



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 FIRST AMENDMENT TO THE 2015 WORK PROGRAMME OF FUSION FOR ENERGY

The Governing Board,

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 it¹, and in particular Articles 6(3)(d) and 11 thereof;

Having regard to Council Decision N° 791/2013 of 13 December 2013 amending decision 2007/198/EURATOM establishing the European Joint Undertaking for ITER and the Development of Fusion Energy and conferring advantages upon it²

Having regard to the Financial Regulation of Fusion for Energy³ adopted by the Governing Board on 22 October 2007, last amended on 25 November 2011⁴ (hereinafter "the Financial Regulation"), and in particular Title III thereof;

Having regard to the Implementing Rules of the Financial Regulation⁵ adopted by the Governing Board on 22 October 2007, last amended on 11 December 2013⁶ (hereinafter "the Implementing Rules"), and in particular Title III thereof;

Having regard to the 2015 Work Programme adopted by the Governing Board on 3 December 2014⁷ and first Amendment to the 2015 Work Programme adopted by the Governing Board on 8 June 2015.

Having regard to the 2015 Budget adopted by the Governing Board on 3 December 2014⁸.

Having regard to the comments and recommendations of the Administration and Management Committee and the 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 second amended 2015 Work Programme of Fusion for Energy annexed to this Decision is hereby adopted.

Article 2

This Decision shall have immediate effect.

¹ OJ L 90, 30/03/2007, p. 58

² OJ L 349, 21/12/2013 p.100-102

³ F4E(07)-GB03-11 Adopted 22/10/2007

⁴ F4E(11)-GB21-10c Adopted 25/11/2011

⁵ F4E(07)-GB03-12 Adopted 22/10/2007

⁶ F4E(13)-GB28-14.2 Adopted 11/12/2013

⁷ F4E(14)-GB30-09.3 Adopted 03/12/2014

⁸ F4E(14)-GB30-09.4 Adopted 03/12/2014

Done at Barcelona, 2 December 2015

For the Governing Board

A handwritten signature in blue ink, consisting of a large, stylized 'J' followed by a horizontal line and a small flourish.

Joaquin Sanchez
Acting Chair of the Governing Board

For the Secretariat of the Governing Board

Romina Bemelmans
Secretary of the Governing Board

A handwritten signature in blue ink, featuring a large, stylized 'R' followed by a horizontal line and a small flourish.

ANNEX
SECOND AMENDED 2015 WORK PROGRAMME

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INTRODUCTION TO THE ANNUAL WORK PROGRAMME

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 document lays down a detailed programme of activities that are foreseen to be implemented and financed under the budgetary appropriation for 2015. This information is complemented by the Budget 2015.

The implementation of the activities in this section strictly corresponds to the implementation of the Budget in commitment appropriation, based in particular on the Articles 64 to 67 of the F4E Financial Regulation.

CONTRACTUAL COMMITMENTS IN THE YEAR

1.1 ASSUMPTIONS AND OBJECTIVES

1.1.1 Assumptions

Following assumptions shall be considered at the basis of the Work Programme 2015:

- Following the instructions given by the ITER Council, ITER IO and all Domestic Agencies (DA) are carrying out an exercise to bring as much as possible reality into the schedule of the project by taking into account the accumulated delays and any other constraint that the Parties may have (i.e. budget, manpower, etc.). The result of this exercise will have to be submitted to the ITER Council in November 2015 to decide on a revised date for the first plasma. The planning of this exercise has foreseen that all DAs had to provide their input for their part of the schedule by the end of September 2014. F4E has carried out its part of the work and critically reviewed its schedule.
- The F4E schedule used for the preparation of the 2nd Amendment of the 2015 Work Programme is as of end of September 2015 and in line with the request of having a realistic Work Programme 2015.
- The realistic schedule exercise carried out by F4E takes into account:
 - the latest input and developments of the schedules from the F4E suppliers;
 - the most realistic assumption of PA signature dates based on the current status of the design of components and on the forecasted dates of the required design reviews prior to the PA signature;
 - the available manpower in F4E to take into account bottlenecks in specific areas where staffing is not sufficient to grant a prompt process of the work;
 - the available yearly budget for the work on the EU in-kind procurements;
 - the most realistic assumptions on the data availability from ITER IO to take into account the existing delays and the agreed dates of data delivery;
 - the information provided by the other DAs through their monthly Detailed Work Schedule (DWS) to take into account any possible delay in the delivery of items to F4E that can cause delays to the EU in-kind procurements;
- Actions delayed from previous years and foreseen to be implemented with budget 2015 have been integrated in this document and accounts for about 5% of the total actions under 2015 budget.
- In order to achieve an improvement of the quality of the PAs that will be signed in 2015, an effort is in progress in the project to better identify the requirements that are linked to each specific procurement. ITER IO has also been called to contribute to this effort by propagating the requirements from the project level down to the level of the PA, where they interface with the DAs. Then F4E will take over for the propagation of the PA requirements down into the different procurement contracts.

- The schedules from the F4E suppliers, taking into account the agreed fabrication routes and showing the real development of the work, are being reviewed every month and the main data, once analysed, integrated into the overall F4E schedule in Primavera.
- 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 an EU procurement package, will be implemented whenever appropriate through the Framework Partnership Agreement (FPA), 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.
- F4E endorsement of the Japanese Procurement Arrangement that foresees an EU financial contribution will be preceded by a budgetary commitment for the entire amount of the F4E contribution.
- The activities shown in the 2015 Work Programme are readjusted according to the reduction in the 2015 budget
- The Reserve Fund (RF) to be received from ITER IO for the implementation of changes in existing contracts will consist in additional revenue. In the case that the description of the specific activity is already listed in the Work Programme, if the RF contribution to it is larger than 10 M€ (in-year value), F4E will seek approval of a specific financing decision by the Governing Board (written procedure or amendment). In the case that the description of the specific activity is not yet listed in the Work Programme, F4E will seek approval of a specific financing decision by the Governing Board (written procedure or amendment) in the case that the RF contribution to that activity is larger than 1 M€ (in-year value). Additional activities for ITER Project, upon the approval of the relevant PCR by the ITER Organization Director General or his delegates in the frame of Reserve Fund Management Plan, will be implemented under the budget line 3.6

Regarding the WP2015 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 and by further adjustments made at the 16th Steering Committee of 21st April 2015.

1.2 ITER CREDITS FOR PREPARATORY ACTIVITIES

This WP2015 includes a 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. Recognizing 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 2015 Annual Work Programme 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 2015 are also included in this document.

1.3 MAIN OBJECTIVES

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 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 implementation of building construction contracts.
- 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 first wall).

- The preparation of new facilities to test prototypes and components during the qualification process and construction respectively.
- The most significant procurements to be either initiated or signed within 2015 are related to:
 - Magnets: tendering for contracts for Impregnation and Additional tooling, manufacturing and cold tests will be running during 2015, the former to be signed in the same year.
 - Vacuum Vessel: release of the contractual stages.
 - Blanket/First Wall (FW): placement of new contracts in the area of development of repair technologies to bond Beryllium tiles to FW panel heat sink.
 - Divertor Inner Vertical Target (IVT): contracts will be signed with selected companies for the manufacture of IVT components.
 - Remote Handling: signature of the FWCs for the IVVS and NB RHS and implementation of task orders for all RH Systems
 - Cryoplant: tendering of the MITICA Cryogenic contract
 - Antennas and Plasma Engineering: mainly small-medium value contracts and grants plus two Framework Contracts (FWC) in the area of Plasma Engineering and EC Control.
 - Neutral Beam: In 2015 significant procurements will be signed as part of the PA 5.3.P6.EU.01 HNB Power Supplies:
 - MITICA & HNBs Acceleration Grid PS (AGPS) & Ground Related PS (GRPS)
 - Diagnostics: During 2015 numerous procurement procedures will be ongoing for the different Diagnostic Systems, mostly in the form of Specific Grants and Specific Contracts under on-going Framework Partnerships Agreements and Framework Contracts, supported by contracts for the manufacture of prototypes for conventional and irradiation testing. F4E will also place a task order under an IO Framework Contract to be signed 2015, for the manufacture of the three upper Port Plugs and two equatorial Port Plugs under F4E Diagnostics responsibility.
 - Buildings: tendering for the following contracts:
 - TB12 Design & Buildings 24, 34 & 37 for which the Pre-Tendering phase will start in 2015
 - TB16 - Contract for Site Infrastructure Works (re-launch), which include the installation of underground cooling water piping, for which the tendering phase has started in 2014 and the signature of the contract is planned in 4rd quarter 2015
 - Transportation: for the year 2015 F4E foresees around 20 Highly Exceptional Loads, requiring the special ITER heavy haul itinerary, around 200 Conventional Heavy Loads and around 230 Conventional Loads.

With respect to the Broader Approach (BA), the general scope of the activities is detailed in the Annexes to the BA Agreement signed between EURATOM and the Government of Japan in 2007. For the three BA Projects (STP IFMIF/EVEDA and IFERC Projects), F4E is acting as EU Implementing Agency in close collaboration with JAEA (the JA Implementing Agency).

The scope of activities for BA is subdivided in a number of Procurement Arrangements (PA), signed by F4E and JAEA, covering part of the activities/deliverables. The procurement sharing, within EU commitment, is approved by the EU BA Contact Persons representing EURATOM and all EU Voluntary Contributors (VCs), namely Belgium, France, Germany, Italy, Spain and (in early years) Switzerland. In general, for the vast majority of F4E's responsibility, each PA corresponds to an Agreement of Collaboration (AoC) in which the PA commitments are transferred to one or more VC Designated Institutions for practical implementation. F4E remains directly responsible for some of the hardware procurements (in particular in JT-60SA) and all the transport from the fabrication places in Europe to the designated Ports of Entry in Japan.

The F4E Broader Approach activities for 2015 are expected to proceed according to the individual BA 2015 Project Work Programmes which were endorsed by the 15th BA Steering Committee of 4th November 2014, and by further adjustments made at the 16th Steering Committee of 21st April 2015.

1.4 DEFINITIONS

The list of the financing decisions at the basis of the implementation of the 2015 commitments is available in this section.

The following definitions and assumptions shall be taken into account for the implementation and follow-up of the Work Programme:

- All the activities in the list can be financed with budget 2015 based on the current F4E rules and based on the reference schedule as at 1 April 2015.
- Certain activities have been moved from previous years into WP2015 due to changes in the overall planning and priorities: these items are identified by a WP ref field showing a WPxx tag different from WP14 (e.g. WP11/..). It is understood that the inclusion of these items in WP2015 is cancelling and superseding any corresponding item in a previous year's WP, unless otherwise specified in this document.
- 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 WP2015.
- The foreseen time of publication of calls, invitations and legal commitments/contract signature dates are indicative only and based on the present understanding of the project development. For expenditure performed through framework contracts and framework partnership agreements, release of the contractual options, amendments to ongoing contracts or use of Joint Procurements the foreseen time of publication of calls is not included (N/A in the Work Programme) as no formal publication will take place.
- Publication of the call for tender is intended as the date of publication on the Industry Portal (for open procedures/call for proposals) 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/dialogue (second phase of the procedure).
- The use of the Grant Unique Beneficiary instrument will be fully justified and summary of justifications are available in Annex VIII.
- In the following, the activities of Fusion for Energy related to ITER and the BA are described according to the 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 PBS 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
SC	Specific Contracts based on a Framework Contracts
FPA	Framework Partnership Agreement
FWC	Framework Contract
P	Procurement ("PServ" for service, "PSupply" supply or "Pwork" works)
Y	Credited by ITER IO through PA
Y(ITA)	Credited by ITER IO through ITA
Y(BA)	Credited under BA Agreement
N	Non credited
MULTIPLE	Commitments will be implemented through multiple WBS

- WP items indicated as Framework Partnership Agreements (FPA) or Framework Procurement Contracts (FWC) are included in the year of signature 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 (as either SG or Pserv/SC). The list of the framework contracts and partnership agreements that will be ongoing at the end of 2014 is available in Annex VII. For the Framework Contracts and Partnership Agreements in the legal commitment column is intended the forecasted quarter of the signature.

- WP2015 introduces the categorization of the work programme activities intended as a measure of confidence of implementation of the milestones foreseen in 2015 based on the current schedule:
 - **Category A:** are the WP activities with legal commitment by the end of September 2015;
 - **Category B:** are the WP activities with legal commitment in the last quarter of 2015 or later;
 - **Category C:** are the activities that F4E considers unlikely to implement with the budget 2015;
- Equivalence F4E OBS to F4E WBS level 3 is available in section 0 Annex VII.
- Some of the Work Programme activities refers to provision for recurrent activities with the same ultimate objective of supporting the final achievement either of the design (e.g. CAD support, engineering analyses, etc.), the manufacturing process (e.g. QA/QC Inspectors, engineering support for deviations analyses, CE marking, etc.) as requested in ITAs/PAs, or the site support services (access control and security, Facility Management Services, etc.). Therefore the description in term of financing decision is the same as in the previous years.

LIST OF CONTRACTUAL COMMITMENTS IN THE YEAR

1.5 ITER PROGRAMME

1.5.1 Magnets

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
B	WP14/11/08	EU.01.11.03	PSupply	PF Cold Test (CTF)	Cold Test Engineering Study and Facility Construction	Y	15Q2	15Q4
A	WP15/11/01	EU.01.11.01 EU.01.11.03	PServ/ PSupply	Release of options for Magnets contracts	Release of options for TF Coil and PF Coil contracts, <i>inter alia</i> for the contracts WP11/11/07 (OPE-414, Option 5 - Assembly, welding and assessment of 3 additional mock-ups) and WP13/11/07 (options for storage station of PF coils)	Y	N/A	2015
A/B	WP15/11/02	EU.01.11.03	PServ	Inspectors for magnets contracts	Provision for Inspector activities for PF, TF, Pre Compression Rings and Conductors contracts. Mainly performed through the framework contract WP14/PO/07	Y	N/A	2015
A	WP15/11/03	EU.01.11.04	PServ	Testing and characterization of PF strands	Task orders related to testing and characterisation of PF Strands. Mainly to be implemented through the Framework contract WP13/11/04 Independent cross-check of the PF NbTi strand standard characteristics. In addition, it will provide an extended characterization in order to assess the strand properties as function of magnetic field and temperature.	Y	N/A	15Q1
C	WP15/11/04	EU.01.11.04	PServ	Testing of TF Nb3Sn Strands	Task Orders for Testing of TF Nb3Sn Strands. Mainly to be implemented through the Framework contract F4E-OPE-145 This contract will be used in 2015 mainly to measure the critical current of the witness barrels inserted in the oven for the heat treatment of the TF coil Double Pancakes	Y	N/A	15Q4
A	WP15/11/05	EU.01.11	P serv	Extension of Sultan contract	Additional SULTAN sample preparation and testing for TF/PF conductors and some PF/TF joints (WP12/11/03)	Y	N/A	15Q1

1.5.2 Vacuum Vessel

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
A	WP14/15/05	EU.01.15.01	FWC	Procurement of Inspections	Framework contract for the QA inspection activities for the follow-up of the Vacuum vessel contract.	N/A	14Q1	15Q1
A/B	WP14/15/06	EU.01.15.01	PSupply	Procurement of Main Vessel (phases 4 & 5)	It also includes: Manufacturing and Final Assembly Stages for Sectors 7, 8, Final Assembly stage for the sector 9, Machining and forming of Splice plates.	Y	N/A	15Q3-15Q4
A/B	WP15/15/03	EU.01.15.01	PServ	Engineering support for VV construction	Material characterization, irradiation tests, 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. Mainly to be performed through specific contracts under on-going frameworks under Technical Support Services area.	Y	15Q1	15Q2/15Q4
A	WP15/15/04	EU.01.15.01	P serv	Procurement of Inspections	QA inspection activities for the follow-up of the Vacuum vessel contract, including site inspections activities related to NDT, welding, quality assurance, etc. in several supplier manufacturing sites. Mainly to be performed through specific contracts under the framework WP14/15/05.	Y	N/A	15Q1/15Q4
A	WP15/15/05	EU.01.15.01	SC	Global Transportation of ITER components	Task Order 04 OMF-0304-01 (IO Global Logistics Transportation Framework) for VV for VV Transportation Plan	Y	14Q3	15Q1

1.5.3 In vessel

1.5.3.1.1 Blanket First Wall

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
A	WP14/16/05	EU.01.16.01	PServ	Storage and recycling of Beryllium coated components	Further to extensive R&D programme performed so far under the Blanket FW, a lot of HHF tested mock-ups are stored in different locations. These mock-ups need to be processed for recycling of Beryllium and final depository	Y	15Q2	15Q3
A	WP15/16/01	EU.01.16.01	SC	Procurement for Inspection Services for Quality Control	Support of external inspectors to fulfil quality control activities on contracts together with or on behalf of F4E personnel. Mainly to be implemented through the framework contract for support inspectors WP14/PO/07	Y	NA	15Q2
A	WP15/16/02	EU.01.16.01	PServ	Heat Flux Test of FW partial prototypes and related material qualification tests	The activity is aimed at performing high heat flux testing of additional fingers of S-NHF SP and of tiles made of Beryllium from a new manufacturer in the framework of the FW panel cost reduction exercise Includes amendment for additional activities for the F4E-OPE-422 (WP13/16/02) contract	Y	15Q1	15Q3
B	WP15/16/03	EU.01.16.01	Option	Release of Option 2B for Technical Support for fabrication and commissioning of a HHF Test Facility	Release of Option 2B for Technical Support for fabrication and commissioning of a HHF Test Facility Option under contract F4E-OPE-517 (WP13/16/08)	Y	NA	15Q4
A	WP15/16/04	EU.01.16.01	G	Execution of Grant FW Panel Repair Technology Development	Bibliographic study to pre-select 2 main repair technologies for subsequent investigation	Y	14Q4	15Q1
A	WP15/16/05	EU.01.16.01	Option	Options for the Manufacture of FW full scale prototypes	Release of contractual options for the contracts F4E-OPE-443 Lots 1-3 (WP13/16/07) including, <i>inter alia</i> , cost containment studies, use of electro-plated copper layer and BE-tile coating	Y	NA	15Q2

1.5.3.1.2 Divertor

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
A	WP14/17/04	EU.01.17.02	PSupply	Pre-qualification of additional suppliers for the procurement of the Inner Vertical Target	The activity is aimed to qualify additional suppliers for the procurement of the ITER divertor Inner Vertical Target by manufacturing mock-ups and full size prototypes	Y	14Q2	15Q2
A	WP15/17/01	EU.01.17.01	SC	Procurement for Inspection Services for Quality Control	Support of external inspectors to fulfil quality control activities on contracts together with or on behalf of F4E personnel. Mainly to be implemented through the framework contract for support inspectors WP14/PO/07	Y	NA	15Q2

1.5.4 Remote Handling

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
A	WP11/23/06	EU.01.23.05	FWC	NB RH framework contract	Procurement activities related to NB RH (design, manufacturing and installation)	Y	13Q4	15Q1
B	WP11/23/08	EU.01.23.04	FWC	IVVS framework contract	Procurement activities related to In-Vessel viewing System (design, manufacturing and installation)	Y	14Q3	15Q3
A	WP14/23/04	EU.01.23.02	G ⁹	Divertor Remote Handling Design and Control System Support	R&D activities on control system in support of the RH design	Y	15Q2	15Q3
B	WP15/23/01	EU.01.23.01	FWC	Engineering Support for Remote Handling	Provision of engineering support in the area of Remote Handling	N/A	15Q2	15Q4

9 Unique Beneficiary VTT Technical Research Centre of Finland and TUT Foundation (trading as Tampere University of Technology): Unique experimental Facility¹⁰ Most of the activities in the area of Plasma Engineering are going to be implemented on the basis of competitive ITAs for which no planning is available from ITER IO; therefore no time of call or contract signature date is given for these activities

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
A/C	WP15/23/02	EU.01.23.01	P Serv	Engineering Support for Remote Handling	Support activities (design and test for the RH procurement packages including development of common technologies like rad-hard components; support to procurement contract follow up; e.g. support to IVVS and CPRHS tender evaluation, RH control system development and validation; etc.) mainly performed through specific contracts within framework WP 11/ES/06 , WP15/23/01, WP11/23/08 and WP12/45/02	Y	N/A	15Q1-15Q4
A/B	WP15/23/04	EU.01.23.05	SC	Design and manufacturing activities for the NB Remote Handling (NB RH)-phase 1	Design and manufacturing activities related to the NB RH procurement package-phase 1 (mainly focused on preliminary design and support validation activities like R&D and tests where needed). Mainly performed through specific contracts under the framework WP11/23/06)	Y	N/A	15Q2 – 15Q4
A	WP15/23/05	EU.01.23.02	SC	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 performed through specific contracts under the framework WP11/23/02	Y	N/A	15Q2

1.5.5 Cryoplant and Fuel Cycle

1.5.5.1.1 Vacuum Pumping and Fuelling

1.5.5.1.2 Tritium Plant**1.5.5.1.3 Radiological Protection & Environmental Monitoring System****1.5.5.1.4 Cryoplant**

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
A/B	WP15/34/01	EU.01.34.01	Option	Options of the Cryoplant Contract	Implementation of contractual options as foreseen in the Cryoplant contract, inter alia, engineering support, , operational spares, etc.	Y	N/A	15Q3/15Q4
A/B	WP15/34/02	EU.01.53.07	PSupply	Procurement of the MITICA Cryogenic Plant	Procurement of the MITICA Cryogenic Plant	Y	15Q1	16Q1
B	WP15/34/03	EU.01.34.01	SC	Post-FDR Design of the integration into ITER CODAC	Task Order for Post-FDR Design of the integration into ITER CODAC. Mainly to be implemented through specific contracts under WP12/45/02 (F4E-OFC-361)	Y	N/A	15Q4

1.5.5.1.5 Antennas and Plasma Engineering

1.5.5.1.6 Ion Cyclotron Heating (ICH) and Current Drive Antenna

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
A/B	WP15/51/01	EU.01.51.01	Pserv	Design and analysis and technical coordination	Specific contracts 2015 for the Build to Print design of the Antenna. Main objectives for 2015 include, <i>inter alia</i> , Faraday screen design and analysis , design update, etc Mainly to be implemented through the framework contract WP11/51/02 for the analysis for Build to Print design	Y,Y(ITA)	N/A	15Q4
A	WP15/51/03	EU.01.51.01	Pserv	Faraday Screen design qualification	Post mortem test of the small scale mock-ups	Y(ITA)	15Q1	15Q2
A	WP15/51/05	EU.01.51.01	P serv	QA Inspectors for IC Antenna	Inspectors for IC Antenna Mainly to be implemented through specific contracts under the framework contract WP14/PO/07	Y	15Q2	

1.5.5.1.7 Electron Cyclotron (EC) Heating and Current Drive Systems

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
A	WP15/52/01	EU.01.52.01	FWC	Engineering Analysis and Support	Framework contracts for the Engineering Support Independent Verification and analysis and design	NA	14Q3	15Q1
B/C	WP15/52/02	EU.01.52.01	PSupply	EC UL prototypes	Prototypes and mock-up fabrication for the EC Launcher, including mechanical and mm-wave component prototypes	Y,Y(ITA)	15Q3	15Q4
A	WP15/52/03	EU.01.52.01	Pserv/Pserv	Support to prototype procurement and testing	Support during manufacture and testing of prototypes, including test facilities	Y,Y(ITA)	15Q2	15Q3

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
A/B	WP15/52/04	EU.01.52.01	PServ	Engineering Analysis and Support	Task orders and contracts for Engineering support for Launcher analysis, including mechanical analysis, nuclear safety and CFD, etc.	Y,Y(ITA)	N/A	15Q2/15Q4
A	WP15/52/05	EU.01.52.01	P serv	QA Inspectors for EC Upper Launcher	Inspectors for Electron Cyclotron Upper Launcher. Mainly to be implemented through specific contracts under the framework contract WP14/PO/07	Y	N/A	15Q3

1.5.5.1.8 EC Control

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
C	WP15/52/07	EU.01.52.05	PServ	Analysis of EC Control System	PServ for EC Control System	Y	15Q2	15Q4
A	WP15/52/10	EU.01.52.05	FWC	EC Operation and control	Activities and analyses in support of EC operation and control	N/A	14Q4	15Q2

1.5.5.1.9 Plasma Engineering¹⁰

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
C	WP15/PE/02	EU.01.PE.01	PServ	Plasma Engineering studies	Engineering studies of plasma systems, controls and design verification	N	15Q3	15Q4

¹⁰ Most of the activities in the area of Plasma Engineering are going to be implemented on the basis of competitive ITAs for which no planning is available from ITER IO; therefore no time of call or contract signature date is given for these activities

1.5.6 Neutral Beam and Electron Cyclotron Power Sources and Supplies

1.5.6.1.1 Electron Cyclotron Power Sources and Supplies

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
C	WP15/52/08	EU.01.52.02	P serv	Engineering Support in the ECPS&S Area	Engineering Support in the ECPS&S Area. Mainly to be implemented through specific contracts under the Framework Contract F4E- OFC-167	Y	N/A	2015
A	WP15/52/09	MULTIPLE	Options	Release of Options for the ongoing contracts in the Electron Cyclotron Power Sources and Supplies area	Release of options in the EC PS&S area: <ul style="list-style-type: none"> Options for the Contract for Procurement of 2nd EU Gyrotron Prototype (1MW CW Gyrotron Prototype) (inter alia: on-site support after acceptance, additional design and engineering activities, complementary housing kit and related risk mitigation activities, etc.) Options for the Contract Procurement of Body PS & MHVPS (WP12/52/02) (Main Contract), inter alia spare parts and additional dummy loads, etc. Options for the Contract Procurement of the He-free Superconducting Magnet II (WP11/52/03) 	Y	N/A	15Q1/15Q2

1.5.6.1.2 Neutral Beam

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
A	WP13/53/02	EU.01.53.07	PServ	SPIDER Diagnostics phase 1	Procurement of Neutral Beam Test Facility SPIDER Diagnostics mainly to be implemented through SC under FWC WP11/53/09	Y	N/A	15Q1
A	WP14/53/06	EU.01.53.07	PServ	SPIDER Control phase 2	Procurement of Neutral Beam Test Facility SPIDER Control, mainly to be implemented through specific contracts under FWC WP11/53/08	Y	N/A	15Q2

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
B/A	WP15/53/01	Multiple	Options	Release of options for NB ongoing contracts	Release of options for: <ul style="list-style-type: none"> Support Activity on Site for SPIDER Transmission Lines & High Voltage Deck WP09/53/06 Options for the Contract for Procurement of MITICA & HNBS Low Voltage Acceleration Grid PS (Lot 1) (WP10/53/13) Options for the Contract for Procurement of MITICA & HNBS GRPS (Lot 2) (WP10/53/13) 	Y	N/A	15Q1/15Q4
C	WP15/53/02	EU.01.53.07	P serv	Engineering Support in the NB Area	Engineering Support in the Neutral Beam Area. Mainly to be implemented through specific contracts in the TSS area.	Y	N/A	2015
A	WP15/53/03	EU.01.53.07	FWC	NBTF Site Supervision and Support	Service Framework Contract for NBTF Site Supervision and Support	Y	14Q4	15Q2
A	WP15/53/04	EU.01.53.07	PServ	Services for NBTF Site Supervision and Support	Services for NBTF Site Supervision and Support, mainly to be implemented through specific contracts under FWC WP15/53/03	Y	N/A	15Q3
A	WP15/53/05	EU.01.53.08	PServ	Inspectors for Neutral Beam contracts follow-up	Support of external inspectors to fulfil quality control activities on contracts within the Neutral Beam area together with or on behalf of F4E personnel. Mainly to be implemented through the framework contract for support inspectors WP14/PO/07	Y	N/A	15Q3
A	WP15/53/06	EU.01.53.07	P Supply	Procurement for SPIDER Beam Source and Vessel	Additional activities to be performed by the supplier for the management of the change orders to the SPIDER Beam Source and Vessel contract; complementary expenditure for supplier's claims.	Y	N/A	15Q2
C	WP10/53/13 ¹¹	EU.01.53.06	PSupply	Contract for Procurement of MITICA & HNBS GRPS	Procurement of MITICA & HNBS Ground Related Power Supplies, lot 2	Y	14Q4	15Q4

Additional activities, upon the approval of the relevant PCRs by the ITER Organization Director General or his delegates in the frame of Reserve Fund Management Plan, will be implemented under the budget line 3.6.

¹¹ Current planned signature for the Contract for Procurement of MITICA & HNBS GRPS is December 2015 using budget from Global Commitment 2014. To mitigate the risk the contract signature is not achieved by the end of 2015 F4E has duplicated the financing decision in WP 2015. Therefore the duplication of the financing decision will not therefore imply the cancellation of the financing decision in WP2014.

1.5.7 Diagnostics

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
A/B	WP15/55/01	EU.01.55.10	SG	Design & R&D for Low Field Side Collective Thomson Scattering	Specific Grants under the FPA for the design of the Low Field Side Collective Thomson Scattering (WP13/55/01). 2015 activities mainly include the consolidation of requirements, overall system design, performance predictions and the definition of functional specifications for subsystems and the definition of technical specification for the manufacture of prototypes for the front-end components	Y	NA	15Q1-15Q4
A/B	WP15/55/02	EU.01.55.02	SG	Design and R&D for Bolometers	Specific Grants under the FPA for the Design of Bolometers Diagnostic (WP13/55/01). 2015 activities mainly include the consolidation of requirements, overall system design, performance predictions and the definition of functional specifications for subsystems and the manufacture of prototypes for bolometer sensors.	Y	NA	15Q2-15Q4
A/B	WP15/55/03	EU.01.55.03	SG	Design and R&D for Plasma Position Reflectometry	Specific Grants under the FPA for the Design of the Plasma Position Reflectometry (WP11/55/01). 2015 activities mainly include R&D and testing of the In-Vessel components, In-Port-Plug components and Ex-Vessel components of the PPR diagnostics system.	Y	NA	15Q1/15Q4
A	WP15/55/05	EU.01.55.11	SG	Design and R&D for Core-Plasma Charge Exchange Recombination Spectrometers	Specific Grants under the FPA for the design of the Core-Plasma Charge Exchange Recombination Spectrometry (WP14/55/05). 2015 activities mainly include the consolidation of requirements, overall system design, performance predictions and the definition of functional specifications for subsystems	Y	NA	15Q1-15Q3

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
A	WP15/55/06	Multiple	PServ	Irradiation and post-irradiation testing of diagnostic components and assemblies	<p>Irradiation and post-irradiation testing services for prototype components and assemblies. Mainly performed through specific contracts within framework contract WP11/55/10.</p> <p>2015 activities mainly include the irradiation test Diagnostic components: (Magnetic Coils, set of terminated mineral insulated cables among others), simulation of RIEMF radiation effect and support in radiation effect expertise</p>	Y	NA	15Q1-15Q3
A	WP15/55/07	EU.01.55.07	SG	Design and R&D for Radial Neutron Camera and enabling of the Gamma Spectrometer	<p>Specific Grants under the FPA for the design of the Radial Neutron Camera and enabling of the Gamma Spectrometer (WP11/55/01).</p> <p>2015 activities mainly include the concept design and interface definition for the enabled Gamma Spectrometer and the experimental test program for RNC prototypes (neutron detectors and electronics)</p>	Y	NA	15Q1-15Q2
B	WP15/55/08	EU.01.55.14	P serv	Integration design of diagnostics into ITER ports	<p>Specific contracts under FWC WP12/55/11.</p> <p>2015 activities mainly include the Preparatory integration design of EU Diagnostics ports including interfaces refinement, engineering design and the assessment of performances against requirements.</p>	Y	NA	15Q4
A/B	WP15/55/10	Multiple	P supply	Prototypes & Test Equipment	<p>2015 activities will include the manufacturing of prototypes for irradiation and conventional tests for different Diagnostics components.</p> <p>2015 activities include prototypes for most of the Diagnostic systems (bolometer sensors, waveguide samples, ex-vessel components and antenna prototypes for the PPR system, various optical components for WAVS, etc.) and the procurement of test equipment when required.</p>	Y	NA	15Q3-15Q4
A	WP15/55/11	EU.01.55.01	P serv	Inspectors for Diagnostic Manufacturing and Prototype Manufacturing Contracts	<p>Follow-up of the contract for the for the manufacturing of final Diagnostics ITER components and prototypes. Mainly to be performed through specific contracts under the framework WP14/PO/07</p>	Y	NA	15Q1

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
A	WP15/55/13	EU.01.55.01	P serv	Procurement of I&C Integrator services for all EU supplies	Plant Controller Integration - Preliminary Design. Mainly to be performed through specific contracts under the framework WP12/45/02	Y	NA	15Q1
A	WP15/55/14	EU.01.55.06	SG	Design and R&D for Tokamak Services	Specific Grants under the FPA for the design of the Tokamak Services (WP11/55/01). 2015 activities mainly include the Interfaces and requirement definition, CAD models production and the system level design of the remote handling connector.	Y	NA	15Q1-15Q2
A	WP15/55/15	EU.01.55.13	SG	Design and R&D for Equatorial Visible/IR Wide-Angle Viewing System	Specific Grants under the FPA for the design of the Equatorial Visible/IR Wide-Angle Viewing System (WP13/55/01). 2015 activities mainly include the System Level Design and Preliminary design of Port-Plug and Ex-Vessel components	Y	NA	15Q2-15Q4
A	WP15/55/16	EU.01.55.14	SC	Qualification and Supply of port plug structures	Specific Contract under the IO owned FWC for the Qualification and Supply of Upper and Equatorial Port Plug Structures for ITER Diagnostics	Y	NA	15Q3
B	WP15/55/17	EU.01.55.15	FWC	Development of Manufacturing Specifications	Framework contract for the development of Manufacturing Specifications (including Build-to-print drawings and Specifications) for ITER Diagnostics	Y	NA	15Q4

1.5.8 Site, Buildings and Power Supplies

1.5.8.1.1 Power Supplies

WP cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
A	WP15/41/01	EU.01.41.01	PSupply	TB06 Contract options for Procurement, Installation and Commissioning PPEN/SEEN Equipments & Cables (Additional Activities)	Option for the Electrical Power Distribution TB06 Contract (WP13/41/01) Electrical Power Distribution TB06 Contract covers: procurement of PBS 43 equipment including cables and non-safety Relevant , and installation of PBS 41-PP and PBS 43 equipment	Y	N/A	15Q2

1.5.8.1.2 Site and Buildings

WP cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
A	WP15/62/01	EU.01.62.02	SC	Contract for Site Security and Reception Services for the ITER Site	Provision of worksite access control and security -2015 activities – Jointly with IO	Y	N/A	15Q1
B	WP15/62/03	EU.01.62.02	SC	Facility Management Services for the ITER Site 2016	Provision of Facility Management Services for the ITER Site -2016 activities – Jointly with IO	Y	N/A	15Q4

WP cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
A/C	WP14/62/21	EU.01.62.02	P serv	Buildings Contract Amendments (PCRs cost impact) and alternative disputes settlements	Additional work linked to IO PCRs for the Construction contracts of ITER buildings. Additional expenditures related to alternative disputes settlements	Y	N/A	15Q1-15Q4
B	WP15/62/12 ¹²	EU.01.62.02	P works	Construction activities	Re-launch of the contract TB16 for site infrastructure Works	Y	15Q3	15Q4
B	WP15/62/13	EU.01.62.02	Amend	Architect Engineer. Additional Activities (Amendment)	AE - Contract Amendment 12 signed for: Design Extension and additional Design activities	Y	N/A	16Q1

Additional activities, upon the approval of the relevant PCRs by the ITER Organization Director General or his delegates in the frame of Reserve Fund Management Plan, will be implemented under the budget line 3.6.

1.5.9 Test Blanket Modules and Material Development

WP cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
A	WP12/56/07	EU.01.56.02	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.	N	14Q4	15Q2

¹² Current planned signature for the Procurement for Site Infrastructure Works (Tender Batch 16) is December 2014 using budget from Global Commitment 2014. To mitigate the risk the contract signature is not achieved by the end of 2015 F4E has duplicated the financing decision in WP 2015. The duplication of the financing decision will not therefore imply the cancellation of the financing decision in WP2014.

WP cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
A	WP12/MD/01	EU.01.56.02	FPA	Structural materials characterization and design rules- Characterization of materials and welds	Characterization and validation of TBM structural materials base material and welds.	N	14Q3	15Q1
A	WP13/MD/06	EU.01.56.02	FPA	Structural materials characterization and design rules – Design rules and methodologies	Development of specific design rules and design methodologies.	N	14Q3	15Q1
A/B	WP15/56/01	EU.01.56.02	SG	Specific Grants for R&D in support to the TBS design	R&D in support of the TBS design (inter alia modeling, code development for Eurofer, sensor technologies, etc.). Mainly specific grants to be implemented through the FPAs: WP12/MD/01, WP13/MD/06, WP12/56/07, WP11/56/03, WP11/56/07.	N	N/A	15Q1 /15Q4
A/B	WP15/56/02	EU01.56.01	P serv	TBSs Design Review (DR) preparation and outcomes implementation; related techno demonstration	Test Blanket System finalization of the CDR (chits resolution), preparation of Preliminary Design Review (PDR), resolution of PDR outcomes by design update and complementary analyses, technological demonstration. Includes the analysis of condition of acceptance, treatment and packing for the TBS radwaste. Mainly to be performed through specific contracts under the frameworks: WP13/56/02, WP11/56/11, WP13/ES/01, WP12/MF/12.	N	N/A	15/Q1 – 15/Q3
A	WP15/56/03	EU01.56.02	FWC	Handling, cutting, storage of EUROFER products	Service Framework Contract for handling, cutting, storage of EUROFER products to be used for R&D activities	N	14/Q3	15/Q1

WP cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
A	WP15/56/04	EU01.56.02	SC	Specific contract for handling, cutting, storage of EUROFER products	Handling, cutting, storage of EUROFER products to be used for R&D activities Mainly to be performed through the Framework Contract WP15/56/03	N	N/A	15/Q1
A	WP15/56/05	EU.01.56.01	SC	DACS Preliminary Design	Data Acquisition Control System (DACS) Preliminary design Mainly activities to be performed for the PDR preparation through the framework contract F4E-OFC-361 (WP12/45/02)	N	N/A	15/Q1
B	WP15/56/06	EU.01.56.02	G	Additional analysis on Tritium Migration Modelling using ECOSIMPRO platform.	Simulations in support of follow-up of the Conceptual Design review	N	15/Q4	15/Q4

1.5.10 Technical Support Service

1.5.10.1.1 CODAC

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
B	WP15/IC/01	MULTIPLE	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 and WP15/IC/03.	Y	N/A	15Q2
				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. 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.	Y	N/A	2015
A	WP15/IC/03	EU.01.ES.03	FWC	System Instrumentation Engineering Support	System Instrumentation Engineering Support Framework Contract, including Conventional I&C and Nuclear I&C	N/A	15Q1	15Q3

1.5.10.1.2 Nuclear Safety

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
B	WP15/SF/01	MULTIPLE	PServ	Supporting safety analysis to follow up ITER design evaluation and licensing process	Supporting safety analysis to follow up ITER design evaluation and licensing process .	Y,Y ITA	N/A	15Q4
A	WP15/SF/02	EU.01.NS.01	FWC	Supporting safety analysis to follow up ITER design evaluation and licensing process	Framework contract for safety analysis to follow up ITER design evaluation and licensing process	NA	15Q2	15Q4

1.5.10.1.3 Materials and Fabrication

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
B	WP15/MF/01	MULTIPLE	Pserv	Joining Technology and non-destructive testing	On demand material and joining characterisation in the frame of construction and R&D of ITER components. Mainly performed through specific contracts within frameworks F4E OPE 149, WP14/MF/07and WP15/MF/02	Y, Y(ITA)	N/A	2015
				Materials irradiation and post irradiation characterization	Characterization of non-irradiated and irradiated XM19, SS660, NiAl Bronze, Inconel 718, XM19/316L(N)-IG welded joint and CuCrZr/316L(N)-IG explosion bonded joints. Mainly performed through specific contracts within framework WP12/MF/12.	Y, Y(ITA)	N/A	2015
				Material characterization at cryogenic temperatures	On demand material characterisation at cryogenic temperatures in the frame of construction and R&D of ITER components. Mainly performed through specific contracts within framework F4E OPE 084.	Y, Y(ITA)	N/A	2015
				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.	Y, Y(ITA)	N/A	2015
A	WP15/MF/02	EU.01.MF.01	FWC	Joining Technology and non-destructive testing	On demand material and joining characterisation in the frame of construction and R&D of ITER components.	N/A	15Q1	15Q3
A	WP15/MF/03	EU.01.MF.01	G ¹³	Assessment Material Fabrication route	Feasibility study of new manufacturing technology electron beam, laser sintering for ITER component.	Y, Y(ITA)	15Q1	15Q1
B	WP15/MF/04	EU.01.MF.01	P supply	ITER specific raw material	Provisions for small quantities of ITER specific raw materials	Y, Y(ITA)	15Q4	15Q4

¹³ Unique Beneficiary: Chalmers Tekniska Högskola - Material and Manufacturing Technology/Material, Sweden, Unique technical capacity

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
B	WP15/MF/05	EU.01.MF.01	P Serv	Material Manufacturing	Provision of Manufacturing Services using Hot Isostatic Pressing	Y, Y(ITA)	15Q4	15Q4

1.5.10.1.4 Engineering Analysis

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
B	WP14/ES/10	EU.01.ES.02	FWC	Thermo-hydraulic Fluid Dynamic analyses	Fluid Dynamic analyses, including thermo hydraulics, in support of PAs and ITAs.	N/A	15Q2	15Q2
B/C	WP15/ES/01	MULTIPLE	PServ	Engineering Support- CAD support	Support in CAD design CAD checking and CAD exchange. Mainly performed through specific contracts within framework WP11/ES/07.	Y,Y(ITA)	NA	15Q4
B	WP15/ES/02	MULTIPLE	PServ	Metrology Support	Geometrical survey and data analysis for VV and Magnet component. On demand metrology services in the frame of manufacturing and R&D of components for ITER. Performed through specific contracts within framework WP13/ES/03.	Y,Y(ITA)	N/A	2015
B/C	WP15/ES/03	MULTIPLE	PServ	Mechanical analyses	Mechanical analyses in support of PAs and ITAs. Mainly performed through specific contracts within frameworks WP 13/ES/02 and WP12/ES/05	Y,Y(ITA)	N/A	2015
				Dynamic Analysis	Seismic and Dynamic Analysis of ITER buildings and components. Mainly performed through specific contracts within framework contract WP12/ES/01.	Y, Y(ITA)	NA	2015
				Electromagnetic analyses	Electromagnetic analyses in support of PAs and ITAs. Mainly performed through specific contracts within frameworks WP12/ES/03 and WP13/ES/01.	Y,Y(ITA)	N/A	2015

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
				Nuclear analyses	Nuclear analyses in support of PAs. Mainly performed through specific contracts within framework F4E-2008-OPE-02 and WP12/ES/08.	Y,Y(ITA)	N/A	2015
				Thermo-hydraulic Fluid Dynamic analyses	Fluid Dynamic analyses, including thermo hydraulics, in support of PAs and ITAs. Mainly performed through specific contracts within frameworks WP14/ES/10.	Y,Y(ITA)	N/A	2015
B	WP15/ES/04	MULTIPLE	PServ	Support for technical coordination and integration	Support in the areas of integration, operation, maintenance and other technical areas within a short notice	Y, Y(ITA)	15Q4	15Q4
B	WP15/ES/05	EU.01.ES.01	FWC	Engineering Support – CAD support	Supply of CAD Design Support Services	Y, Y(ITA)	15Q3	15Q4

1.5.10.1.5 Nuclear Data

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
B	WP15/ND/01	EU.01.ES.02	FPA	Nuclear Data improvements and development of tools	Integrated R&D for the development of Fusion Nuclear Data libraries, their processing, benchmarking and validation and related computational tools.	N	15Q2	15Q4
B	WP15/ND/02	EU.01.ES.02	SG	Nuclear Data improvements and development of tools	Integrated R&D for the development of Fusion Nuclear Data libraries, their processing, benchmarking and validation and related computational tools. Mainly to be performed through specific grants under the FPA WP11/ND/01	N	N/A	2015

Nuclear Data experiments and measurement techniques	Integrated R&D for the experimental validation of Fusion Nuclear Data libraries and development and testing of measurement techniques. Mainly to be performed through specific grants under the FPA WP12/ND/01	N	N/A	2015
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1.5.11 Technical Processes Integration

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
A/C	WP15/TP/01	EU.01.PM.01.91	PServ	Service of QA support for ITER project contracts follow-up	QA Support to QA Officers and Project Teams. Mainly performed through specific contracts within framework WP14/PO/07	Y	N/A	15Q1-15Q4
B	WP15/TP/02	MULTIPLE	PServ	Service of QA/QC surveillance Inspectors for ITER project suppliers monitoring	QA/QC Inspectors for suppliers monitoring. Mainly performed through specific contracts within framework WP14/PO/07	Y	N/A	2015
A/C	WP15/TP/03	EU.01.TR.08.	PServ	Global Transportation of ITER components - Security	Convention 4 for Real Convoys for Gendarmerie Services (<i>inter alia</i> escort and security of convoys), third party insurance and civil works on the itinerary. Mainly performed through specific contracts within framework WP14/PO/24 and WP15/TP/06	Y	N/A	15Q2
B/C	WP15/TP/04	MULTIPLE	PServ	Global Transportation of EU ITER components	Transportation of EU in Kind components	Y	N/A	2015
B	WP15/TP/05	EU.01.TR.08.	PServ	Global Transportation of NON EU ITER components	Transportation of Other DAs ITER in Kind components (from Fos/Marignane to Cadarache)	Y	N/A	2015

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
A/C	WP15/TP/07	MULTIPLE	PServ	Support to Technical Process Integration	General support for CE Marking, Configuration Management and System Engineering. Mainly performed through specific contracts within frameworks WP13/PO/15 and WP13/PO/16	Y	N/A	15Q1-15Q4

1.5.12 Budget allocation for Amendments, Price Indexation and alternative disputes settlements under ongoing contracts and grants

F4E may agree on alternative disputes settlements, may pay liquidated damages, late payment interests and other financial compensations that F4E may be obliged to pay under its contracts and grants and amend grants and contracts covered by (a) financing decision(s) and without substantial change in such decision(s) under the following criteria:

- Total amendments to a contract or grant will not exceed 20% of the price of the initial contract or grant; and
- Aggregated value of the amendments will not exceed in 2015 2.0% of the sum of running contracts as planned at the date of WP2015 first issue

Exercise of contractual options and amendments exceeding the thresholds under the above underlying criteria shall require a new prior financing decision. F4E may implement price indexation referred to in the signed contracts covered by (a) financing decision(s) and without substantial change in such decision(s)

Implementation of contract amendments or indexation that leads to a change in the contract value larger than EUR 10 million, independently of the above-mentioned percentages, shall require a new prior financing decision.

WP cat	WP ref	Activity Type	Activity Title	Activity Description	Duration (months)	Credit Status	Time of Call (year/quarter)
C	WP15/PM/01	G	Amendments of ongoing Grants	Budget allocation for amendments of ongoing Grants	N/A	Y,Y(ITA)	N/A
A/C	WP15/PM/02	G	Amendments to ongoing Grants	Budget allocation for amendments on ongoing Grants	N/A	N	N/A
A/B/C	WP15/PM/03	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

WP cat	WP ref	Activity Type	Activity Title	Activity Description	Duration (months)	Credit Status	Time of Call (year/quarter)
C	WP15/PM/04	P	Amendments to ongoing Procurements	Budget allocation for amendments on ongoing procurement Contracts	N/A	N	N/A

1.5.13 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 cat	WP ref	Activity Type	Activity Title	Activity Description	Duration of (months)	Credit Status	Time of Call (year/quarter)
C	WP15/PM/05	G	Analysis for cost containment or risk assessment	On-demand, urgent analysis and engineering activities	N/A	Y,Y(ITA)	N/A
C	WP15/PM/06	G	Analysis for cost containment or risk assessment	On-demand, urgent R&D activities	N/A	N	N/A
C	WP15/PM/07	P	Analysis for cost containment or risk assessment	On-demand, urgent analysis and engineering activities	N/A	Y,Y(ITA)	N/A
C	WP15/PM/08	P	Analysis for cost containment or risk assessment	On-demand, urgent R&D activities	N/A	N	N/A

1.5.14 Contribution in Cash

1.5.14.1.1 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 2015. This contribution is for 2016. It will be committed in the last quarter of 2015 and will be paid to ITER IO in two payments.

1.5.14.1.2 Contribution to Japan -Obsolete

1.5.14.1.3 NBTF Agreement

This cash contribution to the Consorzio RFX corresponds to the 2016 NBTF Work Programme and amendment of the 2015 NBTF WP implementing the agreement on the Neutral Beam Test Facility on credited and not-credited budget lines. The commitment for the activities will be implemented after the F4E approval of the NBTF 2016 Work Programme and after the F4E approval of the amendment of the 2015 NBTF WP. The main activities that will be performed in 2016 are:

- SPIDER integration, commissioning;
- R&D activities and procurements for demonstration activities finalised to the verification and optimization of NB components;
- Modelling and physics studies directly related to the development of the components for the NB system, including activities carried out on the ELISE experiment;
- Preparation for the exploitation of the SPIDER test bed
- Support to F4E in the preparation and follow-up of procurements contract;
- Participation to technical meetings including interface meeting with IO and other Domestic Agencies;
- Provision of NBTF Host services like: technical support during installation, construction supervision, licensing and safety, insurance, procurement of balance of plants, consumables and other supplies and services necessary for construction, integration and operation;
- Provision of site facilities to Third Parties, as applicable.

1.5.14.1.4 Contribution in cash for Site cooperation agreement and host agreement of F4E Suppliers at Cadarache

The Agreement on ITER Site collaboration between the ITER Organization (IO) and Fusion for Energy (F4E) set out the terms and conditions under which F4E and IO may share certain goods and services available at the ITER Site (including electrical power, water and facilities on site) and the Host Agreement between the IO and F4E set out the terms and conditions under which IO provide support to F4E with equipment and/or IT, Mail & Landline services.

1.5.14.1.5 Cash transfer to ITER IO for the Design and Procurement of Test Blanket Systems Connection Pipes

According to the IC-12 decision, the design and procurement of the Test Blanket Systems Connection Pipes and the associated provision of financial resources are transferred from F4E to the IO for the HCLL and the HCPB TBM Systems. The budget transfer to IO shall be executed according to the payment modalities, shown below, defined in the 11th meeting of the Test Blanket Module Program Committee (TBM-PC-11) (19-21 May 2014) and endorsed by the ITER Council in the 14th meeting (18-19 June 2014) and finalized through following mail exchanges.

- 1) The XX IM (or XX DA) shall pay at least fifty percent (50%) of its share of the costs no later than 30th April 2016, unless otherwise agreed mutually by the IO and the XX IM (or XX DA) to take note of approved schedule changes.
- 2) This date is linked to the present estimation of the procurement schedule of the different Supplies defined in Article 3 b) of the MoU.

1.6 BROADER APPROACH

1.6.1 JT-60SA

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal Commitment (year/quarter)
A	WP15/BA/1	EU.BA.01.01.01	Pserv	Transport TF coils to Japan	Transport of TF coils from Saclay to Japan PoE	N	15Q1	15Q1
A	WP15/BA/2	EU.BA.02.02.02	Pserv	Engineering support studies	Support studies testing samples from TF coil production.	N	NA	15Q1
A	WP15/BA/3	EU.BA.02.02.01	P supply	Additional Spare TF Coil and TF Coils delay risk mitigation	Provision of a second spare TF coil and other measures for TF coils delay risk mitigation (part directly contracted by F4E)	Y	15Q1	15Q2
A	WP15/BA/4	EU.BA.02.03.01	P supply	TF coil pre-assembly	On site splice plate machining	Y(BA)	15Q1	15Q2
A	WP15/BA/5	EU.BA.01.01.01	Pserv	Transport of TF coil current leads to Japan	Transport from Karlsruhe to Japan PoE . Planned to be performed through specific contracts under the framework for WP12/BA/06	N	N/A	15Q1
A	WP15/BA/6	EU.BA.01.01	Pserv	Transport (TOs under FWC)	Transport to be performed through specific contracts under the framework for WP12/BA/06 for JT-60SA and IFMIF.	N	N/A	15Q2
A	WP15/BA/7	EU.BA.01	Pserv	Engineering and safety support on site	Support services at Naka site for TF coil on site machining and cryopant assembly (JT-60SA), and at Rokkasho site for LIPAc plant assembly (IFMIF). Planned to be performed through specific contracts under framework for WP14/BA/16.	N	N/A	15Q1
A	WP15/BA/9	EU.BA.02.01	Pserv	Engineering Support Services	Third Party inspection and verification services	N	15Q1	15Q1

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal Commitment (year/quarter)
A	WP15/BA/21	EU.BA.02	Pserv	Installation of Power Supplies	Installation on site of JT-60SA Power Supplies	Y	15Q3	16Q1
A	WP15/BA/22	EU.BA.02	Pserv	Demonstration Conductor Winding	Logistics and installation activities for the demonstration conductor winding	N	15Q4	15Q4
A	WP15/BA/23	EU.BA.02	Pserv	Electrical breakers	Electrical breakers for TF coils	N	15Q4	15Q4
B	WP14/BA/14 ¹⁴	EU.BA.02	P supply	ECH Power Supplies	ECH Power Supplies	Y(BA)	14Q1	15Q4

1.6.2 IFMIF

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal Commitment (year/quarter)
A	WP15/BA/10	EU.BA.03.02.01	Pserv	Engineering support	Support services for LIPAc assembly and commissioning	N	15Q1	15Q1

1.6.3 IFERC

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal Commitment (year/quarter)
A	WP15/BA/15	EU.BA.04.02	P supply	Remaining REC control room software	Software for simulation codes	Y(BA)	15Q3	15Q3

¹⁴ Current planned signature for the Procurement for Electron Cyclotron Power Supplies for JT-60SA is December 2015 using budget from Global Commitment 2014. To mitigate the risk the contract signature is not achieved by the end of 2015 F4E has duplicated the financing decision in WP2015. Therefore the duplication of the financing decision will not therefore imply the cancellation of the financing decision in WP2014

1.6.4 Cash Contribution

For IFMIF there is a two-component cash contribution to be considered for 2015 covering expenditure for Common Expenses for the PT, and a contribution to the Common Fund for Maintenance. For IFMIF there is also a reimbursement of costs to be made to Voluntary Contributor Designated Institutions for discharging F4E's responsibility for transportation of cryoplat components to Japan.

For IFERC, the hardware for the REC will be purchased jointly by Japan, requiring a cash contribution from Europe via F4E.

For JT-60SA there is a reimbursement of costs to be made to Voluntary Contributor Designated Institutions for discharging F4E's responsibility for transportation of part of the power supplies components (QPC) to Japan. There are also reimbursements to be made to VCs for testing overcosts due to deficient components (provided by Japan), and those foreseen by the amendment of the TF Coil Agreement of Collaboration (namely payments for schedule acceleration and supply of one additional Toroidal Field Coil Casing).

1.6.5 Budget allocation for Amendments and Price Indexation for ongoing contracts

F4E may exercise contractual options, may pay liquidated damages, late payment interests and other financial compensations that F4E may be obliged to pay under its contracts and amend grants and contracts covered by (a) financing decision(s) and without substantial change in such decision(s) under the following criteria:

- Total amendments to a contract or grant will not exceed 20% of the price of the initial contract or grant; and
- Aggregated value of the amendments will not exceed in 2015 2.0% of the sum of running contracts at the date of WP2015 first issue

Exercise of contractual options and amendments exceeding the thresholds under the above underlying criteria shall require a new prior financing decision. F4E may implement price indexation referred to in the signed contracts covered by (a) financing decision(s) and without substantial change in such decision(s).

Implementation of contract amendments or indexation that leads to a change in the contract value of EUR 10 million, independently of the above-mentioned percentages, shall require a new prior financing decision.

Provisions for budget allocation for amendments and dispute settlements are identified under category C.

1.7 OTHER EXPENDITURES

1.7.1 Legal and Procurement support

In 2015 F4E will need specialist support from economic operators (by means of service contracts) for operational needs: this will include (where appropriate) legal and commercial services, including adjudicators of on-going contracts and provision to cover the Chairman and advisors fees in case of lost disputes in front of the adjudication Panel. Provision in this sense is included in the budget for 2015.

1.7.2 Experts with contract

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 for a total equivalent of approximately 4500 expert man-days in 2015.

1.7.3 Consultancy services

A general provision is included in 2015 for the consultancy service for participation to specific ITER/F4E committees and support/advice to F4E Management. Provisions for financial audit for the ongoing contracts are included under the same budget title.

1.7.4 Provisions for service/supply contracts and long-term missions for F4E staff

In view of the increasing demand of metrology services, analysis and surveys, it is foreseen to purchase a minimum set of tools to be used by F4E staff in the technical support services team to perform geometrical checks according component manufacturing schedule. Among the others it is worth to mention Vacuum vessel sector's and part's geometrical checks as well metrology driven assembly processes. Provisions for portable Metrology devices like laser trackers, laser tracker accessories and necessary tools to make surface scans and gap/step detection including all relevant software applications are included under the budget title 3.4.

The performance of operational technical activities requires access to, provision/storage and use of specific software, technology, hardware and items (inter alia for CAD design, planning and reporting tools, engineering analysis codes and technical material/safety items). Provisions for supply, licenses, development, installation, maintenance and training are included under the budget title 3.4

The close follow-up of the ongoing manufacturing contracts require F4E staff to stay at supplier's premises or facilities for long periods. Provisions for expenditures incurred for the long-term mission are included under the budget title 3.4.

1.7.5 Complementary expenditures for the contracts under Global Commitment 2014 and Work Programme 2015

F4E has foreseen that some activities under the Work Programme 2014 will be implemented under the Global Commitment scheme in 2014. Being the exact amount of the expenditure not known when the Global Commitment is made or when the Work Programme 2014 (or its amendments) are prepared, provisions for complementary expenditures are made available in WP2015 to fulfill the needs as in the relevant award decisions. These provisions are limited to EUR 5 million for Global Commitments 2014.

WP cat	WP ref	Activity Type	Activity name	Credited type	Legal commitment date (year)
C	WP15/PM/10	G	Complementary expenditure for Global Commitment 2014 activities for ITER project	N	2015
C	WP15/PM/11	G	Complementary expenditure for Global Commitment 2014 activities for ITER project	Y, Y(ITA)	2015
C	WP15/PM/12	P	Complementary expenditure for Global Commitment 2014 activities for ITER project	Y, Y(ITA)	2015
C	WP15/PM/13	P	Complementary expenditure for Global Commitment 2014 activities for ITER project	N	2015
C	WP15/PM/14	P	Complementary expenditure for Global Commitment 2014 activities for Broader Approach	N/A	2015

The list of the procurement procedures for which the complementary expenditure might be needed is available below:

WBS ref	WP Ref	Activity Type	Activity Name	Credited type
EU.01.62.02w.57.35.603	WP13/62/06	PServ	PF Coil HSPC Services	Y
EU.01.56.02w.07.04.603	WP11/56/04	PSupply	Eurofer Procurement for PMU	N
EU.01.56.02w.03.05.603	WP11/56/04	PSupply	Procurement of 20 t of EUROFER semi-finished products	N
EU.01.56.02w.02.08.602.702	WP12/MD/06	SC	Irradiation and post-Irradiation Characterization of EUROFER (Lot 4) 450-650C	N
EU.01.56.02w.02.08.604.702	WP12/MD/06	SC	Irradiation and post-Irradiation Characterization of EUROFER (Lot 3) 300-350C	N
EU.01.56.01w.07.07.603	WP14/56/03	PServ	Engineering services in support of TBM induced ripple analyses	N
EU.01.55.07w.51.09.628.702	WP14/55/15	SG	Design and R&D for Radial Neutron Camera/Gamma Spectrometer - Phase 1 SG3	Y
EU.01.53.06w.51.05.603	WP11/53/01	PSupply	Procurement of MITICA & HNBs High Voltage Deck1 & Bushing	Y
EU.01.52.02w.51.32.603	WP11/52/03	PSupply	Supply of a superconducting magnet system for the European Gyrotron II	Y
EU.01.52.01w.02.21.603	WP14/52/03	PServ	Support to Isolation Valves Prototype procurement and testing	Y(ITA)
EU.01.52.01w.02.15.603	WP14/52/02	PSupply	Contract for Fabrication & qualification of EC UL diamond window prototype	Y(ITA)
EU.01.23.02w.51.03.603.702	WP12/23/04	SC	Preliminary Design of Divertor RH	Y
EU.01.11.03w.53.06.603	WP13/11/13	PSupply	Contract for Impregnation & Additional Tooling Provision (TI&TA)	Y
EU.01.11.03w.53.08.603	WP13/11/15	PServ	Contract for PF Coils Manufacturing and Cold Test (MFR)	Y
EU.01.11.01w.51.17.603	WP14/11/07	PServ	Insurance of the TFWP during insertion process	Y
EU.01.PE.01w.77.07.603	WP14/PE/08	PServ	Contract for PE Studies	N
EU.01.52.05w.91.44.603	WP14/52/05	PServ	Contract for Analysis of EC Control System	Y,Y ITA
EU.01.PE.02w.91.12.603	WP14/PE/10	PServ	Contract for Plasma Control System Design	Y(ITA)
EU.01.PE.01w.77.08.603	WP14/PE/07	G	Analysis of plasma operations, plasma-machine interfaces and actuators	N
EU.01.MF.01w.76.43.603	WP14/MF/03	PServ	Assessment Erosion Corrosion Parameters of ITER components	Y,Y ITA
EU.01.16.01w.08.08.602.702	WP12/MF/13	SC	Re-welding and Pie of Irradiated Pipe Specimens	Y
EU.BA.02.04.03	WP14/BA/14	P supply	ECH Power Supply	NA
EU.BA.01.02	WP14/BA/16	P serv	Engineering and safety support for on-site activities	NA

1.8 PLANNING AND MONITORING ACTIVITIES

WP Cat	WP Ref	F4E WBS	Activity Type	Activity Title	Activity Description	Credit Status	Time of Call	Legal commitment (year/quarter)
A	WP14/PO/02	EU.01.PM.04	PServ	Support for Dual Use	Outsourcing of Dual Use Consultancy. Mainly performed through specific contracts within Framework contract WP13/PO/06.	Y, Y(ITA)	N/A	14Q3
A/B/C	WP15/PM/09	MULTIPLE	P serv	Support to Project Control	Outsourcing of project control activities, <i>inter alia</i> Planning & Scheduling, Risk Management, Reporting and Cost Management. Mainly to be performed through the framework contracts WP11/PO/13, WP14/PO/17, WP14/PO/18, WP13/PO/15	Y, Y(ITA)	N/A	15Q1-15Q4

1.9 SCIENCE AND TECHNOLOGY SUPPORT FOR ITER AND BA

1.9.1 Science and technology support for ITER and BA

In 2015 F4E will launch the procedure to award a framework contract to procure broad range science and technology support for ITER and BA projects. Task orders will be issued in 2015 in support of the areas Diagnostics, Antennas and Plasma Engineering for ITER Project and IFERC for Broader Approach.

ANNEX I: SUMMARY OF THE 2015 WORK PROGRAMME¹⁵

Commitment appropriation (EUR)				
Budget line	Title	Original WP2015 (Dec 14)	1st Amendment WP2015 (June 15)	2nd Amendment WP2015 (December 15)
3 1	ITER construction including site preparation	810 618 418.14	310 415 818.14	315 309 818.14
3 2	Technology for ITER	18 409 100.00	16 353 700.00	12 843 700.00
3 3	Technology for Broader Approach	9 976 000.00	12 234 000.00	11 850 000.00
3 4	Other expenditure	5 500 000.00	5 500 000.00	4 500 000.00
3 5	Appropriation from the ITER Host State contribution	64 000 000.00	64 000 000.00	64 000 000.00
Total Title III of the Budget 2015		908 503 518.14	408 503 518.14	408 503 518.14
3 5	Host State contribution carried over from previous year and bank interests	0.00	10 793 033.79	10 835 613.21
3 1	Internal revenue	0.00	0.00	1 960 946.89
3.6	Revenue from the ITER Organization Reserve Fund Allocation Scheme	0.00	0.00	p.m.
Total amount available for the operational expenditure		908 503 518.14	419 296 551.93	421 300 078.24 + p.m.

¹⁵ p.m. Estimated at 8 200 000 Euro at the time of the preparation of the second Amended 2015 Work Programme

Commitment appropriation (EUR)

Budget line	Title	Original WP2015 (Dec 14)			1st Amendment WP2015 (June 15)			2nd Amendment WP2015 (December 15)		
		Grants	Procurement	Cash	Grants	Procurement	Cash	Grants	Procurement	Cash
3 1+3 5	Expenditure in support of ITER, credited by ITER IO through PAs and ITAs	17 400 000.00	604 232 818.14		10 800 000.00	163 911 251.93		7 700 000.00	249 706 378.24	
3 1+3 5	Contribution in cash in support of ITER (paragraph 2.3.1.15)			156 600 000.00			156 600 000.00			121 500 000.00
3 1+3 5	Contribution in cash to Japan (paragraph 2.3.1.15)			39 300 000.00			4 072 000.00			0.00
3 1+3 5	Contribution for site agreement (paragraph 2.3.1.15)			2 960 000.00			3 050 000.00			2 700 000.00
3 1+3 5	Contribution in cash for management fees related to Transportation Framework			960 000.00						
3 1+3 5	Contribution in cash on NBTF Agreement (paragraph 2.3.1.15)			1 750 000.00			2 000 000.00			2 000 000.00
3 1+3 5	Amendment, Price indexation, Dispute... (paragraph 2.3.1.13)	915 600.00	50 500 000.00		915 600.00	43 860 000.00		500 000.00	8 000 000.00	
3 1+3 5	Subtotals	18 315 600.00	654 732 818.14	201 570 000.00	11 715 600.00	207 771 251.93	165 722 000.00	8 200 000.00	257 706 378.24	126 200 000.00
3 1+3 5	Total ITER Construction	874 618 418.14			385 208 851.93			392 106 378.24		

Commitment appropriation (EUR)

Budget line	Title	Original WP2015 (Dec 14)			1st Amendment WP2015 (June 15)			2nd Amendment WP2015 (December 15)		
		Grants	Procurement	Cash	Grants	Procurement	Cash	Grants	Procurement	Cash
3 2	Design and R&D in support of ITER, not credited IO	3 800 000.00	7 600 000.00		3 800 000.00	6 500 000.00		2 700 000.00	4 000 000.00	
3 2	Contribution in cash to IO for the Design and Procurement of Test Blanket Systems Connection Pipes (paragraph 2.3.1.15)			1 292 010.00			1 266 700.00			1 266 700.00
3 2	Contribution in cash on NBTF Agreement (paragraph 2.3.1.15)			5 305 000.00			4 375 000.00			4 375 000.00
3 2	Amendment, Price indexation, Dispute,... (paragraph 2.3.1.13)	192 000.00	220 090.00		192 000.00	220 000.00		192 000.00	310 000.00	
	Subtotals	3 992 000.00	7 820 090.00	6 597 010.00	3 992 000.00	6 720 000.00	5 641 700.00	2 892 000.00	4 310 000.00	5 641 700.00
3 2	Total Technology for ITER		18 409 100.00			16 353 700.00			12 843 700.00	

Commitment appropriation (EUR)

3 3	Expenditure in support of Broader Approach		8 300 000.00			7 934 000.00			7 300 000.00	
3 3	Contribution in cash in support of IFMIF-EVEDA Project and QPC transport			726 000.00			3 350 000.00			3 600 000.00
3 3	Amendment, Price indexation,... (paragraph 2.3.2.5)		950 000.00			950 000.00			950 000.00	
	Subtotals		9 250 000.00	726 000.00		8 884 000.00	3 350 000.00	0.00	8 250 000.00	3 600 000.00
3 3	Total Technology for Broader Approach and		9 976 000.00			12 234 000.00			11 850 000.00	

Commitment appropriation (EUR)

Budget line	Title	Original WP2015 (Dec 14)			1st Amendment WP2015 (June 15)			2nd Amendment WP2015 (December 15)		
		Grants	Procurement	Cash	Grants	Procurement	Cash	Grants	Procurement	Cash
3 4	Appointment of experts for technical assistance to F4E (paragraph 2.3.3.2)			2 000 000.00			2 000 000.00			1 500 000.00
3 4	Legal and commercial services for assistance to F4E and supply for F4E staff (paragraph 2.3.3.1, 2.3.3.3 and 2.3.3.4)		3 500 000.00			3 500 000.00			3 000 000.00	
	Subtotals	0.00	3 500 000.00	2 000 000.00	0.00	3 500 000.00	2 000 000.00	0.00	3 000 000.00	1 500 000.00
3 4	Total Other Expenditure		5 500 000.00			5 500 000.00			4 500 000.00	
3.6	Revenue from the ITER Organization Reserve Fund Allocation Scheme								p.m.	
	Subtotals								p.m.	
	Total expenditure by type	22 307 600.00	675 302 908.14	210 893 010.00	15 707 600.00	226 875 251.93	176 713 700.00	11 092 000.00	273 266 378.24 +p.m	136 941 700.00
3	Total Operational Expenditure		908 503 518.14			419 296 551.93			421 300 078.24 +p.m.	

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 0.

- 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 contributions, 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.

ANNEX II: SUMMARY OF THE BUDGETS FOR GRANTS

Work Breakdown Structure	Work Programme 2015 (December 2014)		1 st Amended Work Programme 2015 (June 2015)		2 nd Amended Work Programme 2015 (December 2015)	
	Credited (EUR million)	Not Credited (EUR million)	Credited (EUR million)	Not Credited (EUR million)	Credited (EUR million)	Not Credited (EUR million)
Magnets						
Vacuum Vessel						
In Vessel	X ¹⁶		0.05		0.04	
Remote Handling	X ¹⁶		0.66		0.6	
Vacuum Pumping & Fuelling						
Tritium Plant						
Cryoplant						
Power Supplies						
I&C and CODAC						
Heating & Current Drive	X ¹⁶					
Diagnostics	14.95		8.00		6.81	
Buildings						
Test Blanket Modules and Material Development		2.74		2.74		2.7
Plasma Engineering	X ¹⁶	X ¹⁶	0.34	0.25		
Technical Support Services	X ¹⁶	X ¹⁶	0.32	0.46	0.25	
Analysis for cost containment and budget allocation (including complementary expenditures GC 2014)	1.52	0.54	2.34	0.54	0.5	0.19
Broader Approach						
Sub-Totals	18.32	3.99	11.71	3.99	8.2	2.89
Total		22.31		15.70		11.09

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

¹⁶Value not published as only 1 grant in the area

ANNEX III: 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.

ANNEX IV: UPPER FUNDING LIMITS FOR GRANTS

The upper limits for the F4E Contribution 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%
Purchase of durable equipment or assets and of ancillary services approved by the Joint Undertaking as necessary to carry out such activities	70%
Coordination and support actions	100%
Management, audit certificates and other specific activities	100%

ANNEX V: ABBREVIATION LIST

A/E	Architect Engineer
AGPS	Accelerator Ground Power Supplies
ALARA	As Low As Reasonably Achievable
ANB	Authorized Notification Body
ANDRA	Agence Nationale pour la gestion des déchets radiocatifs
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	Radiological 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
SIP	Seismic Isolation Pit
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
TPI	Technical Processes Integration
UT	Ultrasonic
Vis	Visible
VS	Vertical Stability
VV	Vacuum Vessel
WAVS	Wide Angle Viewing System
WBS	Work Breakdown Structure
WDS	Water Detritiation System

ANNEX VI LIST OF FRAMEWORK CONTRACTS AND PARTNERSHIP AGREEMENTS

FORESEEN TO BE ONGOING AT THE END OF 2014

F4E-WPref	F4E-Work Programme year	Contract type	Procurement Code	WBS Code L6	FWC/FPA scope
N/A ¹⁷	N/A	FwC	F4E-OPE-017	EU.01.ES.01.76.04.603	Engineering Support to F4E on General Mechanics
N/A	N/A	FwC	F4E-OPE-017	EU.01.ES.01.76.04.606	Engineering Support to F4E on Plant Systems
WP11/23/02	WP14	FWC	F4E-OMF-340-01	EU.01.23.02.51.02.603	Procurement activities related to DIV RH
N/A	N/A	FwC	F4E-OPE-017	EU.01.ES.01.76.04.608	Engineering Support to F4E on Nuclear and Safety Engineering
N/A	N/A	FwC	F4E-2008-OPE-02	EU.01.ES.02.78.02.607	Eng. Support in the Area of Nuclear Analysis Systems and Components Analysis
N/A	N/A	FwC	F4E-OPE-031	EU.01.ES.02.79.01.609	Eng. Analysis in the Area of Thermo-Hydraulic and Fluid Dynamic Analysis (Lot 2)
N/A	N/A	FwC	F4E-OFC-167	EU.01.MF.01.76.16.603	Material characterization at room and elevated temperatures
N/A	N/A	FwC	F4E-OPE-084	EU.01.MF.01.76.19.603	Material Characterization at Cryogenic Temperatures
N/A	N/A	FwC	F4E-OMF-298-01	EU.01.66.01.01.02.605	ESS in the area of Compliance with ITER Safety Requirements
N/A	N/A	FwC	F4E-OMF-298.02	EU.01.66.01.01.02.604	ESS in the area of Radiological and Environmental Monitoring System
N/A	N/A	FwC	F4E-OMF-298.03	EU.01.66.01.01.02.605	ESS in the area of Compliance with ITER Safety Requirements
N/A	N/A	FwC	F4E-OPE-145-01 (MS-MG)	EU.01.11.04.51.06.603	Strand characterization of TF Nb3Sn samples
WP11/ES/05	WP11	FwC	F4E-OPE-031	EU.01.ES.02.79.01.608	Engineering support to F4E in the Area of Thermohydraulic (Lot 1)
WP11/45/02	WP11	FwC	F4E-OFC-169	EU.01.ES.03.91.02.603	Provision of System and Instrumentation Engineering Support
WP11/55/01	WP11	FPA	F4E-FPA-327	EU.01.55.07.51.07.603	Radial Neutron Camera R&D/Design - Phase 1
WP11/56/03	WP11	FPA	F4E-FPA-380-02	EU.01.56.02.05.01.603	R&D in support to the finalization of the TBM Systems conceptual design (GFPA)
WP11/56/03	WP11	FPA	F4E-FPA-380-01	EU.01.56.02.08.01.603	R&D in support of ancillary systems conceptual design
WP11/56/03	WP11	FPA	F4E-FPA-380-03	EU.01.56.02.01.04.603	Project Management for Qualification of Functional Materials for Test Blanket Module
WP11/56/07	WP11	FPA	F4E-FPA -372	EU.01.56.02.08.03.603	Experimental Activities in support of the design of HCLL and HCP

¹⁷Work programme references are not available for the framework contracts signed before 2011

F4E-WPref	F4E-Work Programme year	Contract type	Procurement Code	WBS Code L6	FWC/FPA scope
WP11/56/11	WP11	FwC	F4E-OMF-331	EU.01.56.01.02.01.603	Conceptual & Preliminary Design of TBMs set and analyses
WP11/56/11	WP11	FwC	F4E-OMF-331	EU.01.56.01.03.01.603	Conceptual & Preliminary design of TBS ancillary systems
WP11/56/11	WP11	FwC	F4E-OMF-331	EU.01.56.01.05.01.603	Conceptual & Preliminary Design of Maintenance Equipments
WP11/56/11	WP11	FwC	F4E-OMF-331	EU.01.56.01.06.04.603	Test Blanket Systems safety analyses
WP11/56/11	WP11	FwC	F4E-OMF-331	EU.01.56.02.03.02.603	Preliminary Welding Procedure Specifications for TBM box
WP11/ES/06	WP11	FwC	F4E-OMF-272	EU.01.ES.01.76.02.601	Engineering Support - Remote Handling
WP11/MF/04	WP11	FwC	F4E-OPE-149	EU.01.MF.01.76.22.603	Engineering Support on Joining and Non-destructive tests for production of ITER Components
WP11/ND/01	WP11	FPA	F4E-GRT-168	EU.01.ES.02.90.01.603	Development of Nuclear Data Files
WP11/PO/12	WP11	FwC	F4E-OFC-137	EU.01.PM.01.91.01.603	Quality Assurance Audits
WP11/PO/13	WP11	FwC	F4E-OFC-252	EU.01.PM.03.91.01.603	Provision of Planning & Scheduling Support Services
WP11/55/11	WP11	FPA	F4E-FPA-364	EU.01.55.04.51.07.603	Design and R&D for Pressure Gauges
WP11/56/11	WP11	FwC	F4E-OMF-331-01	EU.01.56.01.02.01.603	Project Management for Conceptual & Preliminary Design of TBMs set and analyses
WP11/56/11	WP11	FwC	F4E-OMF-331-02	EU.01.56.01.03.01.603	Project Management for Conceptual & Preliminary design of TBS ancillary systems
WP11/56/11	WP11	FwC	F4E-OMF-331-03	EU.01.56.01.05.01.603	Project Management for Conceptual & Preliminary Design of Maintenance eqpts
WP11/56/11	WP11	FwC	F4E-OMF-331-04	EU.01.56.01.06.04.603	Project Management for Test Blanket Systems safety analyses
WP11/55/01	WP12	FPA	F4E-FPA-328	EU.01.55.06.51.24.603	Tokamak Services R&D/Design
WP11/ES/07	WP12	FwC	F4E-OMF-357-01	EU.01.ES.01.77.02.603	CAD Design Support - General Mechanical Design
WP12/45/02	WP12	FwC	F4E-OFC-361	EU.01.ES.03.91.04.603	Provision of Instrumentation and Control Integration Services
WP12/ES/05	WP12	FwC	F4E-OMF-356	EU.01.ES.02.76.11.603	Engineering Support in the area of Mechanical Analysis for the Vacuum Vessel
WP12/ND/01	WP12	FPA	F4E-FPA-393	EU.01.ES.02.90.02.603	Nuclear Data Experiments and Measurement Techniques
WP12/ND/01	WP12	FPA	F4E-FPA-395	EU.01.ES.02.90.02.603	Nuclear Data Experiments and Measurement Techniques

F4E-WPref	F4E-Work Programme year	Contract type	Procurement Code	WBS Code L6	FWC/FPA scope
WP11/51/02	WP13	FwC	F4E-OMF-457	EU.01.51.01.02.02.603	Development of Build to print design of the ICH Antenna
WP11/55/10	WP13	FwC	F4E-OFC-358 - 01	EU.01.55.15.51.02.603	Irradiation Testing - Lot #1
WP11/55/10	WP13	FwC	F4E-OFC-358-02	EU.01.55.15.51.02.604	Irradiation Testing - Lot #2
WP13/55/01	WP13	FPA	F4E- F4E-FPA-407	EU.01.55.13.51.10.603	Equatorial Visible/IR Wide-Angle Viewing System
WP13/55/01	WP13	FPA	F4E-FPA-393	EU.01.55.10.51.04.603	Design and R&D for Low Field Side Collective Thomson Scattering
WP13/55/01	WP13	FPA	F4E-FPA-375	EU.01.55.03.51.14.603	Design and R&D for Plasma Position Reflectometry
WP13/55/01	WP13	FPA	F4E-FPA-384	EU.01.55.02.51.07.603	Design and R&D for Bolometers - Phase 1
WP13/ES/02	WP13	FwC	F4E-OMF-457	EU.01.ES.02.76.13.603	Mechanical analyses of ITER components
WP13/ES/03	WP13	FwC	F4E-OMF-468	EU.01.ES.01.78.02.603	Metrological Support Services
WP14/PO/17	WP14	FwC	F4E-OMF-436-01	EU.01.PM.04.91.01.602	Provision of Project Management Services Lot 1 - Risk
WP13/PO/15	WP13	FwC	F4E-OMF-436	EU.01.PM.04.91.01.604	Project Management Services Lot 2 - Configuration Management & System Engineering
WP13/PO/15	WP13	FwC	F4E-OMF-436	EU.01.PM.04.91.01.606	Project Management Services Lot 3 - Project Management Systems
WP13/PO/15	WP13	FwC	F4E-OMF-436-04	EU.01.PM.04.91.01.608	Provision of Project Management Services Lot 4 - Cost Management Support
WP13/PO/16	WP13	FwC	F4E-OMF-436	EU.01.PM.04.91.01.610	Project Management Services Lot 5 - CE Marking Support
WP11/51/02	WP13	FwC	F4E-OPE-0484	EU.01.51.01.02.02.603	Development of Build to print design of the ICH Antenna
WP12/BA/06	WP12	FwC	F4E-OMF-451	EU.BA.01.01	Transport for Broader Approach
WP14/BA/16	WP14	FwC	F4E-OMF-0608	EU.BA.01	Engineering and Safety Support for onsite activities
WP13/11/04	WP14	FwC	F4E-OMF-405	EU.01.11.04.52.06.603	Framework Contract for Testing and Characterization of PF conductor strands
WP11/53/08	WP14	FwC	F4E-OFC-280 (PMS-H-CD)	EU.01.53.07.51.03.603	FWC Neutral Beam Test Facility Control, Interlock and Safety
WP11/53/09	WP14	FwC	F4E-OFC-531 (PMS-H-CD)	EU.01.53.07.51.04.603	FWC Procurement of Neutral Beam Test Facility Diagnostics
WP14/55/05	WP14	FPA	F4E-FPA-408	EU.01.55.11.51.09.603	Phase 1 of Core-Plasma Charge Exch. Recombination Spectrometer
WP12/55/11	WP14	FwC	F4E-OFC-433 (PMS-DG)	EU.01.55.14.51.02.603	FWC Integration Design of Diagnostics Into ITER Ports

F4E-WPref	F4E-Work Programme year	Contract type	Procurement Code	WBS Code L6	FWC/FPA scope
WP13/56/02	WP14	FwC	F4E-OMF-545	EU.01.56.01.07.10.603	Support from Notified Body for TBS
WP13/ES/01	WP14	FwC	F4E-OMF-0508	EU.01.ES.02.77.27.603	Prov. of Eng. Sup. in the Area of Electromagnetic and Electro-Mech. Analysis
WP12/ES/08	WP14	FwC	F4E-OMF-466	EU.01.ES.02.78.14.603	Provision of Support in the Area of Nuclear Analysis
WP14/ES/10	WP14	FwC	F4E-OMF-0578	EU.01.ES.02.79.12.603	Engineering Analysis in the Area of Thermo- Hydraulic and Fluid dynamic Analyses
WP12/ES/01	WP14	FwC	F4E-OMF-0503-01	EU.01.ES.02.80.02.603	Seismic Analyses of IO Buildings and Mechanical C.
WP12/ES/01	WP14	FwC	F4E-OMF-0503-02	EU.01.ES.02.80.02.604	Dynamic Analyses of IO Buildings and Mechanical C.
WP12/ES/01	WP14	FwC	F4E-OMF-0503-03	EU.01.ES.02.80.02.605	Structural Analyses of IO Buildings and Mechanical C.
WP14/MF/08	WP14	FwC	F4E-OMF-0563	EU.01.MF.01.76.45.603	Material Characterization at Cryogenic Temperatures
WP14/MF/07	WP14	FwC	F4E-OMF-0586	EU.01.MF.01.76.46.603	Provision of Engineering Support on Joining and Non destructive test for production of ITER Components
WP14/PO/18	WP14	FwC	F4E-OMF-556	EU.01.PM.03.91.05.603	FWC for Support on Planning & Scheduling
WP13/PO/06	WP14	FwC	F4E-OMF-555	EU.01.PM.04.91.13.603	FWC for Dual Use Management
WP14/15/04	WP15	FwC	F4E-OMF-557-02	EU.01.15.01.51.11.605	Vacuum Vessel Inspectors
WP14/15/04	WP15	FwC	F4E-OMF-557-01	EU.01.15.01.51.11.605	FwC for Quality Assurance Audits
WP15/23/01	WP15	FwC	Not yet available	EU.01.23.01.91.09.603	FWC for Engineering Support Contracts for RH Engineering Studies
WP11/23/04	WP15	FwC	F4E-OMF-0577	EU.01.23.03.51.11.603	Design, manufacturing and Installation for Cask and Plug Remote Handling System
WP11/23/08	WP15	FwC	F4E-OMF-383	EU.01.23.04.51.02.603	Design, manufacturing and Installation of In Vessel Viewing System
WP11/23/06	WP15	FwC	F4E-OMF-340-03	EU.01.23.05.51.02.603	Design, manufacturing and Installation of Neutral Beam Remote Handling System
WP15/52/01	WP15	FwC	Not yet available	EU.01.52.01.03.21.603	Contract for Support for design of cooling systems
WP12/53/06	WP15	FwC	F4E-OFC-582	EU.01.53.07.51.05.603	FWC Procurement of NBTF Assembly

F4E-WPref	F4E-Work Programme year	Contract type	Procurement Code	WBS Code L6	FWC/FPA scope
WP12/MD/01	WP15	FPA	F4E-FPA-603-01	EU.01.56.02.02.09.603	FPA TBM design methodologies and design code - Development Phase
WP13/MD/06	WP15	FPA	F4E-FPA-603-02	EU.01.56.02.02.11.603	FPA TBM structural materials characterization
WP15/56/03	WP15	FwC	Not yet available	EU.01.56.02.03.14.603	Continuation of Handling & Storage of EUROFER
WP12/56/07	WP15	FPA	F4E-FPA-611	EU.01.56.02.04.03.603	Project Management for Modelling develop.
WP15/ND/01	WP15	FPA	Not yet available	EU.01.ES.02.90.10.603	Development of Nuclear Data Files (2015-2019)
WP15/IC/02	WP15	FwC	Not yet available	EU.01.ES.03.91.05.603	Provision of Cubicles assembly services
WP15/IC/03	WP15	FwC	Not yet available	EU.01.ES.03.91.06.603	Provision of System and Instrumentation Engineering Support
WP15/MF/01	WP15	FwC	F4E-OFC-0618	EU.01.MF.01.76.47.603	Provisions for Destructive and Non-Destructive Testing of Materials at Room and Elevated Temp.
WP13/PE/09	WP15	FwC	Not yet available	EU.01.PE.01.91.42.603	System and Control Engineering
N/A	WP14	FwC	F4E-ADM-363	EU.AD.02.08.01.01.603	Provision of Legal Services in the Field of Industrial Contracting

**ANNEX VII: MAPPING OF ORGANIZATIONAL BREAKDOWN STRUCTURE (OBS- F4E UNITS LEVEL)
AND WORK BREAKDOWN STRUCTURE (WBS LEVEL 3)**

F4E UNIT	WBS REF. (LEVEL 3)	WBS NAME (LEVEL 3)
Magnets (MG)	EU.01.11.01	Toroidal Field Coils
	EU.01.11.02	Pre Compression Rings
	EU.01.11.03	Poloidal Field Coils
	EU.01.11.04	Magnet Conductors
Vacuum Vessel (VV)	EU.01.15.01	Main Vessel
In Vessel (IV)	EU.01.15.02	Blanket Manifolds
	EU.01.16.01	Blanket and First Wall Panels
	EU.01.17.01	Divertor Cassette Body and Assembly
	EU.01.17.02	Divertor Vertical Target
Remote Handling (RH)	EU.01.17.03	Divertor Rails
	EU.01.23.01	Remote Handling Common Activities
	EU.01.23.02	Divertor Remote Handling System
	EU.01.23.03	Cask and Plug Remote Handling System
Cryoplant and Fuel Cycle (CF)	EU.01.23.05	Neutral Beam Remote Handling System
	EU.01.57.01.	Remote Handling In Vessel Viewing System
	EU.01.31.01	Cryopumps
	EU.01.31.02	Leak Detection and Localization System
	EU.01.32.01	Hydrogen Isotope Separation System
	EU.01.32.02	Water Detritiation System
Antennas and Plasma Engineering (PE)	EU.01.34.01	Liquid Nitrogen Plant and Auxiliary Systems
	EU.01.64.01	Radiological and Environmental Monitoring System
	EU.01.66.01	Radiological and Conventional Waste Treatment and Storage
	EU.01.51.01	Ion Cyclotron Antenna
	EU.01.52.01	Electron Cyclotron Upper Launcher
Neutral Beam and EC Power Supplies and Sources (NB)	EU.01.52.05	Electron Cyclotron Control System
	EU.01.52.02	Electron Cyclotron Gyrotrons
	EU.01.52.03	Electron Cyclotron Power Supplies
	EU.01.53.01	Neutral Beam Assembly and Testing
	EU.01.53.02	Neutral Beam Source and High Voltage Bushing
	EU.01.53.03	Beamline Components
	EU.01.53.04	Pressure Vessel and Magnetic Shielding
	EU.01.53.05	Active Correction and Compensation Coils
	EU.01.53.06	Neutral Beam Power Supplies
	EU.01.53.07	Neutral Beam Test Facility
Diagnostics (DG)	EU.01.53.08	Neutral Beam Common Activities
	EU.01.55.01	Magnetics
	EU.01.55.02	Bolometers
	EU.01.55.03	Plasma Position Reflectometry
	EU.01.55.04	Pressure Gauges
	EU.01.55.06	Tokamak Services
	EU.01.55.07	Radial Neutron Camera - Gamma Spectrometer
	EU.01.55.08	High Resolution Neutron Spectrometer
	EU.01.55.09	Core-plasma Thomson Scattering
	EU.01.55.10	Low Field Side Collective Thomson Scattering
	EU.01.55.11	Core-Plasma Charge Exchange Recombination Spectrometer
	EU.01.55.13	Equatorial Visible/Infrared Wide-Angle Viewing System
	EU.01.55.14	Port Engineering Systems
	EU.01.55.15	Diagnostics Common Activities
	TBM and Materials Development (TB)	EU.01.56.01
EU.01.56.02		Test Blanket Systems Research & Development
Site and Buildings and Power Supplies (SB)	EU.01.41.01	Electrical Power Distribution System
	EU.01.62.02	Buildings and Civil Infrastructures

Technical Support Services (TS)	EU.01.ES.01	Engineering Support and Integration
	EU.01.ES.02	Engineering Analysis and Nuclear Data
	EU.01.ES.03	Embedded Control Data Access and Communication
	EU.01.MF.01	Materials and Fabrication Technologies
Planning and Monitoring (PM)	EU.01.CC.01	Cash Contributions to ITER Organization
	EU.01.CC.02	Cash Contributions to Japan Domestic Agency
	EU.PM.PM.02	Risk Management
	EU.PM.PM.03	Planning and Scheduling
	EU.PM.PM.04	Project Management
Technical Process Integration (TP)	EU.PM.PM.09	Other Expenditures
	EU.01.PM.05	Systems Engineering
	EU.01.PM.06	Configuration Management
Nuclear Safety and Quality (NS)	EU.01.PM.11	Assembly Coordination
	EU.01.TR	Transportation
	EU.01.PM.01	Quality Assurance
	EU.01.PM.04	Project Management – CE Marking
Broader Approach Common (BA)	EU.01.NS.01	Nuclear Safety
	EU.BA.01.01	Transportation
	EU.BA.01.02	On site activities
	EU.BA.01.03	PA Monitoring
Satellite Tokamak JT-60SA (JT)	EU.BA.01.04	Legal Costs
	EU.BA.02.01	Satellite Tokamak (JT-60SA) Common Activities
	EU.BA.02.02	Toroidal Field Magnet
	EU.BA.02.03	Assembly
	EU.BA.02.04	Power Supply
	EU.BA.02.05	Cryogenic System
	EU.BA.02.06	Materials
EU.BA.02.07	Cryostat	
IFMIF (IF)	EU.BA.03.01	IFMIF-EVEDA Project Common Activities
	EU.BA.03.02	LIPAc Activities
IFERC (BA)	EU.BA.04.01	International Fusion Energy Research Centre Common Activities
	EU.BA.04.02	Remote Experimentation Centre
	EU.BA.04.03	Computational Simulation Centre
	EU.BA.04.04	DEMO Design
Legal Service (LS)	EU.PM.PM.07	Legal Support
Information and Communication Technology (ICT)	EU.PM.PM.09.93	Other Expenditures-ICT
Corporate Services (CS)	EU.PM.PM.09.92	Other Expenditures-FMHS