



#Euratom

Towards an EU Fusion Strategy

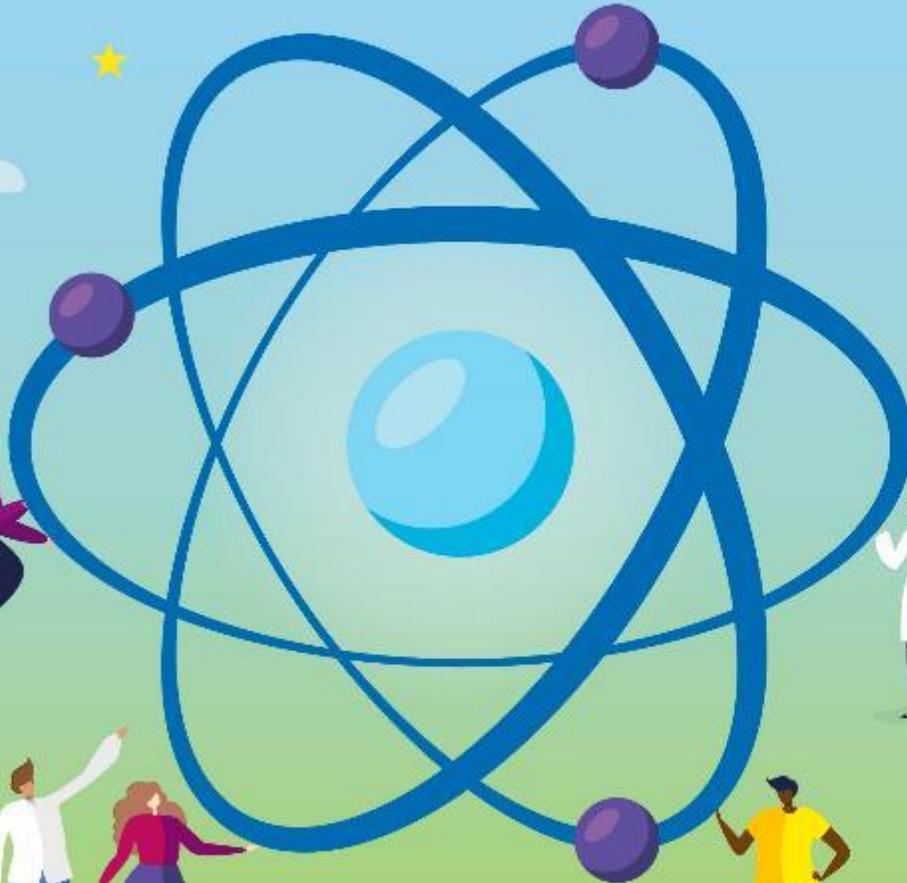
DUTCH FUSION DAY 2025

Differ, Eindhoven, 9 May 2025

Twan van Erp

**Directors' office, Clean Planet directorate
European Commission, DG Research and Innovation**

*Research and
Innovation*

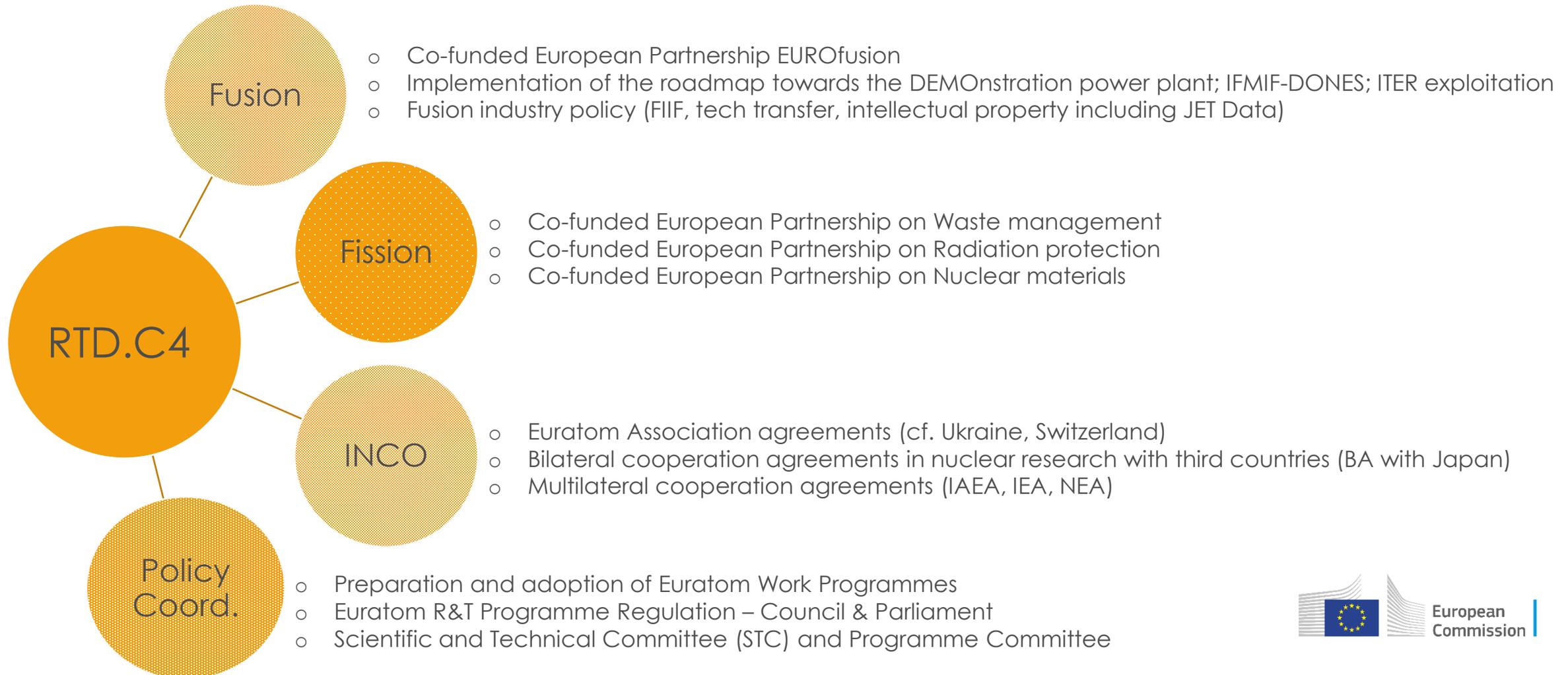


Introduction

- European Commission - DG Research and Innovation (RTD)
- Directorate Clean Planet
 - Strategy, policy coordination and urban transitions
 - Clean Energy Transitions
 - Clean Transport Transitions
 - Euratom Research
- My role: policy assistant to the Director (provide strategic advice on our files in line with our priorities, coordinate and facilitate the work of the Director and the units, drive engagement with key external stakeholders, etc.)
- Before: Dutch Permanent Representation to the EU in Brussels, traineeship in the European Commission

DG RTD – Unit ‘Euratom Research’

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



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 Research & Training programme 2021-2025

Objectives

- Research and training activities to reduce risks in nuclear safety and security, development of safe nuclear technologies and optimal radiation protection.
- **Foster the development of fusion energy and contribute to the implementation of the fusion roadmap**

Key novelties

- Increased focus on non-power applications of radiation (medical, industrial, space)
- Opening mobility opportunities for nuclear researchers through inclusion in Marie Skłodowska-Curie Actions

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 main outcomes



Development of scientific & technological knowledge to achieve fusion energy through magnetic confinement



26 Work Packages: 7 on Fusion Science, 15 on Fusion Technology, technology transfer, socio-economic studies, INCO



+1000 publications & 750 PhD positions activated (EUROfusion grant 2014-2020)



Training and education activities; communication

42 Researcher Grants
40 Engineering Grants

awarded under the current
Framework Programme

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

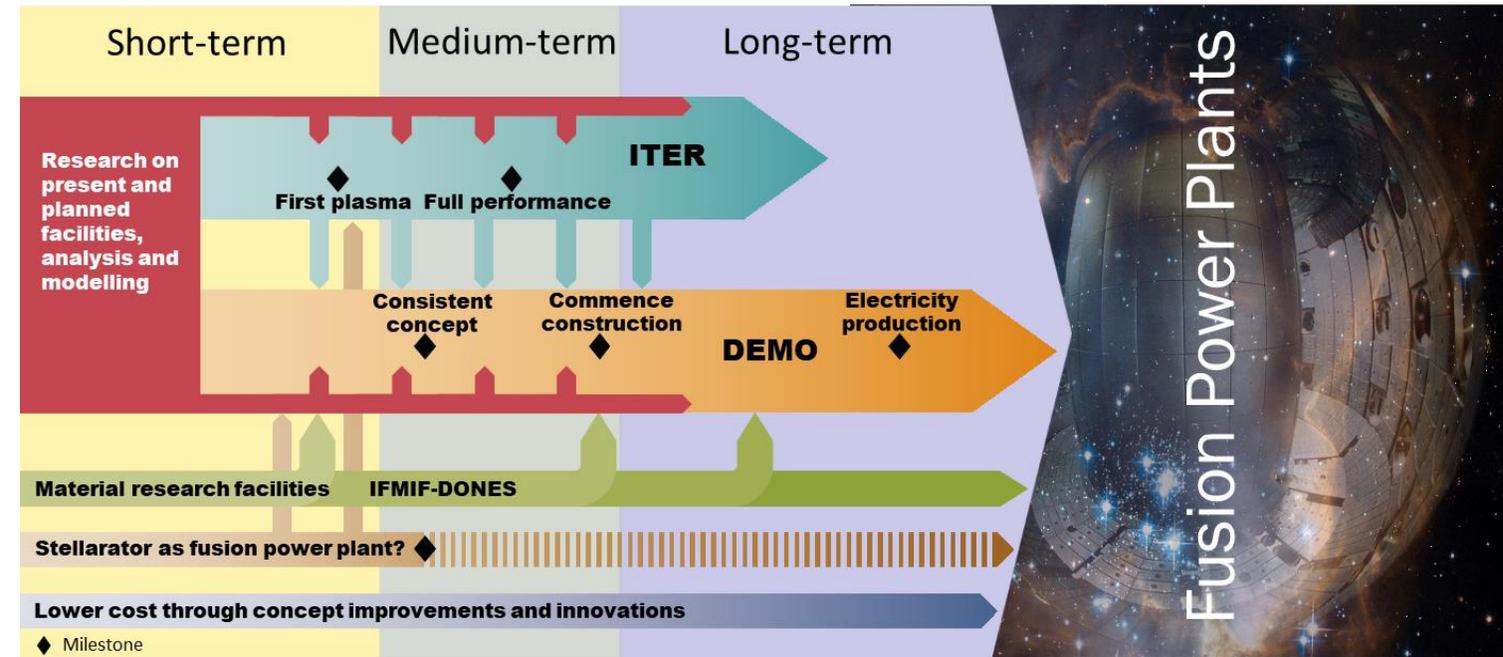
- Fusion Materials testing facility (neutron source)
- Under construction in Granada (Spain)

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)



IFMIF-DONES facility

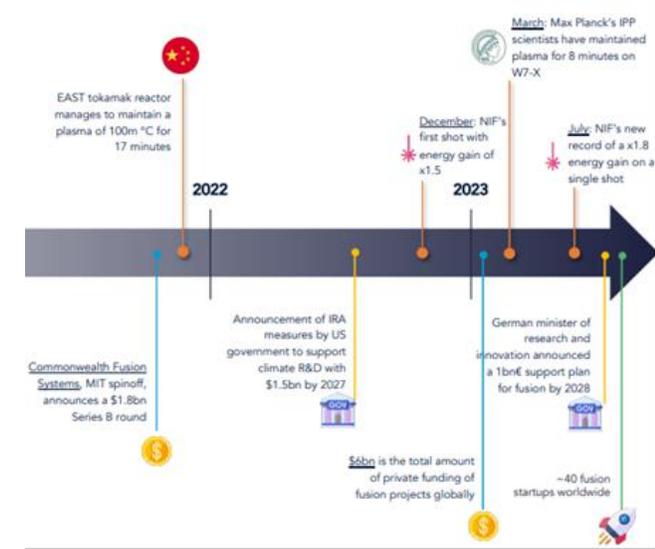
Towards an EU Fusion Strategy



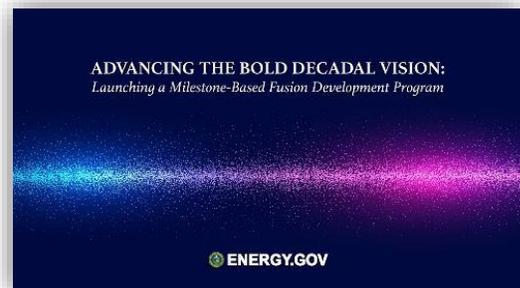
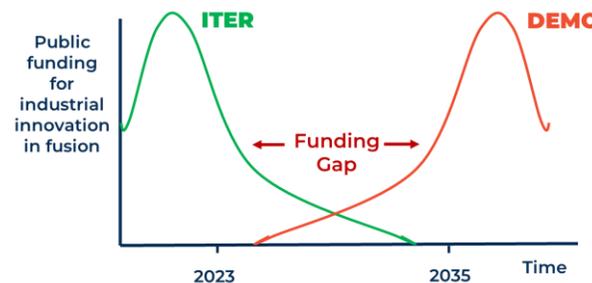
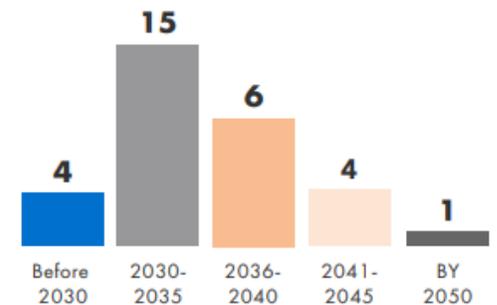
A changing fusion landscape

- 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)



Political momentum for EU action

- European Commission President Ursula von der Leyen, World Economic Forum 21/1/25: *'We will have to invest in next-generation clean energy technologies, like **fusion**, enhanced geothermal and solid-state batteries.'*
- Mario Draghi, report on the future of European competitiveness: *'Develop an overarching EU innovation strategy for nuclear fusion energy and support the creation of a public-private partnership to promote its rapid, economically viable commercialization.'*
- European Commissioner for Energy and Housing Dan Jørgensen, European Parliament 20/02/25: *'I am committed to delivering an EU Fusion Strategy'*
- Recent initiatives referred to fusion: the Clean Industrial Deal, the Action Plan for Affordable Energy



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 International Cooperation)

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

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



6 June 2023 (workshop PPP)

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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- Responding to the questionnaire
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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

(Formal consultation) 1 March – 24 May 2024

Energy

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

Home > Events > The EU blueprint for fusion energy

The EU blueprint for fusion energy

This event has ended.

nuclear fusion

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

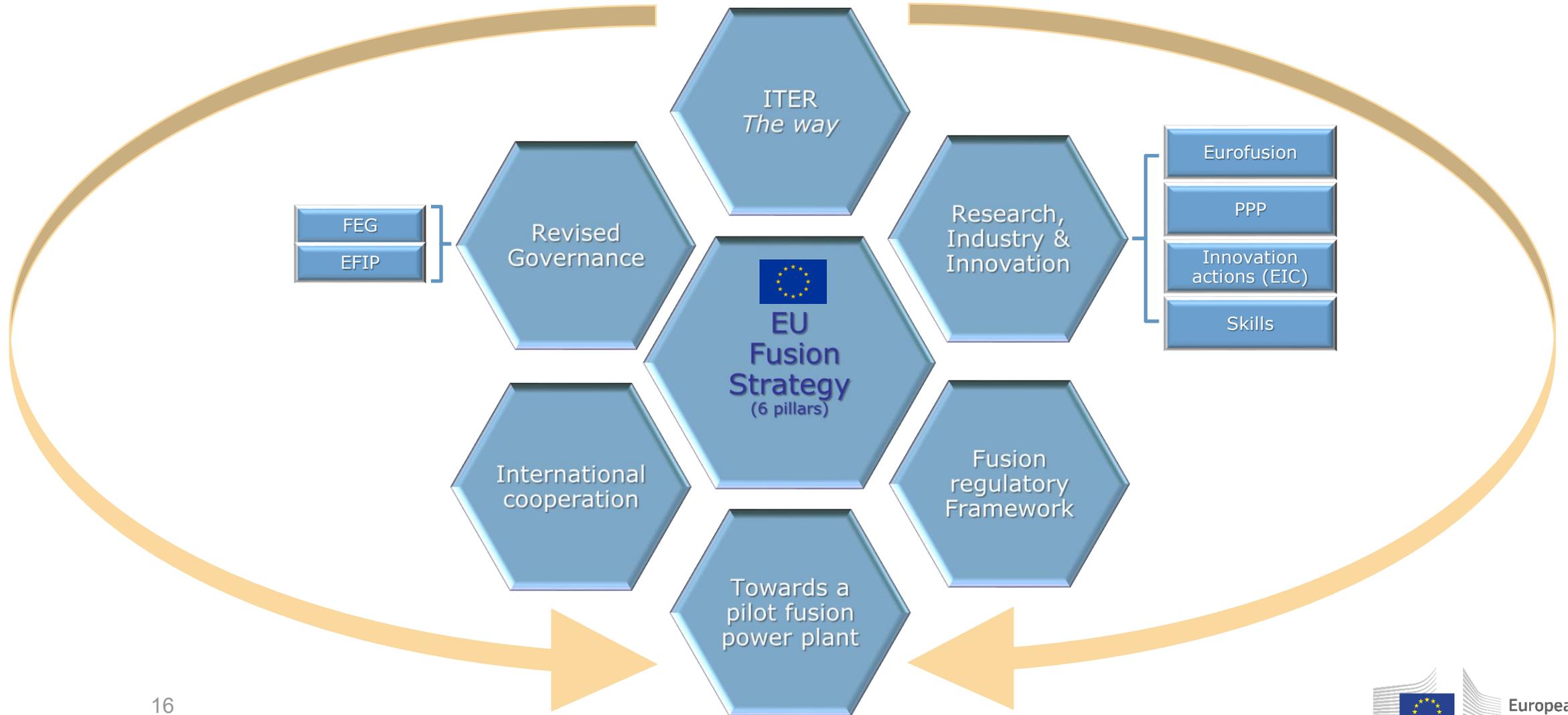
Strasbourg, France

The EU blueprint for fusion energy

©iStockPhoto/maxkabakov

23 April 2024

Towards an EU Fusion Strategy: key elements



Ongoing activities

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



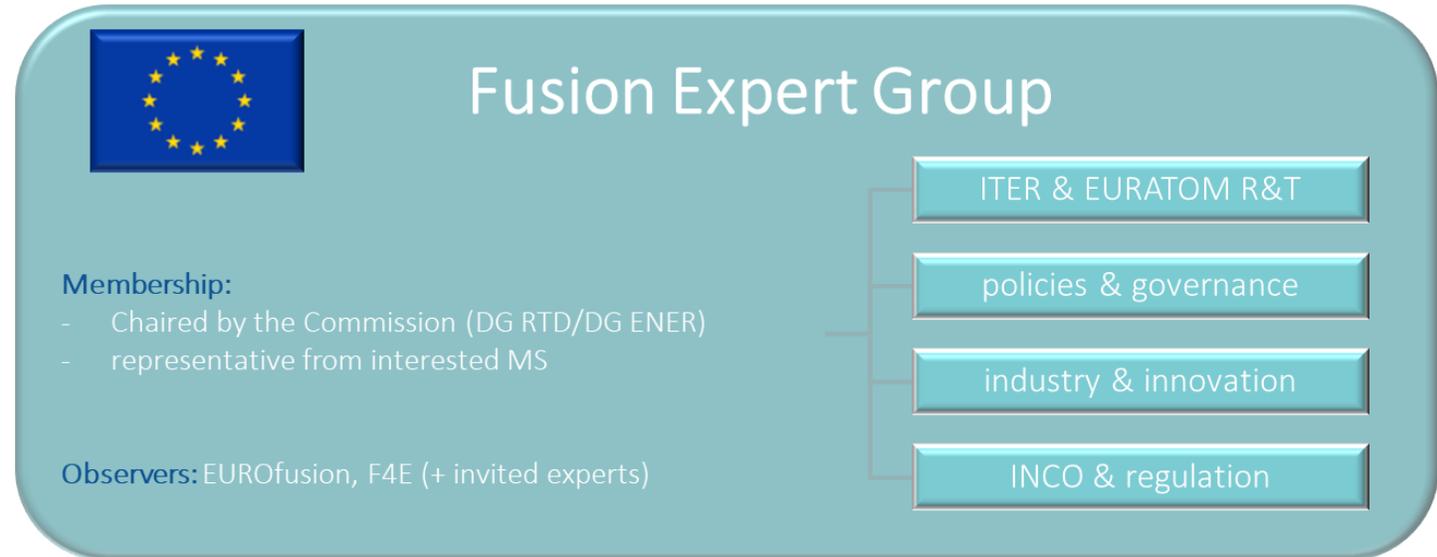
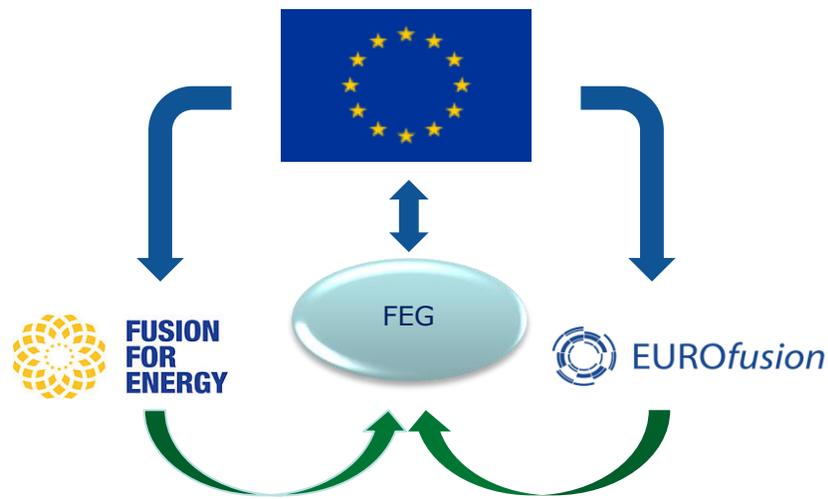
Ongoing activities

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Fusion Expert Group (FEG)

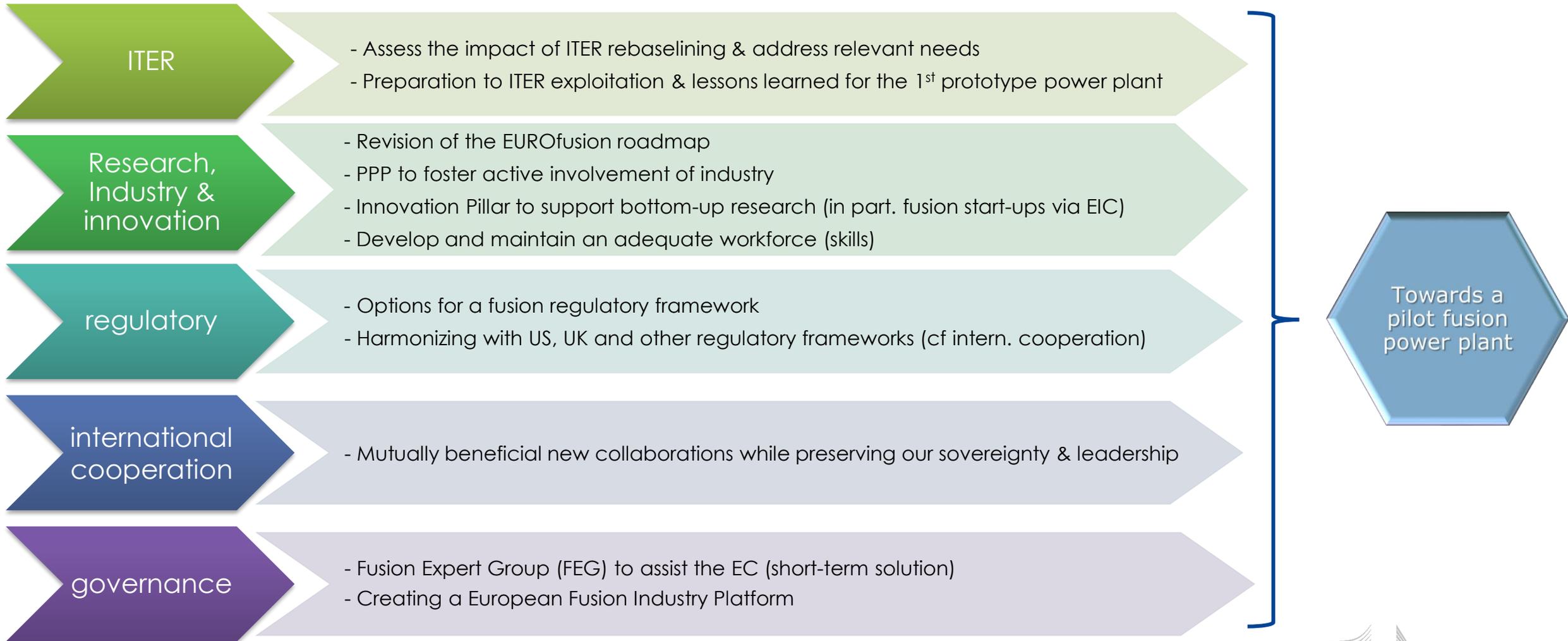
- A Commission Expert Group has been established: kick-off meeting 26/06/2024
- Composition: high-level representatives from EU Members States
- Advise the EC on fusion energy policy, considering synergies with national policies



Mission (until Q4-2025):

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

Elements of discussion with FEG





FEG Opinion paper is out

- Published on 7 April
- Available online

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 **EU Stakeholder 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 **industry-led EU Fusion 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

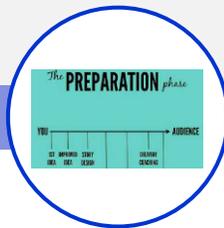
- Study, workshops, Round Table, interim-evaluation (Eurofusion, ITER)
- Fusion Expert Group (FEG)



2023-2024

preparatory phase

- Kick-off CSA* on PPP
- Kick-off CSA on Skills
- FEG Opinion Paper



2025

ramp-up phase

- Extension Euratom WP 2026-2027
- Extension of the EUROfusion grant
- Launch PPP (1st call: mid-2026)
- Launch Innovation actions (EIC)



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

