



### **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 "Fusion for Energy") and conferring advantages upon it (hereinafter "the Statutes") and in particular Article 6(3)(d) and Article 11 thereof,

Having regard to the Financial Regulation of the Joint Undertaking<sup>2</sup> 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 at its meeting of 13 November 2008,

#### 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 FUSION FOR ENERGY HAS ADOPTED THIS DECISION:

#### Article 1

The resource estimates plan 2009-2013 of Fusion for Energy annexed to this Decision is hereby adopted.

#### Article 2

This Decision shall have immediate effect.

<sup>2</sup> F4E(07)-GB03-11 Adopted 22/10/2007

O.J. L 90, 30.03.2007, p. 58.

Done at Barcelona, 4 December 2008

For the Governing Board

Carlos Varandas

Caa Novemdes

Chair of the Governing Board



#### **ANNEX**

## RESOURCE ESTIMATES PLAN (2009-2013) 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 2009-2013.

#### 2. ASSUMPTIONS

The information presented in this 2<sup>nd</sup> version of the F4E Resource Estimates Plan is based upon the following assumptions:

- The revised cost estimates for the in kind contributions of F4E to ITER are not presently taken into account for the estimate of expenditures provided in this document;
- The European schedule, agreed with IO, for the procurement of the ITER components was used as basis for this document with a date for the first plasma on 31<sup>st</sup> July 2018;
- F4E will receive on time from IO the necessary inputs foreseen in the ITER Quality Management process deposited with the Nuclear Safety Authorities and in accordance with Build-to-Print, Detailed Design and Functional Specification status agreed in 2001;
- The necessary inputs from the IO will be provided in time to allow the associated PAs to be signed according to the foreseen schedule;
- The planning of the activities and the corresponding delivery of components, by the other ITER Domestic Agencies will be respected;



- A current understanding of the ITER Design and that some modifications might be required in 2009 to adjust it to the possible ITER developments;
- No additional delays in the ongoing tasks launched under EFDA for which the results may be required to launch certain F4E activities;
- To launch preparatory actions for the Heating & Current Drive systems according to the agreed ITER procurement sharing without prejudice to the outcome of future analysis;

And regarding the Broader Approach activities,

- The project plans presented in this document are those approved by the Broader Approach Steering Committee;
- The Work Programmes for the projects IFMIF/EVEDA, IFERC and the Satellite Tokamak Programme will be approved by the Broader Approach Steering Committee.

The human resources planned for 2010 are fully in line with the Report on the Staffing Needs endorsed by the Governing Board in July 2008, and the underlying assumptions described in the Report.

#### 3. BUDGET DEFINITION AND CONTENT

The budget is the sole 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 2007<sup>3</sup>.

In summary, the budget shall comprise:

<u>Revenues</u> made up of a Euratom (hereinafter "the Community") contribution, the contribution of the ITER Host State, the annual membership contributions from members other than Euratom, and miscellaneous revenues.

<u>Expenditure</u> made up of Operational expenditure, necessary for the pursuit of its tasks and activities and Administrative expenditure, necessary for the functioning of Fusion for Energy.

#### 4. THE BUDGETARY PROCEDURE – INDICATIVE TIMETABLE FOR 2009 AND 2010

As foreseen in the Financial Regulation and its Implementing Rules, the Annual Budgetary Procedure consists of several steps. For 2009 and 2010, the indicative timetable is the following:

#### **Budgetary Procedure 2009:**

<sup>&</sup>lt;sup>3</sup> F4E(07)-GB03-11 of 22/09/2007



<u>December 2008</u>: The Governing Board adopts the Budget together with Work Programme for 2009.

This Budget was previously established on the basis of the estimates that were adopted by the Governing Board in December 2007 and proposed by the Director of Fusion for Energy to the European Commission in February 2008.

In parallel the EU Budgetary Authority is expected to adopt the Community budget (and therefore the Euratom contribution to 'Fusion for Energy's budget, including the establishment plan) for 2009 in December 2008.

<u>1 January 2009</u>: The budget is definitive and ready to be implemented.

#### **Budgetary Procedure 2010**

<u>December 2008</u>: The Governing Board adopts the Project Plan and the Resource Estimates Plan for 2009-2013, the latter including budget estimates for both operation and administration as well as the proposed establishment plan for 2010.

<u>February 2009</u>: The Director proposes to the EU Commission and the French authorities a Budget for 2010 (for their respective parts) based on the Project Plan and the Resource Estimates Plan for 2009-2013. He also informs the members of F4E on their membership contribution for the following year.

November 2009: The Governing Board adopts the Budget and the Work Programme for 2010.

<u>December 2009</u>: The budgetary authority (Council and European Parliament) adopts the 2010 Community Budget and the related Euratom contribution.

<u>1 January 2010</u>: The budget is definitive and ready to be implemented.

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

The cost estimates of Fusion for Energy projects is detailed I the table 1 below

The indicative total resources (2007-2041) deemed necessary for Fusion for Energy to carry out its objectives based on 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 the Members of Fusion for Energy other than Euratom, and additional resources.

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.

Within these headings, the tasks entrusted to Fusion for Energy are divided into two periods:

- The first one covering is based on the ITER construction phase and the Broader Approach activities.
- The second phase focuses on the operation and decommissioning of ITER, the possible construction and operation of IFMIF and a programme of activities in preparation for DEMO.

The present document will concentrate on the first phase and in particular on the budget covering the period 2007-2011, forming part of the 7<sup>th</sup> Euratom Research Framework Programme.

The additional support to ITER and Technology will cover if necessary Broader Approach to complete the Europe contribution of the donors.



F4E(08)-GB08-10 Final 04/12/2008

In Cash by F4E

Table 1: Detailed Cost estimates of Fusion for Energy Projects
(In commitment appropriations)

2007-2016
2017-2041

	,	2007-2016	<u> </u>	···	-2041	Modalities	
	kIUA	kBAUA	MEUR (2005)	kIUA	MEUR (2005)	for delivery	
ITER construction	1626.2						
Of which EU direct	995.0					In Kind by F4E	
Of Which EU to Japan	243.8					In Cash by F4E	
Of Which EU To Fund	134.5					In Cash by F4E	
Of which ITER R & D	36.4					In Cash by F4E	
Of which ITER Management	216.7					In Cash by F4E	
ITER Construction Optional	162.6		a to the a control of a control of the control of t			In Kind and Cash by F4E	
ITER operations				1278.4		In Kind and Cash by F4E	
ITER Decommissioning					195.2	In Cash by F4E	
ITER Deactivation					103.4	In Kind by F4E	
ITER Total	1788.9		0	1278.4	298.5		

ITER Total	1788.9		0	1278.4	298.5	
Technology for ITER			265.0			In kind by F4E
Other Technology (DEMO and Broader Approach)			60.0			In kind by F4E
Technology Broader Approach IFMIF-EVEDA		143.8				In kind by BA members
Technology Broader Approach IFERC -Rokkasho		119.8				In kind by BA members
Technology Broader Approach NCT JT60		236.4				In kind by BA members
IFMIF construction			158.0		246.0	In kind by F4E
IFMIF Operation and Decommissioning.					716.5	In kind by F4E
Technology Total		500.0	483.0	0.0	962.5	
		*				

282.0

765.0

0.0

1278.4

433.0

1694.0

500.0

1788.9

F4E running cost (administration)

Total F4E projects



#### 6. ESTIMATES OF REVENUE FOR THE PERIOD 2007-2016

Table 2 details the revenue of Fusion for Energy for the ITER construction phase.

Note: 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.

#### **Euratom Contribution**

The contribution from Euratom constitutes 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.

#### **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, or 20% of the EU contribution valued at 1788.85kIUA.

#### **Annual Membership contributions**

Membership contributions (except from Euratom) are calculated based on 10% of the administrative expenditure calculated at the time of the preparation of the draft budget. 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.

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

	Current value in MEUR (*)	2006 Executed	2007 Executed (FP VII)	2008 Budget (FP VII)	2009 Budget (FP VII)	2010 Forecast (FP VII)	2011 Forecast (FP VII)	2012 Forecast	2013 Forecast	2014 2016 Forecast	> 2016 Forecast For PA	FP VII Period TOTAL	TOTAL
ions	Euratom contribution	40.6	74.0	142.7	308.0	373.7	391.8	381.9	379.9	1054.4	-	1290.2	3147.0
Commitment appropriations	France contribution	2.0	p.m	47.8	61.2	66.5	80.1	76.9	75.7	169.2	-	255.6	579.3
ent app	F4E members contribution	-	-	2.7	2.9	3.4	3.6	3.7	3.7	12.2	-	12.6	32.2
nmitme	IFMIF Const. Host State	_	-	-	•	_	-	_	_	38.5	*		38.5
స్త	F4E Total Budget	42.6	74.0	193.2	372.1	443.6	475.5	462.5	459.3	1274.2	-	1558.4	3797.0
us	Euratom contribution	40.6	1.9	123.5	154.0	210.9	362.9	384.6	383.3	1077.7	407.6	<i>853.2</i>	3147.0
priatio	France contribution	2.0	p.m	24.0	30.4	23.6	73.0	79.2	77.5	185.9	83.8	151.0	579.3
t appro	F4E members contribution	-	_	2.7	2.9	3.4	3.6	3.7	3.7	12.2	-	12.6	32.2
Payment appropriations	IFMIF Const. Host State	~	-	-	-	_	-	-	_	21.6	16.9	-	38.5
<u>.</u>	F4E Total Budget	42.6	1.9	150.2	187.3	237.9	439.5	467.5	464.5	1297.4	508.2	1016.8	3797.0



#### 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 donors are currently committed on the following contributions:

M€ 2005 value 2007-2016 Contributor Contributions Spain 42.02 France 159.48 84.16 Italy 14,75 Germany Switzerland 6.67 Belgium 8.35

Total

315.43

Table 3: Broader Approach contribution by donors (\*)

#### 7. FORECAST OF EXPENDITURE FOR THE PERIOD 2007-2016

The table 4 details the expenditure of Fusion for Energy for the ITER construction phase.

Note: Again 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.

#### 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.

The ITER site support activities will be covered under the ITER construction expenditure.

#### 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.

<sup>\*</sup> Pending their final approval

Table 4: Fusion for Energy Total Expenditure

	Current value in MEUR (*)		2007 Executed (FP VII)		2009 Budget (FP VII)	2010 Forecast (FP VII)	2011 Forecast (FP VII)	2012 Forecast	2013 Forecast	2014 2016 Forecast	> 2016 Forecast for PA	FP VII Period TOTAL	TOTAL
us	F4E ITER Of which ITER construction	<b>42.6</b> 40.6	<b>72.1</b> 35.3	<b>148.0</b> 148.0	<b>314.8</b> 314.8	375.1 375.1	<b>400.561</b> 400.561	<b>384.4</b> 384.4	<b>378.5</b> 378.5	<b>816.3</b> 816.3	-	1310.5	2932.4
Appropriations	Of which ITER Site Preparation	40.6 2.0	35.3 36.7	140.0	314.0	3/3.1	400.361	384.4	3/8.3	810.3		1273.8 36.7	2893.7 38.7
prop	Technology	-	-	19.3	28.4	34.3	39.1	41.5	43.5	336.2	-	121.1	542.3
	Of which Tech. for ITER and DEMO	_	_	19.2	18.2	30.0		35.5	36.5		-	101.5	289.7
Commitment	Of which Tech. for BA		_	0.1	10.2	4.3	5.0	6.0	7.0			19.6	60.0
B i	Of which IFMIF construction				-	-	-	-		192.6		-	192.6
Jom C	F4E Administration		1.9	25.8	28.9	34.2	35.9	36.6	37.3	121.7		126.7	322.3
Ľ	F4E Total Commitment	42.6	74.0	193.2	372.1	443.6	475.5	462.5	459.3	1274.2	-	1558.4	3797.0
	F4E ITER	42.6	0.0	122.0	146.5	172.3	368.5582	395.9	387.3	929.7	367.5	809.4	2932.4
္က	Of which ITER construction	40.6	-	112.0	131.5	164.3	364.8109	395.9	387.3	929.7	367.5	772.7	2893.7
tion	Of which ITER Site Preparation	2.0	<b></b>	10.0	15.0	8.0	3.7					36.7	38.7
Payment Appropriations	Technology	-	-	2.4	11.9	31.4	35.0	35.0	39.9	246.1	140.7	80.6	542.3
ıdd	Of which Tech. for ITER and DEMO	_	-	2.3	7.7	27.0	29.3	29.3	34.2	113.3	46.7	66.2	289.7
¥	Of which Tech. for BA		-	0.1	4.2	4.4	5.8	5.8	5.7	24.6	9.6	14.5	60.0
me	Of which IFMIF construction		-	-	_		-	-		108.2	84.4	**	192.6
Pay	F4E Administration		1.9	25.8	28.9	34.2	35.9	36.6	37.3	121.7	-	126.7	322.3
	F4E Total Payment	42.6	1.9	150.2	187.3	237.9	439.5	467.5	464.5	1297.4	-	1016.8	3797.0



#### **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. ESTIMATES OF REVENUE AND STAFFING FOR 2009 AND 2010 BUDGETS

#### (a) Revenue

Taken into consideration the implementation detailed above the revenue for the 2009 and 2010 budget will be as follows:

2009 Budget 2010 Budget Payment Commitment Payment Commitment **EUR** appropriations Appropriations appropriations Appropriations 343,200,000 158,400,000 409,400,000 203,700,000 Operational revenue 279,100,000 125,100,000 339,500,000 176,700,000 Of Which Euratom contribution 61,200,000 30,400,000 66,500,000 23,600,000 Of Which ITER Host State contribution 2,900,000 3,400,000 2,900,000 3,400,000 Of Which Membership contribution 28,900,000 28,900,000 34,200,000 34,200,000 Administrative revenue 28,900,000 28,900,000 34,200,000 34,200,000 Of Which Euratom contribution 187,300,000 372,100,000 443,600,000 237,900,000 Total

Table 5 Revenue for the 2009 and 2010 budgets

The administrative expenditure for the 2009 budget will be reinforced from the unused appropriations authorised in the 2008 budget to complete the setting-up of Fusion for Energy, in particular for the IT and Communication activities.

The estimate of payment appropriations needs is extrapolated from planning of activities and contracts.

The detailed expenditure will be developed in the corresponding budgets.



#### (b) Establishment plan

The Establishment Plans for 2009 and 2010 are based upon the considerations developed with the report on the staffing needs for Fusion for Energy<sup>4</sup> endorsed by the Governing Board in July 2008.

Notes for the 2 tables below:

- (\*) The post occupied will increase before the end of 2008 subject to the new recruitments (all the TA Posts in AD category will be occupied for 2008)
- (\*\*) Contract Agents (CA) and Seconded National Experts (SNE) are outside the number of posts in the formal Establishment Plan

	Table 6 : Posts occupied in 2008 (*)											
Status	Director's Office	ITER Department	Broader Fusion Development Department	Contracts & Procurement Department	Resources Department	Total						
FO	3	13	3	6	10	35						
TA	3	39	2	11	11	66						
Total Posts	6	52	5	17	21	101						
CA	2	11	1	1	22	37						
SNE	0	3	2	2	0	7						
Frand Total (**)	8	66	8	20	43	145						

<sup>&</sup>lt;sup>4</sup> F4E(08)-GB06-10 endorsed the 08/07/08

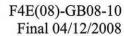




Table 7: Staff Establishment Plan for 2009 and 2010

Category	Posts Auth	orised 2008	Posts occu	pied 2008 (*)	Posts Auth	orised 2009	Posts Requested 2010		
and grade	Permanent Posts	Temporary Posts	Permanent Posts	Temporary Posts	Permanent Posts	Temporary Posts	Permanent Posts	Temporary Posts	
AD16									
AD15									
AD14		1		1		1		1	
AD13	1				1	1	2	1	
AD12	8		10	3	8	8	10	8	
AD11	12		8		12		12		
AD10	14		1		4	10	4	20	
AD9	10	24	3	22	10	38	10	38	
AD8	4		1		4		4	2	
AD7				1		10		20	
AD6	2	35	1	31	2	47	2	55	
AD5			2	2		4		4	
Total grade	51	60	26	60	41	119	44	149	
AD	1	11	86		160		193		
AST11					1		2		
AST10	1		1		1		2		
AST9			1		1		2		
AST8	1						2		
AST7			2	-	1				
AST6	1		2		1	***************************************	1		
AST5	1				6		6	2	
AST4	1		1		2		2	3	
AST3	2	25	1	6	1	25	1	18	
AST2	1								
AST1	1		1						
Total grade AST	9	25	9	6	14	25	18	23	
Total grade AST	3	34		15		39		1	
Total	60	85	35	66	55	144	62	172	
général	1	45	101		19	99	234		