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Japan rejects Europe's nuclear fusion deadline

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The European Union and Japan are still deadlocked over where to build the world's largest nuclear fusion facility, after Japan brushed off a new EU "deadline" to reach a decision by the end of June.

Both are vying to host ITER (International Thermonuclear Experimental Reactor), a $5 billion to $10 billion project that aims to lay the groundwork for using nuclear fusion as an inexhaustible and clean source of energy.

The project has been stalled since December 2003 because its six member parties cannot agree on where to locate the premier facility. The EU, China and Russia have lobbied for Cadarache in France, while the US, South Korea and Japan have supported the Japanese town of Rokkashomura.

On Monday, EU research minister Francois Biltgen of Luxembourg said that current plans call for construction to begin on ITER by the end of 2005. To meet that target, he suggested the EU would go forward with the project - alone if necessary - if no agreement is reached by the end of June 2005. That is when Luxembourg hands over the rotating EU presidency.

But that date is "very artificial", says Dale Meade, a physicist at Princeton University in New Jersey, US. "Every year there's a new deadline, every year there's a missed deadline." He believes the only "agreement" the EU hopes to reach by June is one to build the project in France.

But Japan continues to oppose this. "There is no change in our position," said Takahiro Hayashi, deputy director of Japan's Office of Fusion Energy. He told the AFP news agency: "We believe the Japanese proposal is superior to the EU proposal."

Trade-offs

"Something has got to change," Meade told **New Scientist**. Neither country has shown interest in trade-offs such as hosting a smaller, related facility or another large project.

Meade advocates breaking ITER into smaller, $1 billion projects that each explore an aspect of ITER's main scientific and technological goals. "We may have to split this mega-project into more pieces," he says.

The US continues to support the Japanese site and a six-party coalition but is basically staying out of the fray, says Jeff Sherwood, a spokesman at the US Department of Energy. "It is now between the Europeans and the Japanese," he told **New Scientist**.

The DoE has requested $55.5 million for ITER in the 2006 federal budget and estimates it will spend $1.12 billion on the project between now and 2013 to fulfill its promise to pay for 10% of construction costs.

Meade cautions that if Japan and the EU "are unable to make a decision, the US has to decide what we're going to do". Alternate projects in the US are currently "on hold".

ITER would work by heating isotopes of hydrogen to hundreds of millions of degrees, creating a

plasma of charged particles. Confined by magnetic fields in a doughnut-shaped machine called a tokamak, the particles would collide and fuse, producing high-energy helium nuclei and neutrons.

The uncharged neutrons would escape the tokamak, generating heat that could be siphoned off for generating electricity. But the positively charged helium nuclei would be trapped by the magnetic fields and would help sustain fusion reactions.

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