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Pictures: Top Ten Nuclear Nations' Quake Hazard





**Photograph
from
Kyodo/AP**

**Japan's
annual
nuclear
generation:
265.8 billion
kwh**

Although it is now scene of one of the world's worst nuclear crises, the Fukushima Daiichi plant, seen here in October 2008, once was part of a fleet that exemplified the promise of fission for an energy-hungry nation.

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Despite its experience as the only country to endure a wartime nuclear attack, Japan two decades later turned to the so-called “peaceful atom” to help power its economic growth. With little in the way of domestic fossil fuel sources, and forced to import virtually all of its oil, coal, and natural gas, the island nation came to view nuclear power was a way to produce large amounts of electricity domestically. And since its first commercial nuclear power plant began operation in 1966, Japan has built up a program of 54 reactors, including the largest one in the world: Kashiwazaki-Kariwa in the Niigata prefecture on the west coast.

Nuclear energy has been providing one-third of Japan's power, and before the Fukushima accident, the nation had plans to expand that share to 40 percent by 2017 and to 50 percent by 2030.

As a network of islands on the boundaries of four major tectonic plates, Japan is among the world's most earthquake-prone nations. And, significantly, Japan has a population of 126.5 million in this zone of seismic hazard. (Stein notes that Alaska has a similar level of seismic hazard, but fewer than 700,000 people live there.)

All of the nation's nuclear power plants, of course, are within the danger zone.

Nuclear industry representatives and opponents of nuclear power are quick to point out that it was the failure of diesel backup power generators in the wake of the tsunami, not the shaking produced by the earthquake, that directly triggered the Fukushima crisis. Industry officials have pointed out that the plants survived the shaking from one of the largest earthquakes on record, thus performing as

designed.

Others are less sanguine, noting that power outages are an even more common hazard in times of natural disaster and even less dramatic events. In the United States, for example, "while many of our power plants won't be subject to the one-two punch of a hurricane and tsunami, we are more vulnerable for the situation where we lose power and backup, whether it's because of a hurricane in the Gulf, an ice storm in the Northeast or a tree in Cleveland," said David Lochbaum, director of the Union of Concerned Scientists' nuclear safety program.

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