

UK government sets out fusion ambitions

01 October 2021

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The UK government has today published a strategy setting out how it will leverage scientific, commercial and international leadership to enable the delivery of fusion energy. It has also launched a consultation seeking views on the regulatory framework for ensuring the safe and effective rollout of fusion energy.



Department for
Business, Energy
& Industrial Strategy

Towards Fusion Energy

The UK Government's Fusion Strategy

As set out in Prime Minister Boris Johnson's *Ten Point Plan for a Green Industrial Revolution*, released in November 2020, the government wants the UK to be the first country in the world to commercialise fusion energy technology. As part of this, the government aims to demonstrate the commercial viability of fusion by building a prototype fusion power plant, STEP (Spherical Tokamak for Energy Production). The UK hopes to deliver the world's first prototype fusion power plant by 2040. The site of the demonstration plant is expected to be announced next year.

The government has now published its [Fusion Strategy](#), which sets out these ambitions in further detail. It said the strategy has two overarching goals: firstly, for the UK to demonstrate the commercial viability of fusion by building a prototype fusion power plant in the UK that puts energy on the grid; and secondly, for the UK to build a world-leading fusion industry which can export fusion technology around the world in subsequent decades.

The strategy is focused on achieving these goals by working with the UK Atomic Energy Authority - the UK's research organisation responsible for the development of fusion energy - to secure UK leadership across three 'pillars': collaborating internationally; strengthening cutting-edge scientific research; and releasing private sector innovation to achieve its commercialisation.

"The challenges of fusion energy remain considerable. As with any technically demanding goal, there will be setbacks," the document says. "However, advances in fusion science and engineering capabilities mean that there is increasing confidence in the fusion sector's ability to overcome these. That confidence, resolve and clarity of purpose must be matched by governments around the world if we are to meet the challenges that climate change poses. This strategy demonstrates the UK's commitment to meeting those challenges head on."

The strategy notes analysis suggesting that the annual fusion energy market (in present values) in 2100 could be worth around GBP52 billion (USD70 billion), rising to GBP167 billion if the capital cost of fusion power plants could be reduced by 30%. "The wider benefits to the world of a new low-carbon, safe and continuous power source are incalculable but significant," it says.

Regulating fusion

The UK government has also published a [green paper](#) setting out its proposals for the regulation of fusion energy. The proposals cover the regulation of: occupational and public health and safety; environmental protection; planning consent; third party liabilities; security and safeguards for radioactive material.

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"Fusion energy facilities will need to be regulated appropriately and proportionately in the UK to maintain public and environmental protections, provide public assurances and enable the growth of this low-carbon energy industry," the paper says. "We want fusion developers to be able to plan with confidence and the public to understand the basis for the government's approach to the regulation of this emerging technology."

The government said it believes that any regulatory framework for fusion energy facilities should serve to maintain safety and security in a way that is proportionate to the hazards involved. The consultation sets out its proposals for a regulatory framework for fusion energy which are based on this principle.

"Due to the expected low hazard of fusion power, the government is proposing the continuation of a proportionate 'non-nuclear' regulatory approach as laid out in regulatory consultation proposals published today," the Department for Business, Energy & Industrial Strategy said in a statement. "This will allow for the safe and efficient rollout of the technology through innovation-friendly regulation."

To inform policy on the regulation of fusion energy in the UK, the government has launched a consultation to share knowledge and offer views on the proposals in the green paper. The consultation closes on 24 December. The government will publish its response in early 2022, summarising the received responses and setting out the actions that will be taken.

Science Minister George Freeman said: "By putting in place the crucial foundations we're setting out today, we will ensure the UK is uniquely placed to capitalise on this innovative and revolutionary energy source in the years ahead - helping to tackle climate change and reduce our dependence on unreliable fossil fuels at the same time."

Oxford, England-based Tokamak Energy, developer of the ST-40 compact spherical tokamak, welcomed the publication of the *Fusion Strategy* and the green paper. "It's tremendous news for UK fusion as it highlights a smooth pathway for regulating and stimulating a sector that aims to provide low-cost, limitless, low-carbon energy," Chris Kelsall, its CEO, said. "Today's announcement shows the government's clear commitment to establish the UK as an international leader in fusion - scientifically and commercially."

Researched and written by World Nuclear News

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