

Nuclear Fusion

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Harnessing fusion on earth would provide sustainable energy on a nearly unlimited scale to supply the needs of a growing world population

Fusion powers the sun and all the stars of the universe. Harnessing fusion on earth would provide sustainable energy on a nearly unlimited scale to supply the needs of a growing world population. Fusion energy is safe, has no difficult waste issues and is climate friendly.

Why haven't we got fusion yet?

Despite its huge potential, fusion energy is a tough challenge. After many years of research and experiments, the international scientific community is now building **ITER which will demonstrate the scientific and technological feasibility of fusion on Earth as a sustainable energy source.**

ITER will be the largest tokamak ever built. A tokamak is a donut-shaped "magnetic bottle" in which fusion takes place. ITER is mostly modelled on the [Joint European Torus \(JET\)](#) JET is currently the world's largest tokamak and holds many scientific records, but these will be surpassed by ITER.

ITER will be the first experiment to generate up to 500 million watts (MW) of fusion power.

Following ITER, the DEMO project will pave the way for commercial fusion electricity.

A European roadmap for fusion

Europe speaks with one voice on fusion – EU countries have long been working together on fusion research, and JET made Europe the world leader in this field. This common European vision is summarised in the [Roadmap to Fusion Electricity](#) .

How is the European Union supporting fusion?

The [Euratom Research and Training Programme](#) strongly supports fusion research. The European Union hosts ITER and provides a large contribution to the project.

[EUROfusion](#), launched in 2014, carries out research funded jointly by the Euratom and the Member States. EUROfusion manages a comprehensive programme of research projects that contribute to the realisation of the "Roadmap to Fusion Electricity".

A world of innovators

Fusion research already brings benefits to society. Fusion researchers are continually innovating and developing new and advanced technologies with promising applications beyond fusion, in areas such as aeronautics, robotics, medicine, new materials, computing and advanced instrumentation.

The EU rewards the best innovators in fusion through the [European Prize for Innovation in Fusion](#).

Publications

[European consortium for the development of fusion energy](#) 

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