sup> (6603 million in 2008 value) for the contribution to ITER construction and EUR 650 million for the F4E running costs and other activities. These estimates would require a EURATOM contribution of EUR 5.9 billion (EUR 5892 million)<sup>9</sup> and EUR 1.3 billion (EUR 1321 million) of funding from France (all figures in 2008 value)<sup>10</sup>.

EUR 2.1 billion (current value) of commitment appropriations from the FP7 EURATOM Budget are needed for the years 2012-2013 in order to commit the procurements needed early in the construction process. Programmed appropriations available in the current Multiannual Financial Framework (EUR 346 million for 2012 and EUR 344 million for 2013 in current value) mean that EURATOM is facing an estimated gap on commitment appropriations of about EUR 1.4 billion (in current value) for the years 2012-2013 (EUR 550 million in 2012 and EUR 850 million in 2013).

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<sup>7</sup> Cost Sharing for all Phases of the ITER Project. Attachment 2(b) to the Final Report on Negotiations on the ITER Joint Implementation, 1 April 2006.

<sup>8</sup> As the final construction cost of the whole ITER machine will not be known because each Party will suffer specific cost increases, it would be difficult to substantiate an estimation of what share of the overall ITER construction costs the EUR 6.6 billion would represent.

<sup>9</sup> This amount is broken down as follows:

For 2007-2011 (5 years) the estimated financial needs are about EUR 1.3 billion;

For 2012-2013 (2 years) the estimated financial needs are about EUR 2 billion;

For 2014-2020 (7 years) the estimated financial needs are about EUR 2.6 billion.

<sup>10</sup> To this contribution about EUR 40 million should be added, which come from the F4E members (EURATOM, 27 Member States and Switzerland) other than EURATOM and France.

Given the increased level of maturity of the design and the implementation of costing methodologies that could take into account more detailed data on the project, these estimates are not foreseen to undergo material variation in the short term. The scale of this funding gap requires a response from the budgetary authorities that is linked to a number of conditions.

#### **4. PRE-CONDITIONS FOR SOUND AND SUSTAINABLE FINANCING OF ITER**

##### **4.1. Sound Governance**

The expert assessment of the source of cost overruns has identified a range of issues which must urgently be addressed by the Member States in the governance of F4E and the International Organisation (IO). The governance of F4E will have to be reviewed.

To address these issues a clear programme of delivering the Boundary Conditions needs to be actively supported by the Member States. This will involve improving cost estimates, transparent monitoring and reporting of cost evolutions, and proactively managing cost containment policies notably addressing value engineering, rationalising allocation of procurement obligations, agreeing standards and exploiting economies of scale. Following the resignation of the F4E director in January 2010, it is being restructured and its cost containment overhaul is being put in pace by a new Director.

Beyond the expert assessment reports, additional measures may need to be taken. In the framework of the F4E governance overhaul there is need to also address the F4E procurement policies with European fusion research entities and industries, aiming at strategic partnerships and innovation.

For the IO costs escalations related to design and management resources. The ITER Council will implement key aspects of the Management Assessment report including management changes currently foreseen in June.

##### **4.2. Sustainable Financial Framework**

The Commission underlines its commitment to maintain and continue its original budgetary allocation for ITER. However, given the scale of the financing gap and the need for a systemic solution that will respect the Budget of the Union throughout the life of the project, there is a need for additional funds. The Commission has therefore explored the options requested by the Council.

##### **Loan of the European Investment Bank**

The European Investment Bank (EIB) could be asked to grant a loan to F4E as the underlying research infrastructure activities are within its lending objectives. In order to grant a credit line to F4E, the EIB would need to further investigate if an explicit collateral or guarantee from EURATOM would be required. Should the EIB need an explicit guarantee from EURATOM, the Commission would have to prepare a proposal for modifying the legal act establishing F4E that would need to be adopted by unanimity. Specific provisions would thereafter be set out in an agreement between EURATOM (represented by the Commission), the EIB and F4E. Moreover, certain changes and/or clarifications in the F4E financial regulation and its implementing rules would be required. However, the main problem with using a loan to fill the financing gap is the absence of an identifiable income stream which

could be used to make repayments on a loan; in practice this precludes a loan as being an appropriate solution for the identified funding gap.

## **Redeployment**

Additional financing needs for ITER could be partially covered by the transfer of funds from other headings. However, given the scale of the funding gap and the need for a systemic approach throughout the life of the ITER project, the recourse to redeployment of existing Union funds on this scale would have a significantly negative effect on a range of policies and programmes which are at the heart of the EUROPE 2020 agenda. In policy terms, it would not be advisable to make such significant reductions in these areas. This issue was already signalled in the Commission's recent report on the functioning of the Inter-institutional agreement on budgetary discipline<sup>11</sup>.

In addition, neither of these options (EIB nor redeployment) provides a structural solution to this issue.

The commitment of the Council, also towards the European Parliament, to guarantee adequate financial support to the ITER project throughout its construction and operations phases is a pre-condition of sustainability. Excluding the options of an EIB loan and of redeployment, the Commission considers that the EU's commitment to the ITER project can only be met by two options which are appropriate to the scale and systemic nature of this issue.

### **OPTION ONE: COMPLEMENTARY FINANCING FROM MEMBER STATES**

For 2012-2013, all EU Member States and Switzerland would need to make additional contributions of the order of EUR 1.4 billion and to undertake to finance any cost overruns beyond those provisions foreseen in the Budget of the Union and the Multiannual Financial Framework for the whole life of the project. The possibility of additional contributions from F4E Members is foreseen by the decision establishing F4E.

In the future, from 2014 until the end of the project, additional Member State financing would be triggered once the budget appropriations foreseen for ITER have been fully used. Consideration could be given to possible additional mechanisms increasing flexibility within the Multiannual Financial Framework and to be used before triggering Member States' additional contributions.

### **OPTION TWO: SET FINANCIAL PERSPECTIVES CEILINGS AT APPROPRIATE LEVEL**

Provided a solution for the financing of the whole life of the project is found, a net increase in the overall ceiling of the 2007-2013 financial framework could be envisaged for 2012-2013. However, the Council has so far set a condition that the 7-year global ceilings of the financial framework in terms of commitments and payments should remain unchanged<sup>12</sup>.

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<sup>11</sup> COM(2010) 185, 27.4.2010.

<sup>12</sup> Revision of the ceilings can be done in two ways: a) as a compensation mechanism offsetting the increase in one heading by a matching decrease in another or b) increasing the overall ceiling. A compensation mechanism has been used several times in the past. Until the end of 2013 though, the Commission expects that the margins available will be substantially reduced. Those reduced margins should be partially preserved to leave the possibility to adapt to competing future demands.

In the future, the financial Multiannual Financial Framework ceilings would need to be fixed at a level that would allow the EU to meet its commitment to the ITER project.

Whatever option is preferred by the budgetary authorities, a sustainable solution will require a clear financial commitment for the life of the project and a commitment to finance any overruns outside that framework, by Member States.

For any of the options a capping mechanism should be established to ensure sound financial management of the project.

## **5. TIME FRAME**

The time frame in which a solution for the financing of ITER would need to be found is very limited. Taking into account the need to clarify the situation to the EU's international partners and the dynamics of the EU budget, the Commission proposes that the Council and European Parliament consider this issue as a matter of urgency.

## **6. CONCLUSION**

The launch of the ITER project marked an important milestone in the development of world-wide big science collaboration. For Europe the project is emblematic of the EU's capacity to take a leading role at the global level in science and technology.

Finding an effective, systemic and durable solution to the sound financial governance and sustainability would provide a template for future global cooperation on the grand challenges such as energy supplies, facing our collective way of life.

At its meeting of 16 November 2009, the Council confirmed their support to the ITER project, despite the substantial cost increases, provided that boundary conditions elaborated by the Commission could be met, and invited the Commission to explore funding possibilities in the context of the current Multiannual Financial Framework.

Taking into account the elements presented in this communication, the Commission calls on the Council and the European Parliament to provide the additional resources necessary for the complete period of the ITER construction and to take a decision in principle on the provision of the necessary funding. The Commission considers that it has to be done as soon as possible in order for it to inform its international partners expecting a EURATOM decision on the ITER Baseline at the next meeting of the ITER Council in mid-June.

Once such a commitment is given, the Commission will present the necessary proposals to finance the additional needs for ITER in 2012 and 2013 in line with the recent report on the Inter-institutional agreement.