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Is fusion the best way forward?

BRUSSELS, Belgium (Reuters) -- The choice of France as the site for an international nuclear fusion reactor is a victory for strong-arm European diplomacy, but the EU has had to pay a high price for scientific prestige with uncertain energy benefits.

Winning the right to host the experimental reactor, which offers the prospect of almost unlimited, clean, cheap energy in a very distant future, was a fillip for European science at a time of alarm about the "brain drain" to the United States and the rising technological challenge from Asian economies.

"By hosting ITER (International Thermonuclear Experimental Reactor), the EU will maintain its position at the forefront of fusion research," the European Commission said in a statement.

"The existence of such a high technology, cutting edge research facility in the EU will have considerable benefits for EU industry."

However, some scientists question whether the bold attempt to replicate the way the sun generates energy by fusing atomic nuclei at extremely high temperatures, using fuel extracted from seawater, will ever be commercially viable.

Ian Fells, of the Royal Academy of Engineering in Britain and an expert on energy conversion, described the ITER as a huge physics experiment.

"If we can really make this work, there will be enough electricity to last the world for the next 1,000 to 2,000 years. So it is really quite important but quite difficult to do it," Fells told Reuters.

"I give it a 50-50 chance of success but the engineering is very difficult."

France may face years of harassment from environmental pressure groups which dispute the official line that fusion is far safer than nuclear fission.

Nuclear power produced in fission reactors has been France's main energy source since Paris decided to free itself from dependency on imported oil and gas during the 1970s oil crisis.

EUROPEAN UNILATERALISM?

In its long battle with Japan for the honour of hosting the project, the EU used some of the tactics of unilateralism it often criticises in the United States.

The Europeans had vowed to go it alone or build ITER with a "coalition of the willing" if the Japanese did not yield by the end of next month.

In the end, the EU made huge financial and industrial concessions to the Japanese to clinch the 10 billion euro (\$12.18 billion) project for the town of Cadarache, north of Marseille in southern France, already home to the world's biggest nuclear fusion experimental centre.

The EU will fund 40 percent of the 4.6 billion euro construction cost with France paying an additional 10 percent, while each of the other five members of the international consortium will pay 10 percent.

This will be offset by contracts for up to 10 percent of the procurement going to Japanese companies, EU participation in science projects in Japan with up to 8 percent of the cost of ITER construction, and a disproportionate share of Japanese staff on the ITER organisation, including the post of director-general.

The Commission statement said some headquarters functions could be situated in Japan, and "if there is an international agreement to

undertake the later phase -- construction of a demonstration reactor -- the EU will support Japan as the site."

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