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Energy Intelligence



U.S. Must Learn From Japan Nuclear Crisis

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As floodwaters recently rose at the Fort Calhoun Nuclear Power Plant in Nebraska, many Americans wondered whether an incident on the scale of the Fukushima nuclear accident could happen in the United States. On March 11, a huge earthquake forced the shutdown of several nuclear reactors in Japan. The quake also triggered a tsunami that knocked out the emergency diesel generators at the Fukushima Daiichi Nuclear Power Plant. As backup batteries drained of their electrical charge about five hours later, electricity was not available to run coolant pumps, leading relatively quickly to meltdowns of reactors' cores and release of radioactive materials to the [environment](#). Almost four months later, the plant's operators are still struggling to cope with the aftermath of this damage.

While the full consequences of this catastrophe are still playing out, it is early enough to draw important lessons for the United States and the dozens of other countries that use nuclear power to generate electricity. The first is to ensure that there are adequate means of backup electrical power to keep nuclear plants from melting down. U.S. reactors typically have only about four hours of electrical charge in their batteries. Installing longer-lived batteries and protecting diesel generators from natural disasters would increase the probability of having adequate means of backup electricity. [[Read more about energy policy and climate change.](#)]

Another important lesson is to debunk the mindset of infallibility. For decades, the Japanese authorities had portrayed nuclear power as extremely safe. They used, for example, characters from *Alice in Wonderland* to convey to children and their parents that nuclear energy was very benign. Independent voices had few outlets for expressing their concerns.

The authorities' message to the public was understandable, given Japan's lack of fossil fuels. Nuclear power thus appeared to be the natural choice for an industrial nation feeling threatened by fuel shortages. So, the Japanese government wanted to produce more and more electricity from nuclear energy with plans to ramp up its use to about half of electrical generation in the coming decades. This, however, points to the second lesson: Do not rely too much on nuclear power. [[See a slide show of 10 cities with the most Energy Star-certified buildings.](#)]

Nuclear power remains important for the globe because reactors do not emit greenhouse gases. Thus, this will be an essential power source until renewable energies can be dramatically ramped up.

The United States generates about 20 percent of its electricity with nuclear reactors. These Generation II reactors are relatively old—typically more than 30 years old—with about one fourth having similar designs to those of the Fukushima reactors. So, the United States needs to invest in safety retrofits where appropriate and protect its investment in these reactors.

So-called Generation III reactors have improved safety features, but no technology is inherently safe. Consequently, nuclear power will always need strong, independent regulatory agencies to order improvements or shutdowns when there are safety concerns. But the Fukushima accident has underscored the dangers of regulatory agencies that are too cozy with government entities dedicated to promoting the use of nuclear energy. The company that owns the Fukushima plant had allegedly covered up numerous safety problems. One positive consequence of the accident is that the Japanese government has ordered the creation of a truly independent regulatory agency. [[Check out a roundup of political cartoons on energy policy.](#)]

While the United States took this necessary action in the mid-1970s, this is not sufficient. A standard of excellence in safety culture is required. In particular, this culture works best when workers are free to raise safety concerns without fear of retribution. Japan's whistleblower protection laws broke down years before the accident. An engineer, for example, tried to draw attention to problems at the Fukushima plant, but his identity was revealed. As a result, his career and the plant's safety suffered.

This incident presents an opportunity for the United States to take a more critical look at its nuclear plants. Positively, soon after the accident, the Nuclear Regulatory Commission began a 90-day safety review of all U.S. plants. This review has thankfully led to increased transparency. However, a relatively successful review should not result in complacency but instead should reinforce the need for constant vigilance.

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