



In a message dispatched on December 1 to top-level officials in ITER member governments, the ITER Project



The European Union is paying 45 percent of the cost; China, India, Japan, Korea, Russia, and the United States each contribute 9 percent equally. All members share in ITER's technology; they receive equal access to the intellectual property and innovation that comes from building ITER.

ITER scientists predict that fusion plants could start to come on line as soon as 2040. The exact timing, according to fusion experts, will depend on the level of public urgency and political will that translates to financial investment.

The ITER Tokamak will produce 500 megawatts of thermal power. This size is suitable for studying a "burning" or largely self-heating plasma, a state of matter that has never been produced in a controlled environment on Earth. In a burning plasma, most of the plasma heating comes from the fusion reaction itself. Studying the fusion science and technology at ITER's scale will enable optimization of the plants that follow. A commercial fusion plant will be designed with a slightly larger plasma chamber, for 10-15 times more electrical power. A 2,000-megawatt fusion electricity plant, for example, would supply 2 million homes.

The initial capital cost of a 2,000-megawatt fusion plant will be in the range of \$10 billion. These capital costs will be offset by extremely low operating costs, negligible fuel costs, and infrequent component replacement costs over the 60-year-plus life of the plant. Capital costs will decrease with large-scale deployment of fusion plants. At current electricity usage rates, one fusion plant would be more than enough to power a city the size of Washington, D.C. The entire D.C. metropolitan area could be powered with four fusion plants, with zero carbon emissions.

"If fusion power becomes universal, the use of electricity could be expanded greatly, to reduce the greenhouse gas emissions from transportation, buildings and industry," predicts Dr. Bigot. "Providing clean, abundant, safe, economic energy will be a miracle for our planet."

ITER—designed to demonstrate the scientific and technological feasibility of fusion power— will be the world's largest experimental fusion facility. Fusion is the process that powers the sun and the stars: when light atomic nuclei fuse together to form heavier ones, a large amount of energy is released. Fusion research is aimed at developing a safe, abundant and environmentally responsible energy source.

ITER is also a first-of-a-kind global collaboration. Europe will contribute almost half of the costs of its construction, while the other six Members to this joint international venture (China, India, Japan, the Republic of Korea, the Russian Federation and the USA), will contribute equally to the rest. The ITER Project is under construction in Saint-Paul-lez-Durance, in the south of France.

For more information on the ITER Project, visit: <http://www.iter.org/>