



# Fukushima: A Nuclear Threat to Japan, the U.S. and the World

Japan Disaster Could Have Far-Reaching Consequences

## OPINION

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For several weeks, radioactive leaks from the [Fukushima nuclear power plants](#) have been incapacitating a large part of Japan. Information from the Japanese government and TEPCO, the power company that operates the site, has been sparse, often incomplete and sometimes contradictory. A confidential assessment by the Nuclear Regulatory Commission obtained by The New York Times suggests that the damaged Fukushima Daiichi plant is far from stable. The report concludes that the Fukushima plant is facing a wide array of fresh threats that could persist indefinitely.

The Fukushima disaster has become more than a local, regional or national Japanese event. The worldwide implications of the event are becoming apparent: though a major leak in a maintenance pit of the plant has been plugged, there is still a great likelihood that significant amounts of [radioactive water](#) will continue to be released into the Pacific Ocean; the worldwide Just-In-Time manufacturing cycle has been interrupted; and increased levels of radiation have been detected on the U.S. East Coast. Though the amount of radiation to reach the U.S. is small and poses no present danger, its presence demonstrates that the Fukushima event has global impact.

Circumstances are still evolving too fast and too out-of-control for the consequences to be fully appreciated in real time. Every day brings new revelations of failure and growing frustration in Japan and elsewhere. It has become obvious that not all the facts about the Fukushima tragedy will be known until the danger is long past.

In Japan, there continues to be uncertainty about the extent of the danger from radiation exposure and lack of information about how many people have already been exposed to health-impairing radiation. We don't know how much contamination has leaked into surrounding land and water or when and how those leaks can be repaired.

The Japanese government announced an evacuation

zone extending 19 miles from the crippled Fukushima plants, the same distance as the exclusion zone around Chernobyl in Ukraine. But Japan is neither as large or as sparsely populated as Ukraine. Close to 73 percent of Japan is unsuitable for agricultural, industrial, or residential use. Millions of people could be dislocated in addition to those already homeless because of the quake. These people will need to be relocated and new homes will have to be created for them.

With the international challenge of wars in Iraq, Afghanistan and Libya, and national concerns about Congress being unable to agree on Federal Government funding, the U.S. news spotlight that was on Fukushima has been pointed elsewhere. However, smart investors and social observers continue to monitor the responses to the Fukushima tragedy and gauge its potential impact on world markets.

It will take the equivalent of billions of dollars for the Japanese to recover from these disasters and the U.S. economy is closely linked to theirs. The Japanese government and Japanese investors comprise the second largest holders of U.S. Treasuries, at \$885 billion. The Bank of Japan also is reported to hold \$493 billion in its reserve balance to avert credit problems. Some financial observers have speculated that the earthquake and tsunami may force Japan's

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government and investors to liquidate much of the U.S. debt they hold. This possibility doesn't even consider that there is no transparency as to what plans exist for using these funds.

The wholesomeness of much of Japan's food supply has come under question. Farmers have been forced to destroy crops and dispose of dairy products. Because of continuing contamination of seawater, the healthfulness of seafood from the Pacific Ocean is in question. Japan is already a net food importer. In response to a continuing shortage of Japanese home-grown food, the Japanese government may encourage importation of even more foreign food, which is likely to increase the price of food in a nation where food is already an extremely expensive commodity. Worldwide, increased competition for food is likely to affect prices, causing some people in marginal economies to go hungry.

Japanese manufacturers are increasingly in competition with other Asian countries. With the domestic Japanese industrial base severely damaged by the earthquake, delivery of Japanese-manufactured products to the U.S. has been disrupted. Some U.S. plants using Japanese parts have been forced to slow down or halt production. They will probably recover when Japan begins exporting a full supply again, but in an already shaky economy, that could take months. If severe enough, the postponements could cause demand to disappear.

Some industries where Japan now has a predominant position are already threatened. Pre-Fukushima Japan produced a significant percentage of the world's supply of silicon wafers, the base on which integrated circuits and memory chips are made. Because of the earthquake, it has been estimated that wafer supply has diminished by 25 percent.

A shortage of silicon wafers is likely to cause the price to rise, thus increasing the price of chips worldwide, which would have impact on the price of all sorts of goods from jumbo jet airplanes to programmable coffee makers. Korean manufacturers said they would fill the void. If customers establish supply agreements with new manufacturers in Korea, return to their former suppliers in Japan will become even more difficult.

Japan is a culturally unified nation, with more than 98 percent of its population sharing the same ethnicity. It also is a nation where the social norm is to achieve consensus and conform to standards. Japanese people are careful about expressing dissent or participating in controversy. Yet, we are seeing increased, almost unprecedented criticism of TEPCO and the government beginning to be expressed. If this is possible in such a polite and restrained

society, imagine the response to a similar disaster elsewhere.

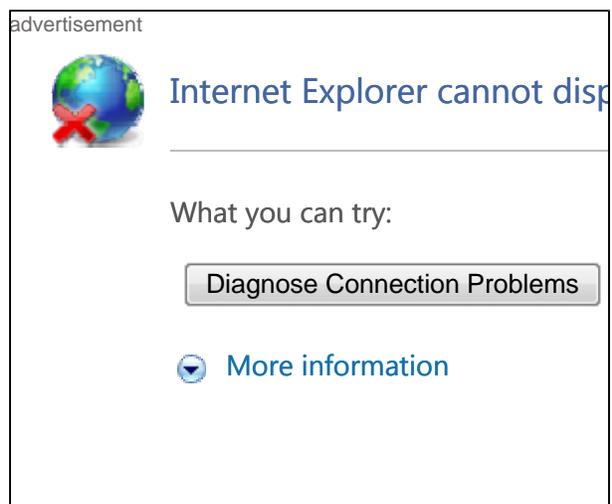
Increasingly, reports of heroic workers, dubbed the Fukushima Fifty by the press, have made their way into Western news media. There may be as many as 1,000 workers who are sacrificing themselves to prevent additional damage and repair existing damage to the nuclear reactors. It is possible some of these workers have been exposed to so much radiation that their lives will be changed in unforeseeable ways. It is likely many of these workers will suffer the long-term effects of radiation exposure, including increased likelihood of leukemia within a few years and other cancers as much as a decade or more from now. DNA damage to workers could become apparent only when these workers have children.

Though the aftermath of Fukushima will be with us for decades, and perhaps generations, immediate attention to this matter is imperative to save lives, provide knowledge that will avert a similar disaster elsewhere, and minimize domestic and worldwide economic impact.

After almost a month, there continue to be more questions than answers. There has been marginal success in cooling the at-risk reactors and little success stemming the flow of radioactive waste water. We have no credible estimate of the impact this disaster will have on the Japanese economy in particular or the world economy in general. There have been no credible steps in the U.S. or by the International Atomic Energy Agency to begin learning from this event and its aftermath and to apply those lessons to avert or minimize future tragedies.

The Japanese authorities, with the help of other

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experts, will have to muddle through this disaster, making up solutions as they go along. Hopefully, the damaged reactors will be brought under control before serious permanent harm is inflicted on national and international resources.

Looking to the future, as fossil fuels are depleted and become more costly, the world inevitably will become more dependent on nuclear power. It is likely that another nuclear disaster will occur sooner or later. Depending on ad-hoc solutions to disasters of this magnitude is shortsighted at best. In the U.S., we have seen no concerted response by U.S. regulators and nuclear power operators to re-examine safety standards in the 104 nuclear plants in this country. Most of them are decades old, some are based on the same design as Fukushima, and some sit on or near fault lines as unstable as those in Japan.

What is needed, in our opinion, is a permanently staffed, international nuclear rescue team. The team could have a core staff of full-time team members with stand-by team members, drawn from government and industry experts, who would be activated in the event of a disaster. The team would be furnished with the scientific, technical and equipment resources necessary to address an equivalent or a worse level of nuclear disaster than Fukushima. It would create scenarios, plans and tactics for remediating disasters when they occur. It would train to prepare to respond to a nuclear accident as a cohesive unit.

Such a resource would not provide a fool-proof solution to inevitable nuclear disasters. However, it is a necessary first step in controlling the potentially cataclysmic effects of a Fukushima-scale, or worse, nuclear reactor tragedy. After Chernobyl, Three-Mile Island and Now Fukushima, failure to prepare in advance for another such tragedy would be foolishly self-destructive.

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