



**FUSION
FOR
ENERGY**

**BRINGING
THE POWER
OF THE SUN
TO EARTH**

ITER

**the way to abundant,
safe and sustainable
energy**



ENERGY – THE CHALLENGE OF THE FUTURE

How can we secure tomorrow's energy needs?

Energy holds the key to our economic prosperity and social well-being. Today, Europe imports 60% of the energy it consumes at a cost of 1 billion EUR per day. We need to lower our dependency on fossil fuels in order to fight climate change, which is also responsible for economic losses amounting to 433 billion EUR over the last 25 years.

How can we promote growth and a cleaner planet for all?

A sustainable energy mix is the answer and Europe is at the forefront of developing one of the most promising long-term options: fusion power. Now more than ever, the EU needs to cut down its greenhouse emissions drastically to combat climate change and make the transition to a low-carbon economy.

NO CO₂

emissions and no long-lasting radioactive waste are produced with **fusion**



60 kg

of fusion fuel generate the equivalent amount of energy of **250 000 tonnes** of oil



2050

Europe needs to cut greenhouse emissions by **80-95%**



€1 billion

is the price we pay daily in Europe for the energy we import



FUSION IS PART OF THE SOLUTION

Fusion is the process that powers the sun and other stars. Harnessing it on Earth, as an energy source, is a major scientific and technological challenge whose potential rewards are far-reaching:

- **The fuels required are widely available** reducing the risk of any geopolitical tensions and there are enough supplies to last millions of years;
- **Small amounts of fuel can generate plenty of energy:** 60 kg of fusion fuel can provide the same amount of energy as 250 000 tonnes of oil;
- **No greenhouse gas emissions or long-lasting radioactive waste are produced** and fusion power plants would be inherently safe posing no risk to populations in the vicinity;
- Fusion plants would be able to **complement the power generation** with renewables by providing a “baseload” electricity supply, when needed.



ITER - “THE WAY” TO FUSION ENERGY

ITER is the biggest international experiment in the field of fusion. Scientists will have the opportunity to study a ‘burning plasma’ releasing more energy than used to produce it. Industry and laboratories will test an impressive range of technologies that will be essential to deliver fusion power in future. ITER is a scientific partnership of unprecedented scale bringing together half of the world’s population: China, Europe, Japan, India, the Republic of Korea, the Russian Federation and the United States. Europe is hosting the project, currently under construction in Cadarache, France.

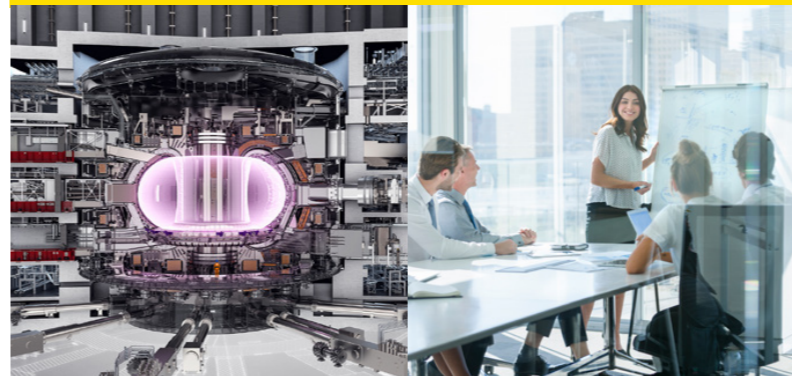
ITER is advancing

Improvements have been made in the management of the project, in addition to the testing and assembly of components to mitigate risks.

The ITER Parties are committed to the project, and their willingness to pave the way for fusion energy.

Fusion for Energy

Fusion for Energy (F4E) is an EU organisation based in Barcelona with the mission to make fusion energy a reality. It receives funding from the EU budget. F4E's main task is to provide Europe's contribution to ITER and to support the development of fusion through various projects as part of the Broader Approach Agreement with Japan. In the longer term, F4E will use the knowledge and expertise gained from its work on ITER and the Broader Approach to prepare for the construction of industrial fusion power plants.



650

Companies

2100

subcontractors collaborating with F4E



in more than **25** countries

INVESTING IN EUROPE'S POTENTIAL

Europe is responsible for nearly half of the ITER project, which in itself means many business opportunities. An impressive supply chain consisting of companies and laboratories is involved in the manufacturing of thousands of components. This work involves many “first-of-a-kind” components and technologies that generate new knowledge and pave the way for spin-offs. Investing in fusion helps Europe to maintain its leadership in this field and to be a champion of green growth. Our companies can become more competitive and offer more smart jobs. The commercial partnerships between small and big enterprises encourage the transfer of know-how and help them tap into new markets.

Fusion is the energy of the future

To address the energy challenges of the future we need a vision. F4E will focus on the successful operation of ITER and in parallel, will remain actively involved in other fusion projects. Europe will need to make the best use of its talent and expertise in order to create a competitive industry offering a wide supply chain.

ITER will help us to understand the potential of fusion energy, its merits, and Europe's capability to be a pioneer in this field. This big technology puzzle gives our industry and scientific community an unparalleled opportunity to become familiar with an emerging strategic market. We need the broadest energy mix to guarantee our citizens safe, sufficient and sustainable power supply

Fusion for Energy

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

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Fusion for Energy
receives funding
from the European
Union budget