



FUSION FOR ENERGY

The European Joint Undertaking for ITER and the Development of Fusion Energy
THE GOVERNING BOARD

DECISION OF THE GOVERNING BOARD ADOPTING THE RESOURCE ESTIMATES PLAN OF THE EUROPEAN JOINT UNDERTAKING FOR ITER AND THE DEVELOPMENT OF FUSION ENERGY

HAVING REGARD to the Statutes annexed to the Council Decision (Euratom) No 198/2007 of 27 March 2007 establishing the European Joint Undertaking for ITER and the Development of Fusion Energy (hereinafter "the Joint Undertaking") and conferring advantages upon it¹ (hereinafter "the Statutes") and in particular Article 6(3)(d) and Article 11 thereof,

Having regard to the Financial Regulation of the Joint Undertaking² adopted by the Governing Board on 22 October 2007 (hereinafter "the Financial Regulation") and in particular Article 30 thereof;

Having regard to the comments and recommendations of the Executive Committee on the proposal for the resource estimates plan drawn up by the Director at its meetings of 22 November and 13 December 2007,

Whereas:

- (1) The Director should, in accordance with Article 8(4)(e) of the Statutes, draw up the resource estimates plan for a period of five years;
- (2) The Executive Committee should, in accordance with Article 7(3)(b) of the Statutes, comment on and make recommendations to the Governing Board on the proposal for the resource estimates plan drawn up by the Director;
- (3) The Governing Board should adopt the resource estimates plan.

THE GOVERNING BOARD OF THE JOINT UNDERTAKING HAS ADOPTED THIS DECISION:

Article 1

The resource estimates plan of the Joint Undertaking annexed to this Decision is hereby adopted.

Article 2

This Decision shall have immediate effect.

¹ O.J. L 90 , 30.03.2007, p. 58.

² F4E(07)-GB03-11 Adopted 22/10/2007

F4E(07)-GB04-10
Adopted 18/12/2007

Done at Barcelona, 18 December 2007

For the Governing Board

Caaf Varandas

Carlos Varandas

Chair of the Governing Board

ANNEX

**RESOURCE ESTIMATES PLAN OF THE EUROPEAN JOINT UNDERTAKING FOR
ITER AND THE DEVELOPMENT OF FUSION ENERGY**

1. INTRODUCTION

The European Joint Undertaking for ITER and the Development of Fusion Energy or 'Fusion for Energy' (F4E) is a Joint Undertaking created under the Euratom Treaty by a decision of the Council of the European Union.

'Fusion for Energy' was established for a period of 35 years from 19 April 2007 and is situated in Barcelona, Spain. The objectives of 'Fusion for Energy' are threefold:

- Providing Europe's contribution to the ITER International Fusion Energy Organisation as the designated Domestic Agency for Euratom;
- Implement the Broader Approach agreement between Euratom and Japan as the designated Implementing Agency for Euratom;
- Prepare in the longer term for the construction of demonstration fusion reactors (DEMO).

In accordance with Article 30 of the Financial Regulation of 'Fusion for Energy', this Resource Estimates Plan sets out the indicative resources estimated to be needed for the implementation of the Project Plan for the period 2008-2012.

Except for the specific chapters dedicated to the implementation of the Budget 2007 and the budgets 2008 and 2009, this first Resource Estimates Plan details the revenue and expenditure baseline for F4E as foreseen at the time of the Council Decision establishing F4E. They are based on commitment appropriations.

2. ASSUMPTIONS

The information presented in this Resource Estimates Plan is based upon the following assumptions:

- That the ITER Procurement Arrangements for components on the critical path for ITER construction (buildings, magnets and vacuum vessel) will be proposed by the ITER Organisation, negotiated and signed according to the present schedule;
- That the current Project Plan reflects the current understanding of the ITER Design and some modifications might be required in 2008 to adjust it to the forthcoming ITER developments;
- That the EU Schedule, with recent additions and modifications, was used as the basis for this document;

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- That the activities and the associated budget have been presented here based on the current understanding of the ITER Project while the results of the ITER Design Review are being assessed;
- That the planning of the activities, and the corresponding delivery of components, by the other ITER Domestic Agencies will be respected, including activities that are subject to the transfer of procurement responsibilities from Euratom to Japan in accordance with the Decision of the ITER Council on this matter;
- That the voluntary contributions on Physics R&D for ITER will be coordinated by EFDA³, through F4E, following the ITER Council's approval of an ITER Work Programme;
- That the project plans presented in this document for the Broader Approach Activities (IFMIF/EVEDA, IFCR and the Satellite Tokamak Programme) reflect the Project Plans approved by the Broader Approach Steering Committee.

3. BUDGET DEFINITION AND CONTENT

The budget is the main instrument which forecasts and authorises the annual revenue and expenditure considered necessary for the Joint Undertaking, on the basis of the Financial Regulation and Implementing Rules adopted by the Governing Board on 22 October 2007⁴.

In summary, the budget shall comprise:

Revenues made up of:

- a Euratom (hereinafter "the Community") contribution as a participation in the financing of 'Fusion for Energy' in accordance with Article 4 of the Constituent instrument⁵ and Article 12 of the Statutes⁶;
- an annual membership contributions from members other than Euratom in accordance with Article 4 of the Constituent instrument and Article 12 and Annex II of the Statutes;
- the financial contribution of the ITER Host State in accordance with Article 4 of the Constituent instrument and Article 12 of the Statutes;
- own revenue consisting of all fees and charges which 'Fusion for Energy' is authorised to collect by virtue of the tasks entrusted to it;
- revenue assigned to specific items of expenditure;

³ European Fusion Development Agreement

⁴ F4E(07)-GB03-11 of 22/09/2007

⁵ Constituent instrument shall mean the Council Decision (Euratom) No 198/2007 of 27 March 2007 establishing the European Joint Undertaking for ITER and the Development of Fusion Energy and conferring advantages upon it. OJ L 90, 30.3.2007, p. 58.

⁶ Statutes shall mean the Statutes of the Joint Undertaking annexed to the Council Decision (Euratom) No 198/2007 of 27 March 2007 establishing the European Joint Undertaking for ITER and the Development of Fusion Energy and conferring advantages upon it.

- additional revenues received under terms approved by the Governing Board in accordance with Article 12 of the Statutes;
- any other revenue.

Expenditure made up of:

- Operational expenditure, necessary for the pursuit of its tasks and activities in accordance with Article 4 of the Constituent instrument;
- Administrative expenditure, necessary for the functioning of 'Fusion for Energy', in particular costs associated with personnel and infrastructure.

4. THE BUDGETARY PROCEDURE – INDICATIVE TIMETABLE FOR 2008 AND 2009

As foreseen in the Financial Regulation and its Implementing Rules, the Annual Budgetary Procedure consists of several steps. For 2008 and 2009, the indicative timetable is the following:

Indicative Timetable – Budgetary Procedure 2008

December 2007: The Governing Board adopts the Work Programme and the Budget for 2008 together with the Project Plan and the Resource Estimate Plan for 2008-2012. Note that the Budgetary Authority (Council and Parliament) is expected to adopt the Community budget (and therefore the Euratom contribution to 'Fusion for Energy's budget, including the establishment plan) for 2008 in December 2007, on the basis of estimates that were provided by the Commission in 2006.

1 January 2008: The budget is definitive and ready to be implemented.

Indicative Timetable – Budgetary Procedure 2009

December 2007: The Governing Board adopts the Project Plan and the Resource Estimates Plan for 2008-2012, the latter including budget estimates for administration and the proposed establishment plan for 2009.

February 2008: The Director proposes to the Commission a Budget for 2009 based on the Project Plan and the Resource Estimates Plan for 2008-2012.

November 2008: The Governing Board adopts the budget for 2009 and the Work Programme for 2009.

December 2008: The budgetary authority (Council and European Parliament) adopts the 2009 Community Budget and the related Euratom contribution.

1 January 2009: The budget is definitive and ready to be implemented.

5. **OVERALL ESTIMATE OF REVENUE AND EXPENDITURE (2007-2041)**

The indicative total resources (2007-2041) deemed necessary for 'Fusion for Energy' to carry out its objectives are set out in Article 4 of the Constituent instrument are determined as follows:

- (a) as regards the tasks related to ITER, in accordance with the Agreement on the Establishment of the ITER International Fusion Energy Organisation for the Joint Implementation of the ITER Project;
- (b) as regards the tasks related to the Broader Approach, in accordance with the bilateral Agreement for the Joint Implementation of the Broader Approach Activities;
- (c) as regards the tasks related to DEMO, in accordance with research and training programmes adopted pursuant to Article 7 of the Euratom Treaty.

The resources of 'Fusion for Energy' shall consist of a contribution from Euratom, contributions from the ITER Host State, the annual membership contributions and voluntary contributions from Members of 'Fusion for Energy' other than Euratom, and additional resources.⁷

'Fusion for Energy's activities are clustered under two headings: the ITER Project and the Technology Project. The ITER Project represents the core activity of 'Fusion for Energy'. The Technology project groups the R&D activities necessary needed for ITER, Broader Approach and IFMIF.

It should be noted that the tasks entrusted to Fusion for Energy are divided into two periods. The first one covering 2007-2016 is based on the ITER construction phase and the Broader Approach activities. The second phase corresponds to the period 2016-2041 focusing on the operation and decommissioning of ITER, the possible construction and operation of IFMIF and a programme of activities in preparation for DEMO.

⁷ Except where differently specified all figures are given in MEUR value 2005

**Table 1:– Detailed Cost Estimates of Fusion for Energy Projects
(in commitment appropriations)**

	2007-2016			2017-2041		Modalities for delivery
	kIUA	kBAUA	MEUR (2005)	kIUA	MEUR (2005)	
ITER construction	1 626.2					
Of which EU direct	995.0					In Kind - F4E
Of Which EU to Japan	243.8					In Cash - F4E
Of Which EU To Fund	134.5					In Cash - F4E
Of which ITER R & D	36.4					In Cash - F4E
Of which ITER Management	216.7					In Cash - F4E
ITER construction Optional	162.6					In kind and in Cash by F4E
ITER operations				1 278.4		In Kind and in Cash by F4E
ITER Decommissioning					199.0	In Cash - F4E
ITER Deactivation					105.0	In Kind - F4E
ITER TOTAL	1 788.9		0	1 278.4	304.0	
R&D for ITER			265.0			In kind - F4E
Other Technology (DEMO and Broader approach)			60.0			In kind - F4E
Tech. Broader Approach IFMIF-EVEDA		143.75				In kind by BA donors
Tech. Broader Approach IFERC -Rokkasho		119.84				In kind by BA donors
Tech. Broader Approach NCT JT60		236.41				In kind by BA donors
IFMIF construction			158.0		246.0	In kind - F4E
IFMIF Operation and Decommissioning.					717.0	In kind - F4E
Technology Total		500.0⁸	483.0		963.0	
F4E Running cost (administration)			282.0		433.0	In cash – F4E
Total F4E	1 788.9	500.0	765.0	1 278.4	1 700.0	

⁸ Equivalent to 339MEUR in accordance with the Attachment to the Joint Declaration of the Ministerial Meeting on the Broader Approach ITER Moscow, 28th June 2005

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The present document will concentrate on the first phase (2007-2016) and in particular on the budget covering the period 2007-2011, forming part of the 7th Euratom Framework Programme for Research.

The additional support to ITER and Technology will cover in particular the ITER site preparation and Broader Approach to complete the Europe contribution of the donors. It could also be used to reinforce the administrative expenditure if needed

6. ESTIMATES OF REVENUE FOR THE PERIOD 2007-2016

Table 2: Revenue of Fusion for Energy for 2007-2016

	2007-2016 Commitment appropriations in MEUR (Current Value) (*)									2007-2016	
	2007-2011(FP VII)					2012	2013 2016	Total	kIUA	MEUR (2005)	
	2007	2008	2009	2010	2011						FP VII
Euratom contribution	108.1	192.3	308.0	328.7	352.9	1290.0	367.1	1525.2	3182.3	1431.1	742.5
France contribution	15.2	32.6	61.2	66.2	71.4	246.6	73.1	261.6	581.3	357.8	
Membership contribution		2.7	2.9	3.1	3.2	11.9	3.4	15.6	30.9		26.8
IFMIF Host State cont.								39.0	39.0		32.0
F4E Total Budget	123.3	227.6	372.1	398.0	427.5	1548.5	443.6	1841.4	3833.5	1788.9	801.3 (**)

(*) The figures in current values are converted respectively from kIUA values using the conversion factor of 1.28 (taken from the Final Report of the ITER Engineering Design Activities) and from kBAUA using the conversion factor of 0.678 (2005); both assumed to be escalated with a fixed inflation rate of 2% per year.

(**)The difference of MEUR 36.3 between F4E total revenue (MEUR 801.3) and the total value of F4E projects (MEUR 765.0 for the part expressed in MEUR) is due to the difference between the total cost of the Broader approach project (MEUR 339 as defined in footnote 1) and the contributions currently committed by the donors (302.7 MEUR), as listed in table 3.

Euratom Contribution

The contribution from Euratom will constitute the main source of revenue for Fusion for Energy.

The Euratom financial contribution is provided through the Euratom Framework research programmes. These programmes are adopted for a period of five years and annual contributions are confirmed with each budget as approved annually by the Council and the European Parliament.

The current Euratom research programme covers the period 2007-2011 and therefore figures beyond 2011 are uncertain subject to approval by the Council and European Parliament.

The budget related to the Euratom contribution will always be adopted under reserve of the corresponding adoption of the European Union General Budget by the budgetary authority.

The Euratom contribution also makes a distinction between the operational and administrative budget which is related to the functioning and operating costs of F4E. The



relative share of the administrative contribution is set at 10.3% (FP VII) or an average of 10.5% for the period 2012-2016 of the total Euratom contribution.

Annual Membership contributions

Membership contributions (except from Euratom) are calculated based on 10% of the administrative expenditure. The annual membership contribution of each Member shall be composed of (a) a minimum contribution of 0.1% of the total amount of annual membership contributions and (b) an additional contribution calculated in proportion to the Euratom financial participation (excluding JET) in the Member's expenditure in the framework of the Community Fusion research programme in the year before last.

Contribution from the ITER Host State (France)

The ITER Host State shall respect its obligations in accordance with the International Agreements entered into for the execution (of its share) of the projects described above.

Revenue made up of financial contributions from the ITER Host State corresponds to a commitment to cover 9.09% of the total costs of the ITER construction phase. The breakdown of this contribution is proportional to the Euratom contribution.

Broader approach

The Broader Approach contributions from the participating countries will be delivered in kind and managed directly by each contributor. This document deals only with Euratom contribution made to Fusion for Energy.

For information, the Broader approach members are currently committed on the following contributions:

Table 3: Broader Approach contributions by donors

(MEUR 2005)	2007-2016 Contributions
Spain	40.3
France	158.9
Italy	84.0
Germany	12.8
Switzerland	6.7
Total	302.7

7. FORECAST OF EXPENDITURE FOR THE PERIOD 2007-2016

Table 4 : Fusion for Energy Total Expenditure

	2007-2016 Commitment appropriations in MEUR (Current Value)(*)									2007 - 2016	
	2007-2011(FP VII)					2012	2013 to 2016	Total	kUA	MEUR (2005)	
	2007	2008	2009	2010	2011						FP VII
ITER	76.1	163.0	305.9	330.8	356.8	1232.6	365.2	1306.6	2904.4	1788.9	
Technology	31.9	37.1	37.3	36.3	38.3	180.9	44.6	379.6	605.1		519.3
Of which Tech. for ITER	27.5	29.1	29.0	27.5	29.0	142.1	30.7	129.1	301.9		265.0
Of which Tech. for DEMO	2.3	3.1	3.2	3.4	3.8	15.8	3.5	14.9	34.2		30.0
Of which Tech. for BA	2.1	4.9	5.1	5.4	5.5	23.0	10.4	43.6	77.0		66.3
Of which IFMIF construction								192.0	192.0		158.0
Administration	15.3	27.5	28.9	30.9	32.4	135.0	33.8	155.2	324.0		282.0
F4E Total Expenditure	123.3	227.6	372.1	398.0	427.5	1548.5	443.6	1841.4	3833.5	1788.9	801.3 (**)

(*) The figures in current values are converted respectively from kUA values using the conversion factor of 1.28 (taken from the Final Report of the ITER Engineering Design Activities) and from kBAUA using the conversion factor of 0.678 (2005); both assumed to be escalated with a fixed inflation rate of 2% per year.

(**)The difference of MEUR 36.3 between F4E total expenditure (MEUR 801.3) and the total value of F4E projects (MEUR 765.0 for the part expressed in MEUR) is due to the difference between the total cost of the Broader approach project (MEUR 339 as defined in footnote 1) and the contribution currently committed by the donors (302.7 MEUR), as listed in table 3.

ITER construction phase

The estimated expenditure related to the ITER construction phase is solely based on the ITER Final Design Report 2001 adjusted to current prices.

Technology for ITER and DEMO

The amount foreseen in the Constituent instrument and its financial statement will allow extra R&D activities in particular the completion of specification given by ITER and the preparation of DEMO.

Technology for Broader Approach

As mentioned above this corresponds only to the Euratom contribution managed by F4E for IFMIF-EVEDA, the IFERC at Rokkasho and the JT60 tokamak.

Technology for IFMIF construction

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Administrative Expenditure

The administrative expenditure relating to the functioning and operating costs of 'Fusion for Energy' is made up of the Euratom contribution. For Euratom, the relative share of the administrative contribution is set at 10.3% (FP VII) or an average of 10.5% for the period 2012-2016 of the total Euratom contribution with a maximum of 15%. Part of the membership contributions may be added to the administrative expenditure. Administrative appropriations not used will be transferred to, or budgeted in addition of, the operational budgets.

8. IMPLEMENTATION UNTIL THE END OF 2007

Table 5: Budget 2007 – 2009 in commitment appropriations

(EUR) Current Value	2007				2008		2009	
	Forecast 2005	Implemen- -tation	Carry over to 2008	Carry over to 2009	Original forecast	Budget	Original forecast	Budget
Euratom contribution	108 100 000	74 367 115	20 332 885	13 400 000	192 300 000	212 632 885	308 000 000	321 400 000
France contribution	15 200 000		15 200 000		32 600 000	47 800 000	61 200 000	61 200 000
Membership contributions					2 683 000	2 683 000	2 900 000	2 900 000
Total	123 300 000	74 367 115	35 532 885	13 400 000	227 583 000	263 115 885	372 100 000	385 500 000

According to the Article 51 of the Euratom Treaty and, as confirmed by the Governing Board's Decision of 28 June 2007⁹, the European Commission is entrusted to implement the necessary actions on behalf of 'Fusion for Energy' before its financial and operative autonomy.

In addition to the table above:

⁹ F4E(07)-GB01-04.1 of 28/06/2007

- MEUR 19.948 and MEUR 18.650 have been paid to ITER Organisation corresponding to the payments of respectively the 2007 and part of the 2008 contributions for ITER management. These payments have been made under the Sixth Framework Programme of Euratom and have no influence on 'Fusion for Energy's revenue.
- MEUR 0.459 has been allocated to the contract for the ITER site deforestation; supervised and financed by the ITER France Agency. This amount will be deducted from the French contribution to 'Fusion for Energy'.

9. ESTIMATES OF REVENUE AND STAFFING FOR 2008 AND 2009 BUDGETS

(a) Revenue

Taken into consideration the implementation detailed above the revenue for the 2008 and 2009 budget will be as follows:

Table 7: Revenue for the 2008 and 2009 budgets

EUR	Budget 2008		Budget 2009	
	Commitment appropriations	Payment Appropriations	Commitment appropriations	Payment Appropriations
Operational revenue	235 615 885	93 500 000	356 600 000	128 000 000
Administrative revenue	27 500 000	27 500 000	28 900 000	28 900 000
Total	263 115 885	121 000 000	385 500 000	156 900 000

Note that the estimate of payment appropriations needs is extrapolated from planning of activities and contracts.

The corresponding expenditure will be detailed in the budget 2008.

(b) Establishment plan

The Establishment Plan for 2008 and 2009 was based on a technical analysis performed by EFDA and discussed extensively in the ELE CCE-FU Preparatory Group. In particular, the Establishment Plan takes account of the fact that 'Fusion for Energy' must exert its full responsibilities for the technical, financial, regulatory and QA follow-up of contracts.

The Establishment Plan for 2009 is based upon the following additional considerations:

- Although it was initially anticipated that technical specifications will, in most cases, arrive from the ITER Organisation in a "build-to-print" form, it is the current practice of the ITER Organisation that the Domestic Agencies should contract out additional R&D and design work in order to ensure that the specifications can be finalised in a form to allow the publication of a call for tender;
- Initially, it was anticipated that the ITER Field Teams would support the Domestic Agencies in the monitoring and follow-up of contracts. As apparent in the organisational chart of the ITER Organisation, this is not the case for the time being and that 'Fusion for Energy' will have the full responsibility for the technical, financial, regulatory and QA follow-up of contracts even if the ITER Organisation keeps full responsibility with regard to the compliance of the delivery with the original specification;

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- Following a decision of the CCE-FU of 5 May 2006, the technical supervision of completing some 400 EFDA Technology contracts related to ITER will be transferred to F4E.

In addition, it is also important to reinforce the management of the Broader Approach activities, in particular for the Satellite Tokamak (JT-60SA) project with dedicated F4E staff in addition to F4E Seconded National Experts (SNEs).

Table 8: Staff Establishment Plan for 2008 and 2009

Categories and Grades	2008		2009	
	Permanent Posts	Temporary Posts	Permanent Posts	Temporary Posts
AD16			0	0
AD15			0	0
AD14		1	0	1
AD13	1		1	1
AD12	8		8	8
AD11	12		12	0
AD10	14		4	10
AD9	10	24	10	38
AD8	4		4	0
AD7			0	10
AD6	2	35	2	47
AD5			0	4
Total AD Grade	51	60	41	119
	111		160	
AST11			1	0
AST10	1		1	0
AST9			1	0
AST8	1		0	0
AST7			1	0
AST6	1		1	0
AST5	1		6	10
AST4	1		2	0
AST3	2	25	1	15
AST2	1		0	0
AST1	1		0	0
Total AST Grade	9	25	14	25
	34		39	
Total Posts	60	85	55	144
	145		199	



Table 9: Indicative distribution of posts per F4E organisational entity¹⁰ – 2008-2009

	2008	2009
Director's Office, Internal Audit	10	11
ITER	95	140
Broader Fusion Development	5	7
Procurement and Contracts	15	20
Resources	20	21
Total	145	199

¹⁰ Having regard to the organisational structure laid down in F4E(07)-GB03-05 of 22/10/2007