



#Euratom

Toward an EU Fusion Strategy

“THE STATE AND PROSPECTS OF FUSION ENERGY”
IEA WORKSHOP, PARIS, 26 FEBRUARY 2025

Elena Righi

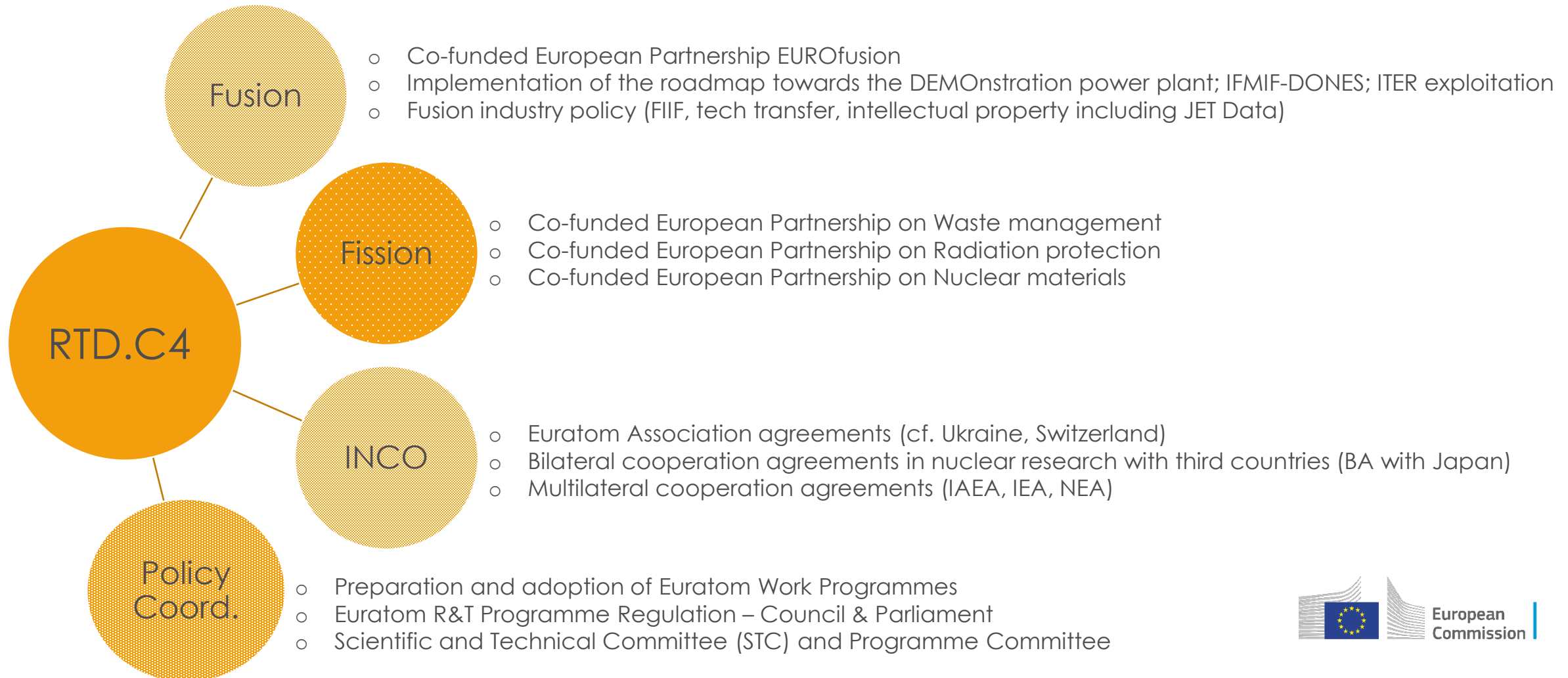
Head of Unit

European Commission, DG RTD
Euratom Research Unit

Research and
Innovation

Who we are

- European Commission - DG Research and Innovation (RTD) - Directorate Clean Planet (C)
- Unit **C.4** (around 30 people) - **EURATOM Research**



Introduction to the Euratom Research & Training Programme



The EU R&T programme

HORIZON EUROPE

EURATOM

SPECIFIC PROGRAMME: EUROPEAN DEFENCE FUND

*Exclusive focus on
defence research
& development*

Research
actions

Development
actions

SPECIFIC PROGRAMME IMPLEMENTING HORIZON EUROPE & EIT*

Exclusive focus on civil applications



Pillar I EXCELLENT SCIENCE

European Research Council

Marie Skłodowska-Curie

Research Infrastructures



Pillar II GLOBAL CHALLENGES & EUROPEAN INDUSTRIAL COMPETITIVENESS

Clusters

- Health
- Culture, Creativity & Inclusive Society
- Civil Security for Society
- Digital, Industry & Space
- Climate, Energy & Mobility
- Food, Bioeconomy, Natural Resources, Agriculture & Environment

Joint Research Centre



Pillar III INNOVATIVE EUROPE

European Innovation
Council

European innovation
ecosystems

European Institute of
Innovation & Technology*

WIDENING PARTICIPATION AND STRENGTHENING THE EUROPEAN RESEARCH AREA

Widening participation & spreading excellence

Reforming & Enhancing the European R&I system

Fusion

Fission

Joint
Research
Center

* The European Institute of Innovation & Technology (EIT) is not part of the Specific Programme

EURATOM R&T budget (2021-2025*)

€1.38 billion (€2 billion for 2021-2027)

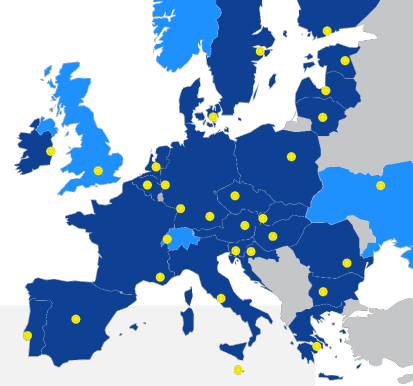


€583 M for indirect
actions in **fusion
research** and
development

€266 M for indirect
actions in **nuclear
fission**, safety and
radiation protection

€532 M for **direct
actions** undertaken by
the JRC
(separate WP)

EUROfusion in a nutshell



EUROfusion is a **co-funded partnership** under the Euratom R&T Programme. Almost all (26) EU Member States + Ukraine, Norway, Switzerland, and the UK



30 research organisations
167 affiliated entities
+/- 5000 researchers, students & support staff



Total budget: **€ 1 billion** (2021-2025) (Euratom 55%; MS 45%)
plus € 300 M from UK and € 57 M from CH

EUROfusion roadmap (current)

Issued by **EUROfusion** in 2012, updated in 2018

Three main pillars

ITER

- World's largest tokamak
- Scientific and technological feasibility of fusion energy
- EC budget: € 5,6 billion (2021-2027)
- Start ITER operation (2034 - new baseline)

IFMIF-DONES

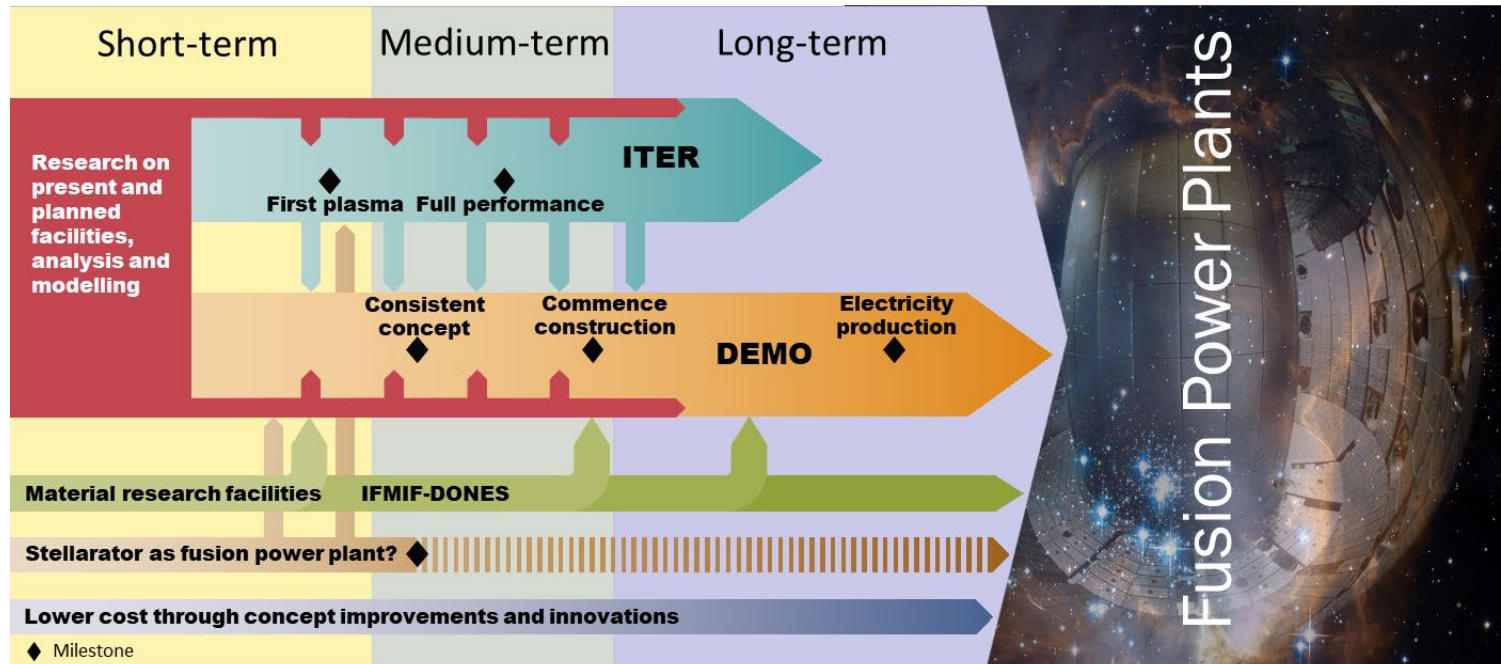
- Fusion Materials facility (neutron source)
- Under construction in Granada (Spain)

DEMO

- Prototype of a fusion power plant
- Electricity production (grid)
- DEMO engineering design (2030-2040)
- Construction of DEMO (>2040)

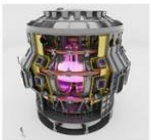
Revision

An Addendum to the Roadmap has been issued in July 2023. Its assessment by independent experts has raised the need for further actions (e.g. on components' qualification)



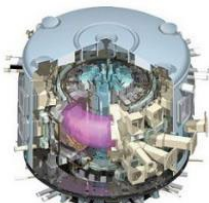
JET

80 m³



JT-60SA

135 m³



ITER

800 m³

(one-third the size of an Olympic swimming pool)

~ 500 MW_{th}



DEMO

~ 1000 – 3500 m³

(half to one and a half times the size of an Olympic swimming pool)

~ 2000-4000 MW_{th}



IFMIF-DONES facility

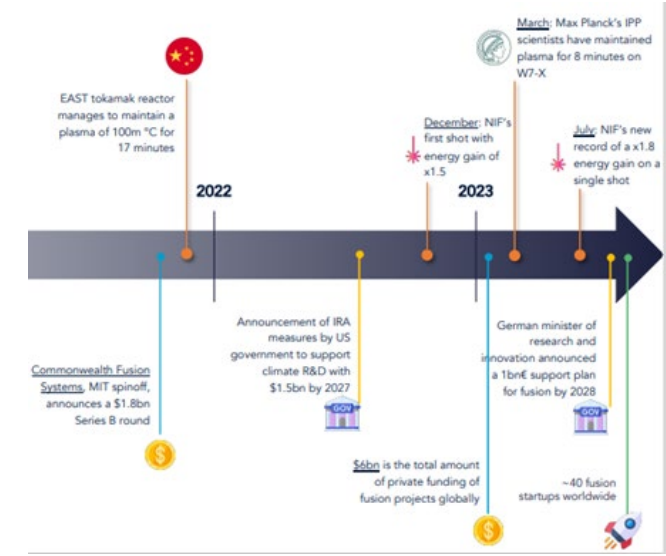
Towards an EU Fusion Strategy



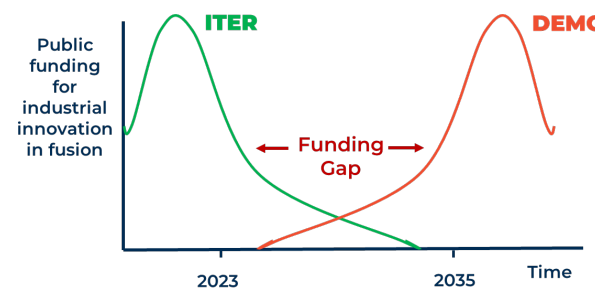
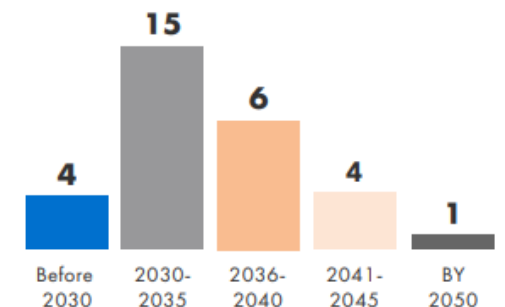
A changing fusion landscape

- Fusion **breakthroughs** announced worldwide (NIF, JET DT)
- A new baseline for ITER
- **Private companies** and **start-ups** proposing parallel ways to obtain fusion and attracting funding (> EUR 7 billion)
- Increased public attention and accrued **political pressure**
- Significant **risk**: EU fusion leadership put into question; know-how and industrial potential might be lost and/or migrate to other countries

... reflection: an **EU Fusion Strategy** is needed



When do you anticipate your company will deliver power to the grid (30 responses)



ADVANCING THE BOLD DECADEAL VISION:
Launching a Milestone-Based Fusion Development Program

ENERGY.GOV

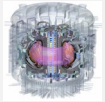
Japan adopts national strategy on nuclear fusion as competition intensifies



EC's goals: creating an innovation ecosystem



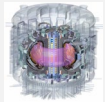
Provide a **clear vision** and a roadmap **to accelerate** the development of fusion energy in the EU



Foster active **involvement of industry** (from *supplier* to *partner*)



Train & maintain our scientific & technical **expertise/leadership**



Identify options for a fusion **regulatory framework**



Develop a robust EU **coordination mechanism** at all levels (incl. strengthening INCO)

Towards an EU Fusion Strategy

A consultation process (formal/informal) with the stakeholders has started

New Commission study on potential public-private partnership approach to foster innovation in fusion energy



07 March 2024



6 June 2023 (workshop PPP)

NEWS ARTICLE | 14 March 2024 | Directorate-General for Research and Innovation

The European High-Level Roundtable on Fusion energy calls for closer collaboration between the public and the private sector

On 14 March, **Commissioner for Innovation, Research, Culture, Education and Youth, Iliana Ivanova**, hosted the first "High-Level Roundtable on Fostering Innovation for Fusion energy in Europe". The online event gathered leading public and private stakeholders in the field of fusion energy research and technology. Participants discussed how to accelerate the demonstration of fusion electricity generation, and involve bigger industrial stakeholders, as well as startups, in the transition from LAB to FAB. The participants also considered potential R&I policy initiatives to unlock the disruptive potential of EU innovation in the shortest time possible.

14 March 2024

Euratom research and training programme for 2026-2027

Have your say - Public Consultations and Feedback > Published initiatives > Euratom research and training programme for 2026-2027 > Public consultation

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About this consultation

Consultation period 01 March 2024 - 24 May 2024 (midnight Brussels time)

Topic Research and innovation

Target audience

This consultation is addressed mainly to researchers in the nuclear research (fission and fusion), radiation protection and radioactive waste management, businesses, academia, non-governmental organisations and public authorities and EU-wide 'umbrella' federations of these entities.

Why we are consulting

The Commission seeks stakeholders' views on the Programme's preparation, implementation and future evolution, allowing the Commission services to carry out the Programme's evaluation and to prepare the proposal for the extension.

Responding to the questionnaire

The response period for this consultation has ended. The questionnaire is no longer available. You can track further progress of this initiative by subscribing to receive notifications.

Consultation outcome

Energy

Home | Topics | Data and analysis | Studies | Publications | Consultations | Energy explained | Events | News

Home > Events > The EU blueprint for fusion energy

EXPERT MEETINGS

The EU blueprint for fusion energy

This event has ended.



©iStockPhoto/maxkabakov

nuclear fusion

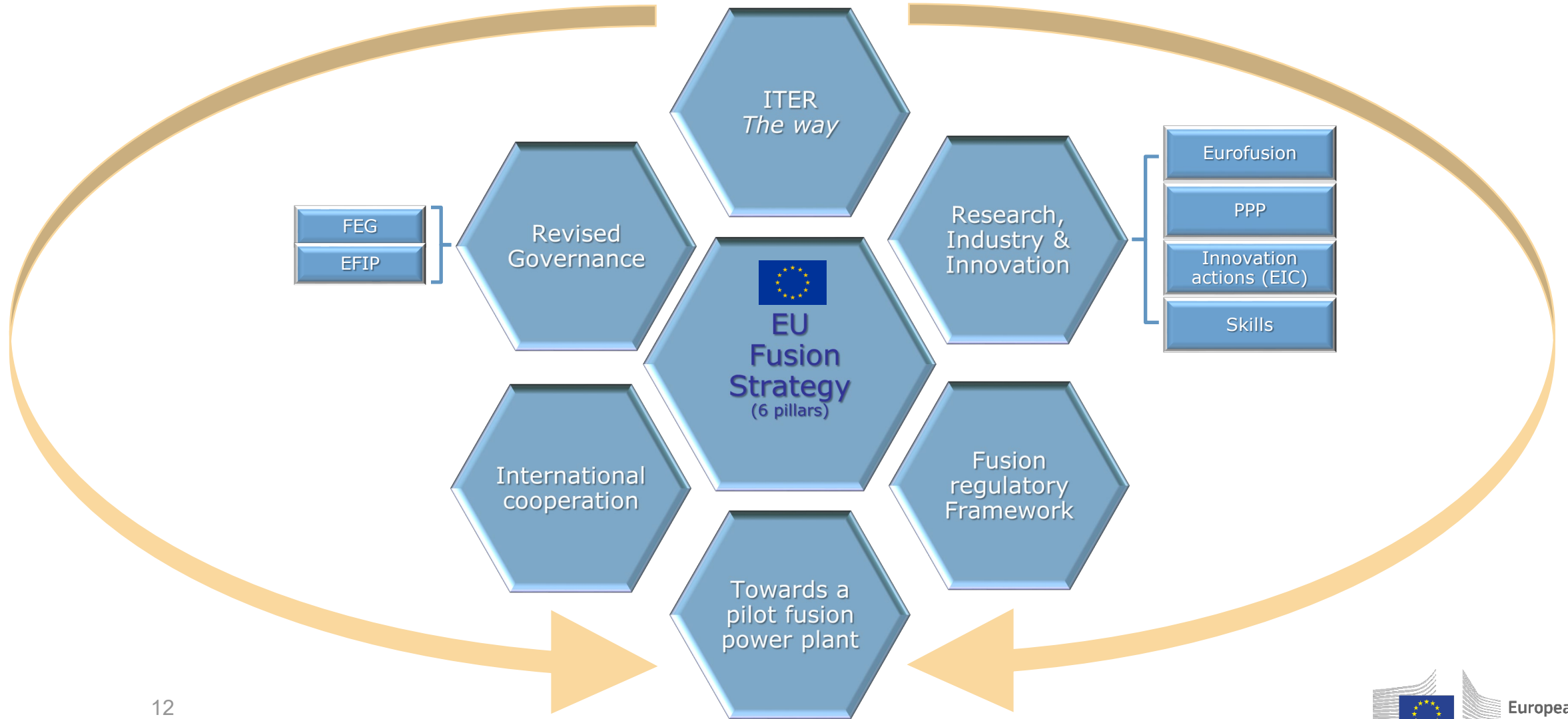
Tuesday 23 April 2024, 09:00 - 18:00 (CEST)

Strasbourg, France

23 April 2024

(Formal consultation) 1 March – 24 May 2024

Towards an EU Fusion Strategy: key elements



Ongoing activities

1. Fusion Expert Group (FEG)
2. Towards a partnership with EU industry



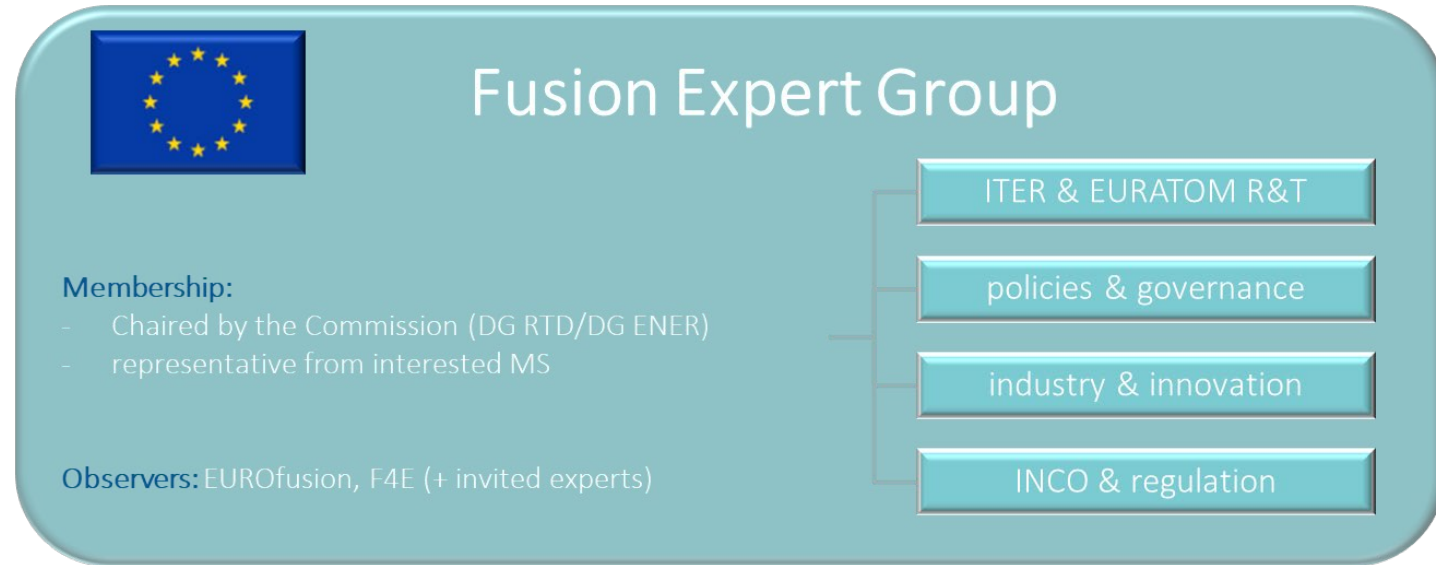
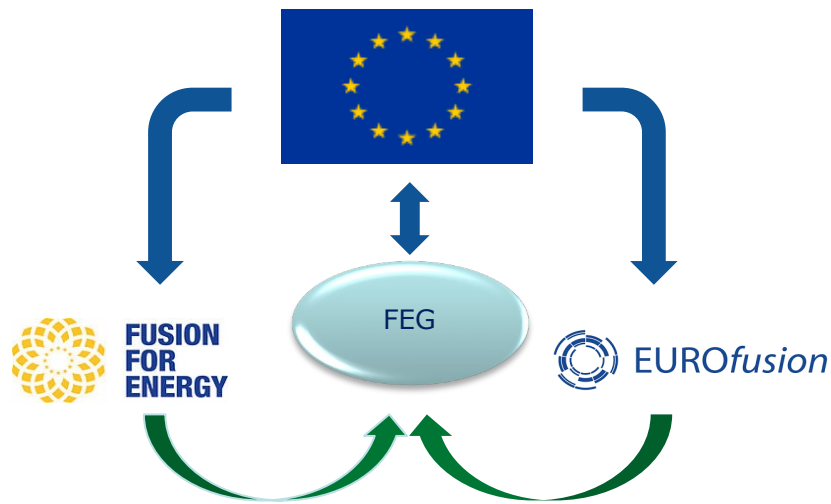
Ongoing activities

1. Fusion Expert Group (FEG)
2. Towards a partnership with EU industry



Fusion Expert Group (FEG)

- A Commission Expert Group has been established: kick-off meeting 26/06/2024
- Composition: high-level representatives from EU Members States
- Advise the EC on fusion energy policy, considering synergies with national policies



Mission (until Q1-2025):

- Developing an **EU Fusion Strategy**, in coordination with the EC

Ongoing activities

1. Fusion Expert Group (FEG)
2. Towards a partnership with EU industry



Towards a partnership with EU industry

- A **Coordination and Support Action** (CSA) will facilitate the creation of a co-programmed **Public Private Partnership** already during the 2026-27 Euratom programme extension. The PPP should address the current technology bottlenecks, leveraging the strengths of the public and private sectors.
- **Expected outcome of the CSA** (started January 2025, for 2 years)
 - Establish an **industry-led EU Fusion Platform**, representing the EU fusion industry and other fusion-related technology centres and research organisations (EUROfusion, F4E)
→ possible evolution into a long-term European Technology and Innovation Platform (ETIP)
 - Establish an **EU Fusion Industry Association** (with a legal status), which will sign the PPP Memorandum of Understanding (MoU) with the EC
 - Steer the definition of a Strategic Research and Innovation Agenda (**SRIA**) on Fusion Energy

Innovation Actions

- In parallel, we are planning **Innovation Actions**, mainly through the European Innovation Council (**EIC**), to support *bottom-up* research (particularly, on emerging/alternative approaches) and key enabling technologies.
- Innovation Actions are mainly intended for **European fusion start-ups**.

short-term planning

consultation phase

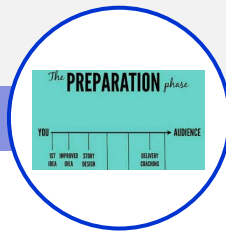
- Study, workshops, Round Table, interim-evaluation (Eurofusion, ITER)
- Fusion Expert Group (FEG)



2023-2024

preparatory phase

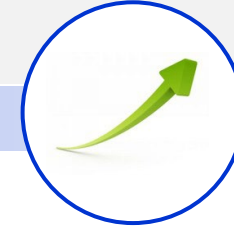
- Kick-off CSA* on PPP
- Kick-off CSA on Skills
- EU Fusion Strategy paper



2025

ramp-up phase

- Extension Euratom WP 2026-2027
 - Launch PPP (calls)
 - Launch Innovation actions (EIC)
- EUR +100 M (tbc)



2026-27

FP10



Thank you for your attention

[Euratom Research and Training Programme - European Commission \(europa.eu\)](https://commission.europa.eu/funding-tenders/find-funding/eu-funding-programmes/iter_en#about-the-programme)

https://commission.europa.eu/funding-tenders/find-funding/eu-funding-programmes/iter_en#about-the-programme

