FUSION FOR ENERGY

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

THE GOVERNING BOARD

DECISION OF THE GOVERNING BOARD ADOPTING WORK PROGRAMME 2012 OF THE EUROPEAN JOINT UNDERTAKING FOR ITER AND THE DEVELOPMENT OF FUSION ENERGY

THE GOVERNING BOARD OF FUSION FOR ENERGY

HAVING REGARD to the Statutes annexed to the Council Decision (Euratom) No 198/2007 of 27th March 2007 establishing the European Joint Undertaking for ITER and the Development of Fusion Energy (hereinafter "Fusion for Energy") and conferring advantages upon it[1] and in particular Articles 6(3)(d) and 11 thereof;

HAVING REGARD to the Financial Regulation of Fusion for Energy[2] adopted by the Governing Board on 22nd October 2007, last amended on 18th December 2007[3] (hereinafter "the Financial Regulation"), and in particular Article 64 thereof;

HAVING REGARD to the Implementing Rules of the Financial Regulation[4] adopted by the Governing Board on 22nd October 2007 last amended on the 8th July 2008[5] (hereinafter "the Implementing Rules") and in particular Article 53 thereof;

HAVING REGARD to the 2012 Budget adopted by the Governing Board on the 25th November 2011[6];

HAVING REGARD to the comments and recommendations of the Executive Committee and Technical Advisory Panel,

WHEREAS:

(1) The Director should, in accordance with Article 8(4)(c), draw up an annual work programme;

(2) The Governing Board should adopt the work programme.

HAS ADOPTED THIS DECISION:

Article 1

The Work Programme 2012 of Fusion for Energy annexed to this Decision is hereby adopted *ad referendum*.

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1 O.J. L 90, 30.03.2007, p. 58.
2 F4E(07)-GB03-11 Adopted 22/10/2007
3 F4E(07)-GB04-06 Adopted 18/12/2007
4 F4E(07)-GB03-12 Adopted 22/10/2007
5 F4E(08)-GB06-06a Adopted 08/07/2008
6 F4E(11)-GB21-11k Adopted 25/11/2011

Article 2

This Decision shall have immediate effect.

Done at Barcelona, 25th November 2012

For the Governing Board

Stuart Ward

Chair of the Governing Board

ANNEX I

FUSION FOR ENERGY 2012 WORK PROGRAMME (WP2012)

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PART I - INTRODUCTION, ASSUMPTIONS AND OVERALL OBJECTIVES

1.1. INTRODUCTION

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

F4E was established for a period of 35 years from 19th April 2007 and its main offices are located in Barcelona, Spain. The objectives of F4E are three fold:

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

In accordance with the Financial Regulation of F4E and its Implementing Rules, this Work Programme lays down a detailed programme of activities that are foreseen to be implemented and financed under the budgetary appropriation for 2012. This information is complemented by the Budget 2012.

1.2. ASSUMPTIONS

At the 7th ITER Council in July 2010 the new ITER baseline was approved. The adopted baseline foresees a first plasma date (FP) in November 2019. Such a scenario has already been used since the beginning of 2010 by both the ITER Organisation (IO) and the DAs as the working basis for the further development of the project. Furthermore the associated schedule was confirmed by F4E to be in line with the request of the Governing Board to mitigate the costs and risks for the delivery of the EU components on the critical path.

Since a few months ITER IO started an exercise, triggered by the catastrophic tsunami that hit Japan in March 2011, to define a new baseline that takes into account both the impact of this event on the capability of Japan to deliver on time their in-kind procurements and the slippages accumulated in the meanwhile in the design and fabrication of the components in the critical path.

A top-down Level 0 schedule has been proposed by IO and it is being discussed with the DAs. This new scenario foresees a delay in the date of the first plasma of approximately 1 year.

Such action has not been taken into account in this document. An amendment will be necessary once a final decision is adopted by the ITER Council.

The F4E schedule used for the preparation of this document is as of **August 2011**. The slippage in the schedule of critical components such as vacuum vessel and buildings, due to the delay of IO in supplying the necessary data opens a compatibility issue of the current F4E schedule with the date of FP in November 2019. In addition, it should be noted that IO has not yet provided their detailed schedule for the preparation of input data, design reviews and PA signatures.

The delays are being analysed as part of the exercise currently carried out with ITER IO and the other DAs.

As for the budget, this WP2012 assumes that F4E will receive an increased budget for the years 2012 and 2013 according to the values presented by F4E to the Commission and also to the EU financial committees.

The 2012 F4E Work Programme (WP2012) for ITER is based on the following assumptions:

- The Procurement Arrangements (PAs) between F4E and IO will be concluded on time and according to the agreed level of design. The necessary inputs from IO will be provided in time to allow the associated PAs to be signed according to the foreseen schedule.
- 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.

- F4E will receive on time, from contracts and grants ongoing, the technical input needed for the preparation of the tenders.
- WP2012 is in line with the new set of guidelines for the evaluation of the ADI credit endorsed at the 8th meeting of the ITER Council (June 2011)
- The planning of the activities and the corresponding delivery of components by the other ITER Domestic Agencies will be respected.
- F4E will continue active management of and involvement in the ongoing tasks signed under EFDA, results of which are required to initiate certain F4E activities.
- Technically and commercially complex procurements will be implemented whenever appropriate through the *Competitive Dialogue* procedure or through the negotiated procedure, in order to improve the alignment of supply chain response to F4E needs and to proactively adopt cost containment measures. This will be done in compliance with F4E Implementing Rules.
- Grants related to recurring and sequential R&D activities, with a well defined development path eventually leading to a EU procurement package, will be implemented whenever appropriate through the *Framework Partnership Agreement* (FPA) procedure, in order to streamline and channel R&D funding, improve its effectiveness and reduce administrative burden to beneficiaries and F4E alike.
- Procurements which encompass scope within the domain of both F4E and contracting authorities, or for which a very close coordination between F4E and other entities is needed, will be implemented whenever appropriate through the *Joint Procurement* procedure.

Regarding the WP2012 for Broader Approach, the main assumptions are that this is to be coherent with the individual BA Projects' Work Programmes and Project Plans as approved by the Broader Approach Steering Committee.

1.3. ITER CREDITS FOR PREPARATORY ACTIVITIES

This WP2012 includes an extensive programme of R&D and preparatory activities that have to be carried out prior to signing the Procurement Arrangement for the Procurement Packages agreed to be at Build-to-Print level. Recognising that F4E is carrying out work that should have been completed by IO, additional credit from IO is being requested by F4E through ITER Task Agreements (ITAs). The activities indicated in this WP2012 as receiving additional (ITA) credits may be cancelled in the event that IO would not make the requested credits available.

Similarly, F4E participates to the call for proposals launched by ITER IO on a competitive basis for activities such as plasma engineering and safety. Activities to answer to forecasted calls in 2012 are also included in this document.

1.4. MAIN OBJECTIVES

1.4.1. ITER

With respect to activities related to ITER, the main objectives are:

- The negotiation and signature of the ITER Procurement Arrangements, proposed by the ITER Organisation (IO), according to the present F4E schedule.
- The signature of procurement contracts for those components on the critical path (in particular buildings, magnets and vacuum vessel) and for those foreseen in the current F4E schedule.
- The continuation of design and R&D activities in areas including Remote Handling, Heating and Current Drive, Vacuum System, Tritium System, Diagnostics and Test Blanket Modules.
- The continuation of the preparation of safety and licensing documentation for ITER in Cadarache and related safety studies.
- The investigation of manufacturing methods and non-destructive tests of critical components from the technical point of view with the objective of minimising the cost and risk of not meeting the technical requirements (divertor, blanket and first wall).
- The preparation of new facilities to test prototypes and components during the qualification process and construction respectively.
- The continuation of the activities for the preparation of the ITER site.

The most significant procurements to be initiated within WP2012 are related to:

- Magnets, for which procurement contracts for Assembly of TF winding packs into coil cases, radial plates, for TF and PF cold tests;
- Vacuum vessel, for which additional stages and options will be released according to the progress in the manufacturing.
- Tritium system, for which a procurement contract for the Water Detritiation Tanks will be signed.
- Cryoplant, for which the procurement of LN2 Plant and Auxiliary Systems is planned;
- Power Supplies, for which procurements will be signed for SSEPN and SSEN systems;
- Neutral Beam system, for which procurement contracts will be launched in support of the Neutral Beam Test Facility (NBTF), including the Back-to-back Agreement.
- Buildings for which procurement contracts for constructions and mainly the civil work of the Tokamak complex and surrounding buildings (Tender Batch 03) will be signed

Further to provide management and follow-up of contracts signed in direct support of the ITER project, F4E continues to be responsible for the technical follow-up of a number of technology contracts previously managed by EFDA. The outcome of these contracts is an important input for many of the activities that will be initiated by F4E.

1.4.2. Broader Approach

With respect to activities related to the Broader Approach (BA), the main objectives are to implement Procurement Arrangements with the Voluntary Contributors and carry out limited direct contributions from F4E which will cover residual activities on the TF Conductor and preassembly tooling, transportation of some components, and cash contributions for the IFMIF/EVEDA and IFERC Projects.

PART II - ITER

In the following, the activities of Fusion for Energy related to ITER are described according to the proposed F4E Work Breakdown Structure. The tables provided in the text use the following abbreviations:

Abbreviation	Meaning
WP ref	Work programme reference, univocally identifying WP items WPxx/yy/zz, where xx are the last two digits of the WP/budget year in which the activity was first financed, yy is a code identifying the ITER WBS element (if available) or the F4E service in charge, zz is a sequential number for the year
G	Grant
SG	Specific Grant based on a Framework Partnership Agreement
FPA	Framework Partnership Agreement
FWC	Framework Procurement Contract
P	Procurement (service, supply or works)
Y	Credited by ITER IO through PA
Y(ITA)	Credited by ITER IO through ITA
N	Non credited

All activities indicated within WP2012 are planned to be committed under the 2012 budget. Certain activities have been moved from previous years into WP2012 due to changes in the overall planning and priorities: these items are identified by a WP ref field showing a WPxx tag different from WP12 (e.g. WP/11/03). It is understood that the inclusion of these items in WP2012 is cancelling and superseding any corresponding item in a previous year's WP, unless otherwise specified in this document for specific and motivated reasons.

WP items indicated as Framework Partnership Agreements (FPA) or Framework Procurement Contracts (FWC) are included for clarification purposes only and do not constitute a financing decision: the implementing financing decisions within such frameworks is indicated as appropriate by separate WP items.

During the implementation of the work programme activities, F4E may group more activities in a single call or split one activity in more calls. This will in any case be performed preserving the scope and objective presented in WP2012.

The foreseen time of publication of calls and invitations is indicative only and based on the present understanding of the project development. For expenditure performed through framework contracts and framework partnership agreements, the foreseen time of publication of calls is not included as the implementation will occur through specific contracts or grants. Publication of the call for tender is intended as the date of publication on the Industry Portal (for open procedures) and the date of the Invitation Letter to be sent out to the Suppliers (for negotiated procedures). For restricted procedures and competitive dialogues this milestones refers to the date of the call for tender (second phase of the procedure).

The foreseen duration of activities is indicative only. Modifications of durations may reflect a different phasing of the activity with respect to the initial planning, in line with the financing decision nature of the WP2012 and the change in the procurement strategy, including the adoption of instruments such as stages, options, lots.

2.1. MAGNETS

2.2.1. List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP09/11/03	EU.01.02.03.	P serv	Cold Test Facility Preparation for PF Coils	Engineering study to develop the preliminary layout and design of the on-site cold test facility for the PF coils	12	Y,Y(ITA)	12Q1
WP10/11/01	EU.01.02.04.	P Serv	Testing and characterisation of PF strands	Service contract to carry out independent verification tests of the PF strand manufactured by RFDA, as required by the PA	36	Y	11Q4
WP11/11/03	EU.01.02.01.	P Serv	Irradiation Resistant Resin for TF Coils	Manufacture and test, before and after irradiation of independent specimens, for verification of the system proposed by the TF winding pack supplier	31	Y	N/A
WP11/11/07	EU.01.02.01.	P Supply	Assembly of TFWP into Coil cases	Qualification (incl. mock-up) and assembly of TF Winding Packs into coil cases	60	Y	11Q3
WP12/11/01	EU.01.02.04.	P Serv	Jacket material qualification & Testing for TF and PF Coils	Independent mechanical tests on the base materials and welds used by the suppliers for the qualification and series production of the conductor jacket materials Mainly specific contracts to be implemented under framework contracts ongoing: F4E-OPE-084, F4E-OPE-149 (ES-MF)	12	Y	N/A
WP12/11/02	EU.01.02.01.	P Serv	Testing of TF structural materials	Independent mechanical tests on the base materials and welds used by the suppliers for the qualification and series production of the TF coil radial plates and cases Mainly specific contracts to be implemented under framework contracts ongoing: F4E-OPE-149 (ES-MF)	12	Y	N/A
WP12/11/03	EU.01.02.04.	Pserv	SULTAN sample manufacture & Tests	Manufacture and testing of conductors and joint samples in the Sultan facility at CRPP Villigen (CH)	12	Y	N/A
WP12/11/04	EU.01.02.04.	Pserv	Qualification and testing	Qualification and testing for magnets and conductor area	12	Y	12Q3
WP12/11/05	EU.01.02.01.	P supply	Procurement for TF ColdTest	Preparation of the TF cold test facility, according to the IO specification	21	Y,Y(ITA)	12Q1
WP12/11/06	EU.01.02.01.	P supply	Procurement of Radial Plates-- Second stage	Supply of a second batch of Radial Plate	32	Y	N/A
WP12/11/07	EU.01.02.01.	P supply	Transportation of TF coil components	Transportation of large and heavy TF coil components during different manufacturing phases	N/A	Y	N/A

WP12/11/08	EU.01.02.01.	P serv	Inspectors for PF and TF contracts	Provision for mechanical, UT, welds, geometrical inspection, mainly via framework contract WP11/PO/12	60	Y	N/A
WP12/11/09	EU.01.02.04.	P serv	Testing of TF Nb3Sn Strands	Provision for control on production and quality performances of strands.	12	Y	N/A
WP12/11/10	EU.01.02.03.	P supply	Procurement for PF ColdTest	Preparation of the PF cold test facility, according to the IO specification	21	Y(ITA)	12Q1

2.2. VACUUM VESSEL

2.2.1. List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/15/01	EU.01.03.01.	P Supply	Procurement of Main Vessel (phase 3)	Implementation of options (including *inter alia* baking, first transportation frame, machining and forming of the splice plates, and stages for materials (sectors 2,9,8,7) and design (sectors 3 and 4) of the VV contract according to the developing of the manufacturing	51	Y	2010
WP12/15/02	EU.01.03.01.	P Serv	Engineering support for VV construction	Engineering and finite-element analysis to support the VV sectors contract activities These analyses include thermal, structural, electromagnetic and seismic. Also CAD tasks to support, validate and/or integrate IO input data and activities to quickly answer to ANB requests to speed design approval.	28	Y	N/A
WP12/15/03	EU.01.03.01.	P Serv	Finalisation of the design of the VV instrumentation	Finalisation of the design of the VV instrumentation including interface definition, build-to-print of the instrumentation fittings and full details of the installation of the sensors	12	Y,Y(ITA)	11Q3
WP12/15/04	EU.01.03.01.	P Serv	Procurement of Inspections by F4E - Phase I	Provision for inspection (mechanical ,welds, UT, geometrical,) in several suppliers manufacturing sites. Mainly to be implemented through specific contracts of WP11/PO/12	12	Y	N/A
WP12/15/05	EU.01.03.01.	P Supply	Procurement for Instruments Interfaces - Phase I	Phase I procurement refers to the first batch of VV instrumentation as defined by activity WP12/15/03	7	Y	12Q4

2.3. BLANKET

2.3.*1 BLANKET MANIFOLDS*

2.3.1.1 List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/16/06	EU.01.04.01.	PServ	Final design of the Blanket Manifold	Analysis of the final model to be delivered by IO including all improvements made in previous analysis iterations	12	Y(ITA)	12Q1
WP12/16/07	EU.01.04.01.	P Serv	Bibliographic review and friction testing for sliding supports	Performance of friction tests to validate the behaviour of the selected coating/ material for the BCM pipe supports. The tests will be made on representative samples	17	Y(ITA)	12Q2
WP12/16/08	EU.01.04.01.	P Serv	Pipe Bending Test	The manufacturing and accuracy of selected representative pipe geometries will be validated by partial full scale sample manufacturing	4	Y(ITA)	12Q2

2.3.*2 BLANKET FIRST WALL*

2.3.2.1 List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/16/01	EU.01.04.02.	P Supply	Manufacture of FW full scale prototypes	Manufacture of First Wall full scale prototypes and related manufacturing studies	26	Y	12Q1
WP12/16/02	EU.01.04.02.	PServ	Fabrication of a 3rd NHF FW semi-prototype	Technology development and fabrication of a FW panel semi-prototype in order to increase competition for the series production.	17	Y	11Q4
WP12/16/03	EU.01.04.02.	PServ	Engineering Support for Blanket First Wall design	Electro-Magnetic, Thermal and Mechanical Analyses for the NHF FW panels design	17	Y (ITA)	N/A

2.4. DIVERTOR

2.4.1. List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/17/01	EU.01.04.03	P supply	Procurement for Prototype Divertor Cassette Body and Integration Stage #1	This activity refers to the manufacturing of the CB prototype and preparation for Cassette Series production and PFC integration	21	Y	12Q1
WP12/17/02	EU.01.04.04	P Serv	Procurement in support to the IVT pre-production qualification	This activity refers to possible needs for analysis or testing in support to the procurement of IVT prototypes and the preparation of the series production.	12	Y	12Q3

2.5. REMOTE HANDLING (RH)

2.5.1. Procurement Arrangements to be signed in 2012

Title	ITER Credit (kIUA)	Signature due
Remote Handling –Cask and Plug RH System	19.8	July 2012
Remote Handling - In-Vessel Viewing System	6.8	September 2012
Neutral Beam Remote Handling	6	September 2012

2.5.2. List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/23/01	EU.01.05.05.	PServ	Engineering Support for RH	Support activities (control system, rad-hard technologies, follow up of the DIV RH tender, preparation of the other PA for TCS, IVVS, NB RH …) Mainly performed through specific contracts within framework WP11/ES/06	12	Y(ITA)	N/A

WP12/23/02	EU.01.05.04.	G	Neutral Beam Remote Handling (NB~~I~~ RH) Design Follow-up Phase I	Support activities specific to NB RH	29	Y	12Q1
WP12/23/03	EU.01.05.01	G	DTP2 extension & upgrades with new prototypes	Test activities on DTP2 including new hardware set-up like central cassette locking and pipe tooling	20	Y, Y(ITA)	12Q1
WP12/23/04	EU.01.05.01	P supply	Divertor Remote Handling Procurement	Design and manufacturing activities related to the DIV RH procurement package (mainly focused on preliminary design and support validation activities like R&D and tests where needed) Mainly to be implemented through WP11/23/02	12	Y, Y(ITA)	12Q1

2.6. VACUUM PUMPING AND FUELLING

2.6.1. List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/31/01	EU.01.06.01.	P supply	Procurement of the MITICA Cryopump	Procurement of the MITICA Cryopump, including instrumentation and follow-up	49	Y	12Q3
WP12/31/02	EU.01.06.02.	G	R&D for leak localization	Support to leak localization techniques development and demonstration on ITER-like scale	12	Y(ITA)	12Q2

2.7. TRITIUM PLANT

2.7.1. List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP11/32/01	EU.01.07.02.	P Serv	Follow-up manufacturing, installation and testing of WDS Tanks contract	Follow up of manufacturing, factory testing, transport, installation and testing at ITER site of WDS Tanks	54	Y	12Q2
WP11/32/02	EU.01.07.02.	P Supply	Procurement of WDS Tanks including installation	Main procurement for WDS tank manufacturing including transport, support in installation and final tests at ITER site of the large tanks for WDS	58	Y	12Q2

2.8. CRYOPLANT

2.8.1. List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/34/01	EU.01.10.01.	P supply	Procurement of LN2 Plant and Auxiliary Systems	Design, manufacturing, on-site delivery and supervision of installation and test of Liquid Nitrogen Plant and Auxiliary Systems	63	Y	11Q4

2.9. POWER SUPPLIES

2.9.1. Procurement Arrangements to be signed in 2012

Title	ITER Credit (kIUA)	Signature due
Material procurement for SSEN	5	April 2012
Material procurement for SSEN Emergency Power Supply	5.7	April 2012

2.9.2. List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/41/01	EU.01.16.01.	P supply	Procurement of SSEPN Emergency System	Electrical Power Distribution TB06 Contract covers procurement of PBS 43 equipment including cables and emergency power supplies, and installation of PBS 41-PP and PBS 43 equipment	48	Y	12Q2
WP12/41/02	EU.01.16.01.	P supply	Procurement of SSEN Equipments SSEN Cables and Installation	Electrical Power Distribution TB06 Contract covers procurement of PBS 43 equipment including cables and emergency power supplies, and installation of PBS 41-PP and PBS 43 equipment	63	Y	12Q3

2.10. CODAC

2.10.1. List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/45/01	EU.01.20.06	Pserv	Support on I&C design and implementation in the frame of EU PA's	Technical support to ICC (Instrumentation, Control & CODAC). Provision of professional services in the field of instrumentation and Control System Engineering and aiming to support F4E with the preparation of technical specifications and the follow-up of in kind contributions to ITER. Mainly performed through specific contracts within framework WP11/45/02.	12	Y	N/A
WP12/45/02	EU.01.20.06	FWC	Procurement for I&C Integrator for all EU supplies	Framework contract for provision of professional services in the field of Instrumentation and Control System Engineering and aiming to support F4E in the development of interfaces to CODAC and plant control systems.	48	N/A	11Q4
WP12/45/03	EU.01.20.06	P serv	Procurement for I&C Integrator for all EU supplies	Preparation activities to start production of plant system interface to CODAC: training to IO standards and quality, efficiency improvements.	12	Y	N/A

				Development of centralised control and monitoring for building construction. Integrate any available building to central monitoring. Mainly performed through specific contracts within framework WP12/45/02			

2.11. ION CYCLOTRON H&CD ANTENNA

2.11.1. List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP11/51/02	EU.01.12.01.	P Serv	Detailed design of the ITER ICH antenna -Built to print	Production of the built to print drawings for the ITER ICH antenna and analysis activities required for the ITER Final Design Review and for PA preparation	18	Y(ITA)	11Q4
WP12/51/01	EU.01.12.01.	P Serv	Engineering support (Antenna design and analysis)	Second part of general mechanical analyses, disruption analysis and seismic/vibration analysis of the IC antenna. Mainly performed through specific contracts within general frameworks	12	Y(ITA)	12Q2
WP12/51/02	EU.01.12.01.	P Serv	RF Vacuum Windows design qualification	Material characteristics and properties measurement before and after irradiation and at high temperature	24	Y(ITA)	12Q2
WP12/51/03	EU.01.12.01.	P Serv	Faraday Screen design qualification	High Heat Flux testing of FS mock-ups and prototypes	16	Y(ITA)	12Q1

2.12. ELECTRON CYCLOTRON

2.12.1. EC UPPER LAUNCHER - List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/52/07	EU.01.13.01.	PServ	Engineering Analyses and Support	Independent verification of analysis for SiC1 component, cost/schedule verification and additional engineering support	18	Y(ITA)	12Q2
WP12/52/08	EU.01.13.01.	P Supply	EC UL prototypes Phase I	Prototype manufacturing and testing required for the BtP EC launcher - part I. Includes SiC1 prototypes for the Primary Confinement System	15	Y(ITA)	12Q2
WP12/52/09	EU.01.13.01.	PServ	Support to Built-To-Print Primary Confinement System	Preparation of BtP drawings and supporting documentation for PA of PCS	18	Y(ITA)	12Q2
WP12/52/10	EU.01.13.01.	PServ	Support to prototype procurement and testing	Support during manufacture and testing of protoytpes	15	Y(ITA)	12Q2

2.12.2. EC POWER SOURCES AND SUPPLIES - Procurement Arrangements to be signed in 2012

Title	ITER Credit (kIUA)	Signature due
Electron Cyclotron Radio-Frequency Power Sources	9.86	June 2012

2.12.3. EC POWER SOURCES AND SUPPLIES - List of Activities[7]

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP11/52/02	EU.01.13.02.	G[8]	Grant for gyrotron experiments on reliabiliy and high frequency modulation	Experiments on fast recovery after an arc, high frequency modulation tests on the EU gyrotron and measurement of vibrations generated by the gyrotron	7	Y	12Q2
WP11/52/04	EU.01.13.02.	FPA[9]	Design & Development of EU Gyrotron (2011-2015)	Integrated design and development activities for the European gyrotron	48	Y	11Q4
WP12/52/01	EU.01.13.02.	P Serv	Engineering Support to the EC Power Sources and Power Supplies	Industrial support to F4E in preparation of the EU contribution to the EC power supplies and RF sources of ITER. Mainly performed through specific contracts within frameworks	N/A	Y	N/A
WP12/52/02	EU.01.13.03.	P supply	Main Contract for the procurement of Main and Body HV power supplies for the EC ITER system	Main contract for the EU contribution to the ITER Electron Cyclotron power supply system (Main and Body power supplies)	71[10]	Y	12Q2
WP12/52/03	EU.01.13.03.	PServ	Follow-up of the contract for the HV power supplies for the ITER system	Technical follow-up of the procurement of the HV power supplies for the ITER system (Main and Body power supplies)	71[10]	Y	12Q2
WP12/52/04	EU.01.13.02.	P Supply	2MW, CW, dummy load and other auxiliaries for the CRPP EC Test Facility	Procurement contract for the procurement of a dummy load for long pulses for the testing of the European gyrotron	12	Y	12Q2
WP12/52/05	EU.01.13.02.	SG	Design & Development of the EU Gyrotron (2nd phase – part 1)	Integrated design and development activities for the European gyrotron	17	Y	N/A

[7] The RF tests on the refurbished EU gyrotron prototype will start in 11Q4. The call for tender for the procurement WP11/52/03 needs to be anticipated to be ready for the testing of the 2nd gyrotron prototype. However the financial commitment will only occur after the decision on the gyrotron development strategy.

[8] Unique beneficiary CRPP/ECYC Experimental facility

[9] Unique beneficiary EGYC Consortium (KIT, CRPP, HELLAS, CNR): technical competencies.

10 The 71 months duration includes the execution of all the contractual stages for the delivery of the complete European scope of procurement.

2.13. NEUTRAL BEAM SYSTEM

2.13.1. List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP09/53/06	EU.01.14.07.	P Supply	Ion source test facility (power supplies - HVD and TX Line)	Procurement of the HV Deck and Transmission Line for SPIDER	26	Y	11Q3
WP10/53/13	EU.01.14.05.	P Supply	Infrastructures of the Neutral Beam Test Facility - Accelerator and Ground Related Power Supplies	Procurement of the NB Acceleration and Ground Related Power Supplies (Conversion System European scope of supply)	36	Y	12Q1
WP10/53/15	EU.01.14.05.	P Supply	Ion source test facility (power supplies - ISEPS)	Supply of Essential Spares for ISEPS	25	Y	N/A
WP11/53/04	EU.01.14.07.	P Supply	Infrastructures of the Neutral Beam Test Facility - Cryo system (Phase1)	Competitive Dialogue -procurement of the cryoplant for the MITICA experiment at the NB Test Facility	25	Y	11Q4
WP11/53/09	EU.01.14.07.	FWC	Infrastructures of the Neutral Beam Test Facility - NBTF Diagnostics	Framework contract for the procurement of the diagnostics for the NB Test Facility. It will be implemented by means of specific financing decisions.	48	N/A	11Q4
WP11/53/05	EU.01.14.07.	P Supply	Infrastructures of the Neutral Beam Test Facility - SPIDER Diagnostics	Procurement of the diagnostics for the SPIDER experiment at the NB Test Facility. Mainly performed through specific contracts within framework contract WP11/53/09.	N/A	Y	N/A
WP12/53/01	EU.01.14.07.	P supply	Infrastructures of the Neutral Beam Test Facility - Instrumentation & Control System	Procurement of I&C systems related to SPIDER and PRIMA experiments at the NB Test Facility. Performed through Specific Contracts within Framework Contract WP11/53/08)	N/A	Y	N/A
WP12/53/02	EU.01.14.08.	PServ	Engineering support in the NB area	Activities in support of F4E design and procurement performed through specific contracts within the Engineering Framework Supporting Contracts	12	Y	N/A

WP12/53/04	EU.01.14.07.	P Supply	Procurement for MITICA Beam Line Components (phase 1)	Competitive dialogue for the finalisation of the procurement specification	8	Y	12Q1
WP12/53/05	EU.01.14.07.	P Supply	Procurement for MITICA Vessel (phase 1)	Competitive dialogue for the finalisation of the procurement specification	5	Y	12Q1
WP12/53/06	EU.01.14.07.	FWC	Infrastructures of the Neutral Beam Test Facility - NBTF Assembly and Testing Equipment	Framework contract for the procurement of the Assembly, Assembly Toolings and testing equipment for the NBTF.	48	N/A	12Q3

2.14. DIAGNOSTICS

2.14.2. List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP11/55/01	EU.01.11.15.	FPA	Diagnostic Development and Design	Multiple Framework Partnership Agreements covering integrated development and design activities of the following diagnostic systems: - LIDAR Thomson Scattering - CXRS - Pressure Gauges - Radial Neutron Camera / Gamma Spectrometer - Equatorial Vis/IR TV sys - Magnetics - Plasma Position Reflectometers - Bolometers - In-Vessel Services - LFS Collective Thomson Scattering	48	Y	11Q4
WP11/55/02	EU.01.11.03.	G	Development and design of High Resolution Neutron Spectrometer	Completion of system-level design and final definition of interfaces for High Resolution Neutron Spectrometer	24	Y	12Q2

WP11/55/03	EU.01.11.08.	G	Development and design of H-phase Hard X-ray Monitor	Development and design of H-phase Hard X-ray Monitor to final design review level	36	Y	12Q2
WP12/55/01	EU.01.11.15	P Serv	Irradiation and post-irradiation testing of diagnostic components and assemblies	2012 activities will mainly focus on testing of in-vessel components including cables, prototype cable loom assemblies and prototype assemblies for bolometers, pressure gauges and magnetic sensors. Mainly performed through specific contracts within framework contract WP11/55/10.	N/A	Y	N/A
WP12/55/02	EU.01.11.14.	P Serv	Port plug design, testing and diagnostic integration	2012 activities will mainly focus on pre-conceptual design activities including review of requirements, establishing teams and processes, and liaisons with interfacing systems/parties. Mainly performed through specific contracts within framework contract WP11/55/09.	N/A	Y	N/A
WP12/55/03	EU.01.11.15	SG	Diagnostic Development and Design	Multiple Specific Grants to be implemented under the FPAs (WP11/55/01). 2012 activities for each of the above FPAs will mainly focus on establishment of a project co-ordination office (where not established under SGs launched in WP2011), conduct of the project coordination office, conduct of the system-level design, design of R&D prototypes, follow-up of prototype manufacturing, conventional testing of prototypes and preliminary design of key components	N/A	Y	N/A
WP12/55/04	EU.01.11.15	P Supply	Prototypes & Test Equipment 2012 Activities	Provision of prototypes and test equipment in support of Specific Grants implemented under Framework Partnership Agreements WP11/55/01 and Grants WP11/55/02 and WP11/55/03 (COTS, precision engineering, electrical/optical, bespoke sensors and analysis/test facilities)	12	Y	12Q3
WP12/55/05	EU.01.11.06.	P Supply	Procurement for prototypes for Bolometers Heads	Manufacture of prototype radiation-hard multi-channel resistive bolometer sensors based on thin substrates with metallic absorber and resistors	9	Y	12Q4
WP12/55/06	EU.01.11.12.	P supply	Procurement of Development and Design of Inner-Target Thermocouples	Integrated development and design activities of the inner target thermocouples, including design and prototyping of bonding to CFC/W as appropriate, modelling of target temperature derivation and support for divertor cable layout	36	Y	12Q2

2.15. BUILDINGS

2.15.1. List of Activities

WP ref	ITER WBS/PBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/62/01	EU.01.15.02.	P supply	Tokamak Complex Civil Works and Steel frame buildings	Stage #1 – Contract (TB03) The civil work of the Tokamak complex: Tokamak, Fuel Storage, Cryoplant, Voltage distribution, etc. (building numbers 11-17,36,42-47,51-53,61,71-75 & Port Cell D)	66	Y	12Q3
WP12/62/02	EU.01.15.02.	P supply	Tokamak Complex -Cranes and Lifts	Contract for Cask Lift & Assembly Hall Cranes (Long Lead Items) (Contract TB02)	31	Y	11Q4
WP12/62/03	EU.01.15.01.	P supply	Site Infrastructure	Contract for Site Infrastructure (Contract TB08)	67	Y	12Q1
WP12/62/04	EU.01.15.01.	PServ	Contract for Guards services for work site access control	Provision of worksite access control and security -2012 activities – Jointly with IO	12	Y	N/A
WP12/62/05	EU.01.15.01.	PServ	Contract for Facility Management (work site common services)	Provision of worksite facility management -2012 activities – Jointly with IO	12	Y	N/A
WP12/62/06	EU.01.15.02.	P serv	Analysis, design optimization and cost reduction strategies for the ITER building structures	Complementary seismic studies & accidental scenarii studies. Mainly performed through specific contracts within framework F4E-2008-OPE-011. and WP12/ES/01	12	Y	N/A
WP12/62/07	EU.01.15.02.	PServ	Independent concrete testing	Mandatory control for concrete for the entire buildings	43	Y	11Q4
WP12/62/08	EU.01.15.02.	P supply	Design and Build for Blds 32,33,35,38,39,41	Contract (TB05) for Design & Built Blgs 32, 33, 35, 38, 39, 41	46	Y	11Q4
WP12/62/09	EU.01.15.02.	P supply	Design and Build for Blds 67,68,69	Stage #1 - Contract (TB07) for Design & Built Blgs 67, 68, 69	46	Y	12Q3

WP12/62/10	EU.01.15.02.	P supply	Tokamak Complex HVAC, Elec & Fluid Netw & Hand'g s and Steel frame buildings	Stage #1 - Contract (TB04) for HVAC, Elec & Fluid Netw & Hand'g Blgs 11-17,36,42-47,51-53,61,71-75	66	Y	11Q3
WP12/62/11	EU.01.15.02.	P supply	Contract for Architect Engineer services	Option for Architect Engineer subsequent services Bldgs 21 23 24	36	Y	12Q2

2.16 RADIOLOGICAL PROTECTION

2.16.1. Procurement Arrangements to be signed in 2012

Title	ITER Credit (kIUA)	Signature due
Radiological and Environmental Monitors System	4.2	June 2012

2.16.2 RADIOLOGICAL PROTECTION - List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/64/01	EU.01.08.01.	P Serv	REMS: preliminary design	Development of Preliminary Design of the REMS. Mainly specific contracts to be implemented through the F4E-OMF-298	12	Y,Y(ITA)	N/A

2.17 WASTE TREATMENT

2.17.1 WASTE TREATMENT - List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/66/01	EU.01.09.01.	P Serv	Radwaste conceptual design development	Engineering support activities for the conceptual design development Mainly specific contracts to be implemented through the F4E-OMF-298	12	Y(ITA)	N/A

2.18. MATERIALS DEVELOPMENT

2.18.1. List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/MD/01	EU.01.17.02.	FPA	TBM structural materials irradiation, characterization and design rules	Development of specific design rules and design methodologies. Characterization and validation of base materials and welds. Irradiation and post-irradiation examination	48	N	12Q1
WP12/MD/02	EU.01.17.02.	SG	Development of specific design rules and design methodologies.	Mainly specific grants to be implemented through the FPA WP12/MD/01	18	N	N/A
WP12/MD/03	EU.01.17.02.	SG	Characterization and validation of base materials and welds.	Mainly specific grants to be implemented through the FPA WP12/MD/01	15	N	N/A
WP12/MD/04	EU.01.17.02.	SG	Irradiation and post-irradiation examination	Mainly specific grants to be implemented through the FPA WP12/MD/01	36	N	N/A
WP12/MD/05	EU.01.17.02.	G	EUROFER steel DEMO characterization and R&D for optimization	Grant for optimization of the EUROFER steel: review and application of the new results from EFDA scientific programme for the preparation of the new EUROFER procurement	18	N	12Q3

2.19. TEST BLANKET MODULES

2.19.1. List of Activities

WP ref	ITER WBS/PBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP11/56/04	EU.01.17.01.	P Supply	Procurement of EUROFER for TBM mock-ups	Procurement of EUROFER semi-finished products for TBM mock-ups	14	N	11Q4
WP12/56/01	EU.01.17.01.	PServ	Specific contracts in support to the TBSs Conceptual Design Review (CDR) preparation and outcomes implementation; related techno demonstration.	TBS conceptual design finalization for the CDR, preparation of CDR documentation, support to the CDR, resolution of CDR outcomes by design update and complementary analyses, complementary technological demonstration (e.g. TBM box fabrication) (Implemented under FwC WP11/56/11)	13	N	12Q2
WP12/56/02	EU.01.17.01.	SG	Specific Grants for R&D in support to the TBS design: Complementary testing & development of ancillary systems components	Experimental testing, design/technology development of ancillary systems components for validation before TBS Preliminary Design development (in particular for the Tritium Extraction Systems) (Implemented under FPA WP11/56/03)	12	N	N/A
WP12/56/03	EU.01.17.01.	SG	Specific Grants for R&D in support to the TBS design: Development/characterization of functional materials in view of update of MDBR and MAR	Further optimization of functional materials fabrication processes, characterization, update of Functional Materials Data Base documents (MDBR, MAR, etc.) (Implemented under FPA WP11/56/03)	13	N	N/A
WP12/56/04	EU.01.17.01.	SG	Specific Grants for R&D in support to the TBS design: Complementary testing & development of ancillary systems components - Activities requiring existing facilities	Experimental testing, design/technology development of ancillary systems components for validation before TBS Preliminary Design development - Activities requiring use of existing facilities (Implemented under FPA WP11/56/07)	8	N	N/A
WP12/56/05	EU.01.17.01.	G[11]	Further development/modelling in TBS Tritium transport modelling	In continuation to WP10/ 56/01 , for taking into account TBS design update and modelling optimization means from WP10/ 56/01	9	N	12Q2

[11] Unique beneficiary: TBM Consortium of Associates: (CIEMAT, KIT, ENEA): technical competences

WP12/56/06	EU.01.17.01.	P Serv	Handling, preparation and transport of EUROFER semi-finish products stored in TBM-CA facilities	Handling, inventory, cutting, machining, shipping to external companies, storage	6	N	12Q1
WP12/56//07	EU.01.17.01.	FPA	Framework Partnership Agreement for the development, benchmarking, validation of predictive tools in view of TBS final design and future ITER application	Framework Partnership Agreement for the development, benchmarking, validation of predictive tools	48	N	12Q2

2.20. PLASMA ENGINEERING

2.20.1. List of Activities[12]

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP10/PE/03	EU.01.18.01.	G	Electromagnetic modelling (including 3D)	Development of analytical or numerical models (possibly 3D) for the computation of eddy currents and forces	12	Y(ITA)	12Q3
WP11/PE/02	EU.01.18.01.	P Serv	SOLPS code development	Update of the SOLPS code for the simulation of the plasma scrape of layer	12	Y(ITA)	12Q2
WP11/PE/04	EU.01.18.01.	G	Plasma boundary and internal profiles reconstruction	Definition of requirements and development of algorithms for the reconstruction of plasma boundary and plasma internal profiles	12	Y(ITA)	12Q3
WP11/PE/08	EU.01.18.01.	P Serv	Engineering Support and analysis for antennas	Activities and analyses in support of the design and optimisation of the ECH and ICH antennas (in support of the PA preparation)	12	Y(ITA)	12Q2
WP11/PE/07	EU.01.18.01.	G	Physics and engineering modelling for plasma control and scenarios	Development of physics plasma models and engineering models in support to the study of the plasma control system and scenario optimisation (i.e. plasma breakdown, transient events)	24	Y(ITA)	12Q2
WP12/PE/01	EU.01.18.01.	G	Disruption Modelling and simulation	Modelling and simulation of plasma disruptions. Computation of the forces on the machine structures	12	Y(ITA)	12Q2

12 Most of the activities in the area of Plasma Engineering are going to be implemented on the basis of competitive ITAs; therefore these activities are subject to possible modifications

WP12/PE/02	EU.01.18.01.	PServ	Engineering Support and analysis for plasma control and scenarios	Activities and analyses in support of the study of the plasma control system or the optimisation of the ITER scenarios	12	Y,Y ITA	12Q2
WP12/PE/03	EU.01.18.01.	G	Fast particle physics - transport and losses	Analysis of Fast Particle confinement and loss in ITER plasmas	12	Y(ITA)	12Q1
WP12/PE/04	EU.01.18.01.	G	ITER scenario and plasma performance analysis (Phase 2)	Analysis and optimisation of the nominal ITER scenarios, including abnormal scenarios such as fast pulse termination	12	Y(ITA)	12Q1
WP12/PE/05	EU.01.18.01.	G	Plasma Control System design	Design of the plasma control system in view and/or in response to the system CDR	12	Y(ITA)	12Q2
WP12/PE/06	EU.01.18.01.	G	Plasma Wall interaction and First Wall and divertor engineering studies	Analyses of the plasma wall interaction, computation of heat loads and engineering studies of the First Wall and divertor	12	Y(ITA)	12Q2
WP12/PE/07	EU.01.18.01.	G	Study of magnetic, kinetic and advanced control including protection systems	Study of the magnetic, kinetic and advanced plasma control systems for ITER including protection systems: definition of requirements and interfaces and algorithm development	12	Y(ITA)	12Q2
WP12/PE/08	EU.01.18.01.	G	Additional heating systems analysis	Analysis of the additional plasma heating: definition of requirements, performance analysis and definition of interfaces (in particular with plasma control)	24	Y(ITA)	12Q2
WP12/PE/09	EU.01.18.01.	P Serv	Analysis of the W divertor option	Engineering support activities for the full W divertor option.	12	Y,Y(ITA)	12Q1

2.21. ENGINEERING SUPPORT

2.21.1. SAFETY - List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/SF/01	EU.01.20.04.	G	R&D for Safety Diagnostic (2012)	Conceptual design of Capacity Diaphragm Monitor, Divertor Erosion Monitor, Laser Induced Breakdown Spectroscopy	12	Y,Y(ITA)[13]	12Q2
WP12/SF/02	EU.01.20.04.	G	Combined H2/Dust explosion & Safety computer code development	Continuation of experiments for code development/validation in the field of the main ITER Safety issues.	24	Y,Y(ITA)[14]	12Q3
WP12/SF/03	EU.01.20.04.	P service	Safety Support for Components Design	Safety Analysis Support on F4E PAs	12	Y, Y(ITA)	N.A.
WP12/SF/04	EU.01.20.04.	G	Supporting Safety Analysis to follow up the ITER Design Evaluation and Licensing Process	Safety Analyses to be routinely performed in order to follow the ITER design development	12	Y, Y(ITA)	12Q3

[13] This activity is going to be implemented on the basis of competitive ITAs; therefore is subject to possible modifications
14 This activity is going to be implemented on the basis of competitive ITAs; therefore is subject to possible modifications

2.21.2. MATERIALS - List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/MF/01	EU.01.20.03.	P Serv	Material characterization at cryogenic temperatures	On demand material characterisation at cryogenic temperatures in the frame of construction and R&D of components for ITER (Magnets, Cryoplant). Mainly performed through specific contracts within framework F4E OPE 084	48	Y, Y(ITA)	N/A
WP12/MF/02	EU.01.20.03.	P Serv	Materials and Joining characterization	On demand material and joining characterisation in the frame of construction and R&D of components for F4E TBM. Mainly performed through specific contracts within framework F4E OFC 167	12	N	N/A
WP12/MF/03	EU.01.20.03.	P Serv	Material characterization at room/elevated temperatures	On demand material characterisation in the frame of construction and R&D of components for ITER. Mainly performed through specific contracts within framework F4E OFC 167	48	Y, Y(ITA)	N/A
WP12/MF/04	EU.01.20.03.	G	Materials and Joining characterization	Characterization of Materials, Joints and Interfaces submitted to ITER specific conditions	12	Y, Y(ITA)	12Q2
WP12/MF/05	EU.01.20.03.	P	Materials and Joining characterization	Procurement of materials for Characterization of Joins and Interfaces submitted to ITER specific conditions	12	Y, Y(ITA)	12Q2
WP12/MF/06	EU.01.20.03.	P Serv	Joining technologies and Non Destructive testing	On demand activities, like qualification, testing and “small scale” R&D tasks related to the construction and R&D of structural components of ITER. s. Mainly performed through specific contracts within framework F4E OPE 149	48	Y,Y ITA	N/A
WP12/MF/07	EU.01.20.03.	G[15]	Assessment of the EU materials database	Update and improvement of the database software, Insertion of new ITER materials.	15	N	12Q1

[15] Unique beneficiary CCFE for technical competencies

2.21.3. ENGINEERING ANALYSES - List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP09/ES/02	EU.01.20.02.	G	Electromagnetic Analysis	R&D activities in support of PAs and ITAs	12	Y, Y(ITA)	12Q2
WP11/ES/07	EU.01.20.02.	FWC	Engineering Support- CAD support	Support in CAD design, CAD checking and CAD exchange..	48	N/A	11Q4
WP12/ES/01	EU.01.20.02.	FWC	Dynamic Analysis	Seismic and Dynamic Analysis of ITER buildings and components	48	Y, Y(ITA)	12Q1
WP12/ES/02	EU.01.20.02.	P Serv	Dynamic Analysis	Seismic and Dynamic Analysis of ITER buildings and components mainly through specific contracts within framework contract.	12	Y, Y(ITA)	NA
WP12/ES/03	EU.01.20.02.	FWC	Electromagnetic analyses	Electromagnetic analyses in support of PAs and ITAs.	24	N/A	12Q1
WP12/ES/04	EU.01.20.02.	P Serv	Electromagnetic analyses	Electromagnetic analyses in support of PAs and ITAs. Mainly performed through specific contracts within framework (F4E-2008-OPE-06 and new one)	12	Y,Y(ITA)	N/A
WP12/ES/05	EU.01.20.02.	FWC	Mechanical analyses	Mechanical analyses in support of PAs and ITAs.	24	Y,Y(ITA)	N/A
WP12/ES/06	EU.01.20.02.	P Serv	Mechanical analyses	Mechanical analyses in support of PAs and ITAs. Mainly performed through specific contracts within framework F4E-2008-OPE-07 and new one	12	Y,Y(ITA)	N/A
WP12/ES/07	EU.01.20.02.	P Serv	Codes and Standards	Codes assessment in support of the design of the ITER components	12	Y,Y(ITA)	12Q1
WP12/ES/08	EU.01.20.02.	FWC	Neutronic analyses	Nuclear analyses in support of PAs and ITAs.	24	Y,Y(ITA)	12Q1
WP12/ES/09	EU.01.20.02.	P Serv	Neutronic analyses	Nuclear analyses in support of PAs. Mainly performed through specific contracts within framework F4E-2008-OPE-02	12	Y,Y(ITA)	N/A
WP12/ES/10	EU.01.20.02.	FWC	Thermo-hydraulic Fluid Dynamic analyses	Fluid Dynamic analyses, including thermo hydraulics, in support of PAs and ITAs.	24	Y,Y(ITA)	12Q1

WP12/ES/11	EU.01.20.02	P Serv	Thermo-hydraulic Fluid Dynamic analyses	Fluid Dynamic analyses, including thermo hydraulics, in support of PAs and ITAs. Mainly performed through specific contracts within framework F4E-OPE-031	12	Y,Y(ITA)	N/A
WP12/ES/12	EU.01.20.02	FWC	Engineering support - general mechanics plant system and integration	Engineering support in the area of general mechanics plant system and integration. Mainly performed through specific contracts within frameworks.	24	Y,Y(ITA)	12Q1
WP12/ES/13	EU.01.20.02	P Serv	Engineering support - general mechanics plant system and integration	Engineering support in the area of general mechanics plant system and integration. Mainly performed through specific contracts within frameworks.	12	Y,Y(ITA)	N/A
WP12/ES/14	EU.01.20.02	P serv	Engineering Support- CAD support	Support in CAD design CAD checking and CAD exchange Mainly performed through specific contracts within framework	12	Y,Y(ITA)	NA

2.21.4. NUCLEAR DATA - List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/ND/01	EU.01.20.05	FPA[16]	Nuclear Data experiments and measurement techniques	Development of the experimental data base required for the validation of the nuclear data libraries and the development and testing of experimental techniques	48	N/A	12Q2
WP12/ND/02	EU.01.20.05	SG	Nuclear Data, and experimental activities	Definition of irradiation campaigns for fusion relevant materials and layouts. Improvement of nuclear instrumentation for the nuclear test programme in ITER	24	N	N/A
WP12/ND/03	EU.01.20.05	SG	Nuclear Data TBM nuclear responses and experimental activities	Definition of irradiation campaigns for fusion relevant materials and layouts. Improvement of nuclear instrumentation for the nuclear test programme in ITER (mainlyTBM).	24	N	N/A

[16] Unique beneficiary ENEA FZK NPI AGH JSI Consortium for Nuclear Data: experimental facility

2.22. QUALITY ASSURANCE AND PROJECT MANAGEMENT

2.22.1. List of Activities

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/PO/03	EU.01.19.06.	P Serv	Global transportation of ITER components (test convoy)	Global transportation of ITER components (test convoy) and preliminary studies .	6	Y	N/A
WP11/PO/14	EU.01.19.02.	FWC	Risk analysis	Framework contract for risk analysis based on the evolution of the manufacturing contracts. Will be implemented by means of specific contracts .	48	N/A	11Q2
WP12/PO/01	EU.01.19.04.	P Serv	Support of Project Management	Risk analysis based on the evolution of the manufacturing contracts. Outsourcing of planning activities on specific tasks and other project management activities. Mainly performed through specific contracts within framework WP11/PO/13 and WP11/PO/14.	12	Y,Y(ITA)	N/A
WP12/PO/15	EU.01.19.01.	P serv	Service of inspectors and auditors for ITER project contracts follow-up	Support to F4E for surveillance and auditing work at the manufacturers' premises for running contracts. Mainly performed through specific contracts within framework WP11/PO/12	12	Y,Y(ITA)	N/A

2.23. BUDGET ALLOCATION FOR AMENDMENTS AND PRICE INDEXATION FOR ONGOING CONTRACTS AND GRANTS

During follow-up of the ongoing contracts, F4E may be required to implement amendments in order to increase contractual effectiveness in view of overall project developments, or as risk mitigation/impact reduction measures required by the occurrence of unforeseen events as well as to cover the price indexation for ongoing contracts. To this extent a budget allocation (corresponding to 3% of the 2012 ITER procurement/grant budget for amendments and additional 3% for indexation, taking into account the available forecasted values) has been allocated, which has been assigned to the following generic WP 2012 items.

WP ref	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/PO/08	G	Amendments of ongoing Grants	Budget allocation for amendments of ongoing Grants	N/A	Y,Y(ITA)	N/A
WP12/PO/09	G	Amendments to ongoing Grants	Budget allocation for amendments on ongoing Grants	N/A	N	N/A
WP12/PO/10	P	Amendments and price indexation ongoing Procurements	Budget allocation for amendments and price indexation of ongoing procurement Contracts	N/A	Y,Y(ITA)	N/A
WP12/PO/11	P	Amendments to ongoing Procurements	Budget allocation for amendments on ongoing procurement Contracts	N/A	N	N/A

2.24. CONTRIBUTIONS IN CASH

2.24.1. Contribution to the ITER Organisation

This corresponds to the annual EU share of the contributions in cash to the ITER Organisation for its management, to be adopted at the ITER Council meetings in 2012. This contribution is for 2013. It will be committed in the last quarter of 2012 and will be paid to ITER IO in two payments in 2013.

2.24.2. Contribution to Japan

This cash contribution to Japan corresponds to the transfer of procurement responsibility from EURATOM to Japan under the supervision of the ITER Organisation.

2.24.3. Back-to-Back Agreement with RFX Padoa

This cash contribution to the Consorzio RFX corresponds to the Back-to-Back agreement being signed for the NBTF activities. Mainly following activities will be performed in 2012:

- Design of SPIDER components and systems and, as applicable, support in the preparation of technical specifications
- Design of MITICA components and systems and, as applicable, support in the preparation of technical specifications
- R&D activities and procurements for demonstration activities finalised to the completion of build-to-print technical specifications
- Modeling and physics studies directly related to the development of the components for the NB system
- Support to F4E in the follow-up of procurements contract
- Participation to technical meetings including interface meeting with IO and other Domestic Agencies
- Provision of NBTF Host services like: preparation of on site safety and licensing documentation, provision of site specific information to IO, F4E, other DAs and contractors, preparation of site activities schedule
- Provision of site facilities to Third Parties, as applicable

2.24.4 Contribution to CEA/AIF for ITER Site Support

F4E shall contribute through CEA/AIF to specific ITER expenditures in accordance with the Annex on Site Support attached to the ITER Agreement and the Arrangement on Site Support between F4E and CEA/AIF. The site support activities to be financed by F4E in 2012 are the fees for the rental of Temporary Offices 523/524 waiting for the handover of the ITER Headquarters mid 2012.

2.25. OTHER OPERATIONAL EXPENDITURE

F4E has issued calls for expressions of interest for individual experts to provide technical assistance in a number of specific areas related to ITER and the Broader Approach. Provision is included in the budget (under title 3.4) for a total of approximately 3500 expert man-days in 2012.

In the context of organizational improvements, F4E has signed a Memorandum of Understanding with IO for the support of project management specialists for the development of harmonized project management systems and processes in F4E. An appropriate budget allocation for 2012 is foreseen (under title 3.4).

Additionally, F4E will need specialist support from economic operators (by means of service contracts) for operational needs linked to the preparatory phase of specific in-kind contributions to IO: this will include (where appropriate) legal and commercial services. Provision in this sense is included in the budget for 2012 (under title 3.4).

2.26. URGENT ACTIVITIES IN SUPPORT OF COST AND RISK ASSESSMENT

Some activities (corresponding to a total of about 5 man-years) may be necessary to be carried out in the estimation of costs and in the assessment of risk during the course of the year. Such activities could be either grants or procurements under the 3.1 and 3.2 budget lines.

WP ref	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Credit Status	Time of Call
WP12/PO/04	G	Analysis for cost containment	On-demand, urgent analysis and engineering activities	N/A	Y,Y(ITA)	N/A
WP12/PO/05	G	Analysis for cost containment	On-demand, urgent R&D activities	N/A	N	N/A
WP12/PO/06	P	Analysis for cost containment	On-demand, urgent analysis and engineering activities	N/A	Y,Y(ITA)	N/A
WP12/PO/07	P	Analysis for cost containment	On-demand, urgent R&D activities	N/A	N	N/A

PART III - BROADER APPROACH

3.1. INTRODUCTION

The European contributions to the Broader Approach Activities are financed to a large extent by contributions in kind from the following Members of F4E: France, Germany, Italy, Spain, Switzerland and Belgium. Only in a limited number of cases, where no contribution by these Members is foreseen, the contribution will have to be financed by the F4E budget.

For the contributions to be provided by Members of F4E, a large share of the Procurement Arrangements between F4E and the Japanese Implementing Agency have been signed and entered into force in late 2010 and in 2011. A limited number of Pas are still to be signed in 2012 and 2013, subject to the conclusion of corresponding Agreements of Collaboration between F4E and the Members concerned.

In the following, the activities of Fusion for Energy related to BA are described. The tables provided in the text use the following abbreviations:

Abbreviation	Meaning
WP ref	Work programme reference, univocally identifying WP items. WPxx/yy/zz, where xx are the last two digits of the WP/budget year in which the activity was first financed, yy is a code identifying the ITER WBS element (if available) or the F4E service in charge, zz is a sequential number for the year
G	Grant
P	Procurement (service, supply or works)

All activities indicated within WP2012 are planned to be committed under the 2012 budget.

During the implementation of the work programme activities, F4E may group more activities in a single call or split one activity in more calls. This will in any case be performed preserving the scope and objective presented in WP2012.

The foreseen time of publication of calls and invitations is indicative only and based on the present understanding of the project development.

3.2. JT60SA

3.2.1. F4E Funded Activities

For JT60SA, direct procurement activities in 2012 will mostly be limited to small procurements intended for R&D engineering support and small complementary services, all deriving from the Procurement Arrangement STP-EU-PA-TFC for the supply of the Toroidal Field Coils for the STP. Activities are listed in the table below.

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Time of Call
WP12/BA/01	EU.03.01.01.	P Serv	SULTAN sample tests	Testing in SULTAN facility of a representative sample of the JT-60SA TF coils conductor	12	12Q2
WP12/BA/02	EU.03.01.01.	P Serv	TF strand measurement	Measurement of superconducting strand properties	12	12Q1
WP12/BA/03	EU.03.01.01.	P	Additional SC dummy conductor(s) manufacturing	Fabrication of additional length(s) of TF conductor geometry and materials	6	12Q4
WP12/BA/04	EU.03.01.01.	P Serv	JT60SA Cryostat Base Transports	Transport of the Cryostat Base from factory to Japan,	3	12Q2
WP12/BA/05	EU.03.01.01.	P Serv	JT60SA Cryostat Materials Transport	Transport of the Cryostat Vessel Body Materials from port of delivery to fabrication site	3	12Q1

3.2.2. Procurement Arrangements

In accordance with the Workprogramme 2012 for the Satellite Tokamak Programme, recommended by the STP Project Committee on the 28th September 2011 and approved by the 9th BA Steering Committee on 25th October 2011, the Procurement Arrangements listed below are expected to be signed in 2012 between F4E and JAEA for components under the responsibility of the EU. With the signature of these PAs the full scope of EU contribution to the STP will be covered. The information is provided for completeness but it is noted that the obligations associated to each of the Procurement Arrangements listed below is discharged by a corresponding Agreement of Collaboration formalising the commitment of one of the EU Voluntary Contributors, through their Designated Institutions. Therefore these PAs do not imply financial commitments of F4E, with the exception of payment or reimbursement of transport costs of the components from Europe (ex works) to the Port of Entry in Japan.

One notable exception is the PA for the EC Power Supplies for which the coverage by the EU VC (Switzerland) is not any more guaranteed and for which alternative solutions are under consideration by EURATOM.

Title/Description	To be signed by	AoC with EU VC (DI)
Supply of the control of the RWM coils for the Satellite Tokamak Programme	12Q2	Italy (CNR-RFX)
Setup of a Cryogenic Test Facility and the Performance of Tests of the TF coils for the Satellite Tokamak Programme	12Q1	France (CEA) and Italy (ENEA)
Supply of a Cryogenic System for the Satellite Tokamak Programme	12Q1	France (CEA)
Supply of the ECRF System Power Supplies for the Satellite Tokamak Programme	12Q4	To be defined

3.3. IFMIF

3.3.1. F4E Funded Activities

For IFMIF/EVEDA, direct procurement activities in 2012 will be limited to one or more service contracts for the transport of the components and systems from the point of delivery in Europe to JA (Port of Entry) as well as some small interface items in the prototype accelerator with value up to 100 kEuro.

WP ref	F4E WBS	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Time of Call
WP12/BA/07	EU.03.02.01.	P Serv	Transport of IFMIF/EVEDA Components	Transport of various components and systems from the manufacturing/pre-assembly site to Japan (Port of Entry)	18	12Q4
WP12/BA/08	EU.03.02.01.	P	Accelerator interfaces / complementary items	Procurement of injector/accelerator complementary items (chopper)	12	11Q2

In terms of direct contributions from F4E, as part of F4E contributions to the IFMIF/EVEDA BA Project, “cash contributions to the common expenses of the Project Team” were approved by the BA Steering Committee for an amount of 110 kEuro. This budget will cover the missions outside of Japan of the EU members of the Project Team as well as for regular maintenance needs for the Protoype Accelerator.

3.3.2. Procurement arrangements

In accordance with the Work Programme 2012 for IFMIF/EVEDA project, recommended by the IFMIF/EVEDA Project Committee on the 29-30th September 2011 and approved by the 9th BA Steering Committee on 25th October 2011, no further PAs are to be signed in 2012.

3.4. IFERC

3.4.1. F4E Funded Activities

Direct expenditure by F4E in support of the IFERC BA project will be limited to the contribution to DEMO design activities by means of the home team and site insurance.

3.4.2. Procurement Arrangements

In accordance with the Work Programme 2012 for the IFERC project, one procurement arrangement is expected to be signed between F4E and JAEA in 2012, to cover possible enhancements to the CSC equipment. The information is provided for completeness but it is noted that the obligations associated to each of the Procurement Arrangements listed below is discharged by a corresponding Agreement of Collaboration formalising the commitment of one of the EU Voluntary Contributors, through their Designated Institutions. Therefore these PAs do not imply financial commitments of F4E. It is noted that following the decision to consolidate all EU activities for DEMO design under the scope of EFDA activities the corresponding F4E funded activities are now transferred to EFDA for implementation.

Title/Description	To be signed by	AoC with EU VC (DI)
CSC Enhancements	12Q4	France (CEA)

3.5. BUDGET ALLOCATION FOR AMENDMENTS TO ONGOING BA CONTRACTS

During follow-up of the ongoing procurement contracts, F4E may be required to implement amendments in order to increase contractual effectiveness in view of overall project developments, or as risk mitigation/impact reduction measures required by the occurrence of unforeseen events. To this extent a budget allocation (corresponding to 1.5% of the 2012 ITER procurement budget for amendments and additional budget for indexation, taking into account the available forecasted values) has been allocated, which has been assigned to the following generic WP 2012 items.

WP ref	Activity Type	Activity Title	Activity Description	Duration of contract (months)	Time of Call
WP12/BA/09	P	Amendments and price indexation to ongoing procurements	Budget allocation for amendments and price indexation on ongoing procurement Contracts		N/A

APPENDIX I: TABLE OF ACRONYMS AND ABBREVIATIONS

A/E	Architect Engineer
AGPS	Accelerator Ground Power Supplies
ALARA	As Low As Reasonably Achievable
ANB	Authorized Notification Body
ANS	Analytical System
ASN	Autorité de Sûreté Nucléaire
AVDEs	Asymmetric Vertical Displacement Event
ATS	Air Transfer System
BA	Broader Approach
BSM	Blanket Shield Module
BtP	Build-to-Print
CD	Current Drive
CFC	Carbon Fibre Composites
CMM	Cassette Multifunctional Mover
CVB	Cold Valve Boxes
CVD	Chemical Vapour Deposition
CXRS	Core plasma charge-eXchange Recombination Spectroscopy
DA	Domestic Agency
DACS	Data Acquisition and Control System
DCLL	Dual Coolant Lithium Lead
DCR	Design Change Request
DEMO	Demonstration fusion reactor
DIV	Divertor
DNB	Diagnostic Neutral Beam
DTP	Divertor Test Platform
EAF	European Activation File
EB	Electron Beam
EBBTF	European Breeding Blanket Test Facilities
EC	Electron Cyclotron
EC UL	Electron Cyclotron Upper Launchers
ECH	Electron Cyclotron Heating
EFDA	European Fusion Development Agreement
EFF	European Fusion File
ELM	Edge Localized Mode
EPC	Engineering Procurement Contract
EUDA	EUropean Domestic Agency
EURATOM	The European Atomic Energy Community
F4E	Fusion for Energy
FS	Functional Specification
FW	First Wall
FWP	First Wall Panel
HAZOP	HAZard Operability
HCLL	Helium Cooled Lithium-Lead
HCPB	Helium Cooled Pebble Bed
H&CD	Heating & Current Drive
HHF	High Heat Flux
HIP	Hot Iso-static Pressing
HNB	Heating Neutral Beam
HV	High Voltage
HVAC	Heating Ventilation &Air Conditioning
HVD	High Voltage Deck
HW	Hardware
HXR	Hard X-Ray
IC	Ion Cyclotron
I&C	Instrumentation and Control

ICH	Ion Cyclotron Heating
IFERC	International Fusion Energy Research Center
IFMIF	International Fusion Materials Irradiation Facility
INB	Installation Nucleaire de Base
IO	ITER Organization
IR	Infra Red
ISEPS	Ion Source and Extraction Power Supplies
ISS	Isotope Separation System
ITA	ITER Task Agreement
ITER	International Thermonuclear Experimental Reactor
IVT	Inner Vertical Target
IVVS	In-Vessel Viewing System
JAEA	Japan Atomic Energy Agency
LD&L	Leak Detection and Localization
LFS-CTS	Low Field Side – Collective Thomson Scattering
MAR	Materials Assessment Report
MDR	Modified Design Reference
MHB	Material HandBook
MHD	Magneto-Hydro-Dynamic
MIG	Metal Inert Gas
MV	Medium Voltage
NB	Neutral Beam
NBI	Neutral Beam Injector
NBPS	Neutral Beam Power System
NBTF	Neutral Beam Test Facility
NHF	Nominal Heat Flux
ODS	Oxide Dispersion Strengthened
ORE	Occupational Radiation Exposure
P&ID	Process and Instrumentation Diagram
PA	Procurement Arrangement
PBS	Product Breakdown Structure
PBS 41	High Voltage and Medium Voltage distribution
PBS 43	High Voltage, Medium Voltage and Low Voltage distribution. Emergency Power Supply
PE	Plasma Engineering
PF	Poloidal Field
PFC	Plasma Facing Components
PFD	Process Flow Diagram
PIE	Post Irradiation Examination
PMU	Prototypical Mock-Up
PP	Procurement Package
PPC	Pre-Production Cryopump
PrSR	Preliminary Safety Report
PTC	Prototype Torus Cryopump
QA	Quality Assurance
R&D	Research & Development
RAFM	Reduced Activation Ferritic Martensitic
REM	Radilogical Environmental Monitoring
RF	Radio Frequency
RFCU	Radio Frequency Control Unit
RH	Remote Handling
RMP	Resonant Magnetic Perturbation
RNC	Radial Neutron Camera
RWF	RadWaste Facility
RWM	Resistive Wall Mode
SC	Super Conductor
SDC	Structural Design Criteria/Code
SHPC	Safety and Health Protection Coordination

SiC-Dual	SiC/SiC composite material for electrical and thermal Insulation
S-NHF	Standard Normal Heat Flux
SOLPS	Scrape Off Layer Plasma Simulation
SS	Steady State
STP	Satellite Tokamak Programme
SW	Software
TBM	Test Blanket Module
TCS	Transfer cask System
TES	Test Extraction System
TF	Toroidal Field
TFC	Toroidal Field Coils
TFWP	Toroidal Field Winding Pack
TH	Thermal Hydraulical
TO	Technical Officer
UT	Ultrasonic
Vis	Visible
VS	Vertical Stability
VV	Vacuum Vessel
WAVS	Wide Angle Viewing System
WBS	Work Breakdown Structure
WDS	Water Detritiation System

APPENDIX II : SUMMARY OF THE WP2012 BUDGET

Summary of the Work Programme 2012 for the financing decision

TITLE III of the 2012 Budget (operational)

Budget line	Title	Commitment appropriation (EUR)
3.1	ITER CONSTRUCTION INCLUDING THE ITER SITE PREPARATION	1,064,163,442.88
3.2	TECHNOLOGY FOR ITER AND DEMO	7,755,900.00
3.3	TECHNOLOGY FOR BROADER APPROACH	2,826,000.00
3.4	OTHER EXPENDITURE	4,600,000.00
3.5	ITER CONSTRUCTION - APPROPRIATION ACCRUING FROM THE ITER HOST STATE CONTRIBUTION	241,200,000.00
Total Title III of the Budget 2012		**1,320,545,342.88**
3.5	Appropriations carried over from previous years	38,765,508.00
Total amount available for the operational expenditure		**1,359,310,850.88**

Financing decision for the 2012 Work Programme

Budget line	Title	Grants	Procurement	Cash
3.1+3.5	Expenditure in support of ITER, credited by ITER IO through PA	15,200,000.00	1,058,143,350.88	-
3.1+3.5	Contribution in cash in support of ITER	-	-	106,000,000.00
3.1+3.5	Contribution in cash for transfer of procurement to Japan	-	-	17,674,200.00
3.1+3.5	Contribution in cash Back-to-Back Agreement on NBTF	-	-	3,300,000.00
3.1+3.5	Contribution to CEA/AIF for ITER Site Support			70,000.00
3.1+3.5	Design and R&D in support of ITER, credited by ITER IO through ITA	5,400,000.00	78,445,000.00	
3.6	Expenditure budgeted against other revenue	-	-	-
3.1+3.5	Budget allocation (paragraph 2.23)	618,000.00	59,278,400.00	-
	Subtotals	***21,218,000.00***	***1,195,866,750.88***	***127,044,200.00***
3.1+3.5+3.6	**Total ITER Construction**	**1,344,128,950.88**		
3.2	Design and R&D in support of ITER, not credited by ITER IO (incl. materials, TBM, nuclear data)	3,980,000.00	3,550,000.00	-
3.2	Budget allocation (paragraph 2.23)	119,400.00	106,500.00	-

	Subtotals	***4,099,400.00***	***3,656,500.00***	-
3.2	**Total Technology for ITER**	**7,755,900.00**		
3.3	Expenditure in support of Broader Approach	-	2,020,000.00	260,000.00
3.3	Contribution in cash in support of IFMIF-EVEDA Project team	-	-	106,000.00
3.3	Budget allocation (paragraph 3.5)	-	440,000.00	-
	Subtotals	**-**	***2,460,000.00***	***366,000.00***
3.3	**Total Technology for Broader Approach and DEMO**	**2,826,000.00**		
3.4	Appointment of experts for technical assistance to F4E (including MoU with IO)	-	-	3,800,000.00
3.4	Legal and commercial services agreement for assistance to F4E	-	800,000.00	-
	Subtotals	**-**	***800,000.00***	***3,800,000.00***
3.4	**Total Other Expenditure**	**4,600,000.00**		
	Total expenditure by type (incl. budget reserve paragraph 2.23 and 2.25)	**25,317,400.00**	**1,202,783,250.88**	**131,210,200.00**
3	**Total Operational Expenditure**	**1,359,310,850.88**		

Notes

A table showing the indicative budget for grants to be awarded in this Work Programme, both credited and non-credited by ITER, is provided in Appendix III.

- Figures corresponding to items to be credited by IO through ITA are provisional, and are based on the present understanding of the share of work to be assigned to F4E by IO with yearly planned ITAs (not competed) or through competitive procedures (competed ITAs).
- Following the evaluation of the proposals and updates on the cash to be paid to IO and Japan the final budget repartition may vary by up to 10% of the specified budget figures in the table above, with the exception of the budget allocation.

APPENDIX III : WP2012 SUMMARY OF THE AVAILABLE BUDGETS FOR GRANTS

WBS	CREDITED (M€)	NOT CREDITED (M€)
Magnets		
Vacuum Vessel		
Blanket		
Divertor		
Remote Handling	1.4	
Vacuum Pumping & Fuelling	0.15	
Tritium Plant		
Cryoplant		
Power Supplies		
I&C and CODAC		
Heating & Current Drive	1.25	
Diagnostics	13.55	
Buildings		
Materials Development		1.68
Test Blanket Modules		1.70
Plasma Engineering	2.45	
Engineering Support	1.3	0.35
Analysis for cost containment	0.50	0.25
Budget reserve (paragraph 2.23)	0.62	0.11
Broader Approach		
	21.22	**4.09**
Total	**25.31**	

NB: Figures shown in this table are the currently estimated values. Modifications may occur within the budgetary constraints.

APPENDIX IV -
ESSENTIAL SELECTION AND AWARD CRITERIA FOR GRANTS

With regard to grant actions referred to in this work programme, the essential selection and award criteria, in accordance with Articles 165 and 166 of the Implementing Rules of the Financial Regulation, are:

Essential Selection Criteria

- The applicants' technical and operational capacity: professional, scientific and/or technological competencies, qualifications and relevant experience required to complete the action.
- The applicants' financial capacity: stable and sufficient sources of funding in order to maintain the activity throughout the action.

Essential Award Criteria

- Relevance and quality of the proposal with regard to the objectives and priorities set out in this work programme and in the relevant call for proposals.
- Effectiveness of the implementation as well as of the management structure and procedures in relation to the proposed action.
- Cost-effectiveness and sound financial management, specifically with regard to F4E's needs and objectives and the expected results.

With regard to the specific action, more details will be provided in the call for proposals. Thresholds and weighting for the essential and additional award criteria will also be given in the call for proposals.

A proposal which does not fulfil the conditions set out in the work programme or in the call for proposals shall not be selected. Such a proposal may be excluded from the evaluation procedure at any time.

The timetable and indicative aggregated amounts for the actions are defined in this Work Programme.

APPENDIX V -
MAXIMUM REIMBURSEMENT RATES FOR GRANTS

The upper limits for the reimbursement of eligible costs for grants are laid down in Article 153 of the Implementing Rules of the Financial Regulation of the Joint Undertaking and are summarised in the following table.

Research, technological development and demonstration activities	40%
Coordination and support actions	100%
Management, audit certificates and other specific activities	100%