

# WebMemo



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## Nuclear Energy: What We Can Learn From Other Nations

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Nuclear power is gaining momentum in the United States as the nation seeks environmentally friendly and affordable sources of energy that can meet growing demand. As the U.S. deliberates the possibility of building new nuclear power plants, other nations have already begun the process.

**A Domestic Source of Energy.** France is an example of a country that developed nuclear energy to reduce foreign energy dependence after the oil shock of the 1970s. It now receives nearly 80 percent of its electricity from nuclear power and is a net exporter of electricity.<sup>1</sup> Germany, alternatively, decided to phase out nuclear energy for political reasons and now imports some of this energy.<sup>2</sup>

Japan is another country that has looked to nuclear power as a clean, safe and reliable form of energy. Nuclear power already provides 30 percent of the country's electricity; however, Japan is working to increase this to 37 percent by 2009 and 41 percent by 2017.<sup>3</sup>

Finland, ranking fifth in the world for per capita electricity consumption, has a significant incentive to secure long-term energy solutions. Embracing nuclear energy as part of an effort to decrease the nation's dependency on foreign energy sources, Finland has begun constructing a modern 1,600-megawatt reactor, which will likely be a model used throughout the United States. Finland already gets 28 percent of its electricity from nuclear power, and a possible sixth reactor would increase that amount substantially.

Presently, the U.K. has 19 reactors that provide about 18 percent of the nation's electricity. Because the U.K. is already a net importer of energy and all but one of its coal-fired and nuclear plants are scheduled to be decommissioned by 2023, building new reactors is a must for the U.K. if it is to avoid creating increased energy dependencies. The British government, while providing long-term politically stable support for nuclear power, has made it clear that it would not subsidize the industry. The U.S., on the other hand, continues to squabble politically about nuclear power but has offered some subsidies to the industry. As a result, the British model should provide a sustainable environment for nuclear power moving forward, while the U.S. model could create a politically tenuous dependency relationship between government and industry.

**Environmental Concerns.** Nuclear energy is attractive to many countries because of its impeccable environmental record. Burning fossil fuels releases an abundance of elements into the atmosphere. Nuclear energy, to the contrary, fully contains all of its byproduct in the form of used nuclear fuel. Such waste is safely managed throughout the world in countries like France, Finland, and Japan.

This paper, in its entirety, can be found at:  
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Nations across the world that are struggling to reconcile mandates to reduce carbon dioxide emissions with the need to maintain economic competitiveness are looking to nuclear technology. Under the new European Union energy plan, by 2020 Finland will be forced to reduce greenhouse gas emissions by 20 percent, increase renewable energy by 20 percent, and increase efficiency by 20 percent by 2020. It has turned to nuclear energy to meet these goals.

**Economic Competitiveness.** Affordable energy is critical to sustaining economic competitiveness in economies with high labor costs, expensive environmental mandates, and other regulatory expenditures. This is especially true in economies that depend on energy-intensive activities like manufacturing, such as the Finnish and U.S. economies. Finland concluded that access to vast quantities of affordable energy should be a top national priority, and nuclear was an obvious choice.

These countries and others searching to expand their nuclear capacity have an opportunity to fuel their respective economies through the thousands of jobs, both temporary and permanent, that nuclear energy creates. A global nuclear renaissance will attract construction jobs as well as high-skill engineering jobs to operate the plants.

Thus, two of the greatest benefits of building more nuclear reactors, if done correctly, will be more jobs and cleaner, cheaper energy. Countries that do not choose to produce clean energy in a carbon constrained world will inevitably pay more to produce energy, resulting in higher input costs and higher prices for consumers on the open market.

As the economic consequences of higher fossil-fuel costs spread to countries that do not produce nuclear power, many countries will likely increase

imports of nuclear electricity from foreign suppliers. While less expensive and more reliable than other non-nuclear, non-emitting sources, this energy will surely cost more to import than it would have had to produce it domestically. In the end, the countries that have barred nuclear power from being produced in their respective countries will ultimately rely on nuclear power, albeit at a more expensive imported price.

**Meeting Higher Demands for Energy.** U.S. electricity demand is projected to increase up to 40 percent by 2030, and other countries are projecting similar increases.<sup>4</sup> The rapid industrial development of both China and India is already placing great pressure on global energy supplies. And because energy sources, especially fossil fuels, are global commodities, growing demand in one part of the world affects the global economy. As a result, higher prices and tightened supply have some nations, such as China, experiencing power shortages.<sup>5</sup> While the U.S. has, for the most part, been able to keep the lights on, with the price of gas breaking the \$4 barrier and natural gas prices increasing, every American knows full well the pain of increasing global energy demand.

Nuclear energy can help meet this growing demand. Most directly, nuclear energy can be used to generate electricity. If that demand were not met by nuclear power, then it would likely be met with natural gas. This would put additional pressure on natural gas reserves, driving up the price for electricity as well as all the other goods that use natural gas in their production.

Although natural uranium is a finite resource like gas, oil, or coal, it can be recycled and reused. The French, Japanese, and British all recycle their used nuclear fuel. The French, for example, remove the uranium and plutonium and fabricate new fuel.

1. "Nuclear Power in France," World Nuclear Association, at <http://www.world-nuclear.org/info/inf40.html> (July 1, 2008).
2. "Country Profile: France," European Atomic Forum, May 30, 2006, at [http://www.foratom.org/index.php?option=com\\_docman&task=cat\\_view&gid=486&Itemid=1236](http://www.foratom.org/index.php?option=com_docman&task=cat_view&gid=486&Itemid=1236) (July 1, 2008).
3. "Nuclear Power in Japan," World Nuclear Association, at <http://www.world-nuclear.org/info/inf79.html> (July 1, 2008).
4. "Annual Energy Outlook 2008," Energy Information Agency, June 25, 2008, at <http://www.eia.doe.gov/oiaf/aeo/electricity.html> (July 1, 2008); "Energy, Electricity and Nuclear Power Estimates for the Period up to 2030," International Atomic Energy Agency, July 2005, at [http://www-pub.iaea.org/MTCD/publications/PDF/RDS1-25\\_web.pdf](http://www-pub.iaea.org/MTCD/publications/PDF/RDS1-25_web.pdf) (July 1, 2008).
5. "Nuclear Power in China," World Nuclear Association, at <http://www.world-nuclear.org/info/inf63.html> (July 1, 2008).

Using that method, America can recycle its 58,000 tons of used fuel stored across the nation to power every U.S. household for 12 years.

China, India, and Russia are already building new nuclear plants. Even smaller countries, like Vietnam and countries in the Middle East, have begun exploring nuclear power as they too are facing demand shortages and feeling pressure from the industrialized world to reduce CO<sub>2</sub> emissions.

**What the U.S. Could Learn.** With the U.S. entertaining the idea of building new nuclear plants, the country can learn a great deal from other nations further along in the process. Electricity demand is skyrocketing in many parts of the world; purported human-induced climate change has the entire globe in a panic. Nuclear energy has become a focal point for countries trying to meet these needs, and some

believe that it can provide an economic boost at the same time. It creates opportunities to electrify portions of the economy that today rely almost entirely on fossil-fuels, like transportation.

Other countries seem to understand the potential benefits of nuclear power and have either commenced constructing, or have developed projections for, new nuclear plants. The time has come for the U.S. to stop squabbling, remove regulatory impediments, and allow nuclear energy to continue helping this country to meet its growing energy demands.

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