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Japan's Nuclear Withdrawal: Bad for Japan, Bad for the U.S., Bad for the World

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Abstract: *Due to the accidents at the Fukushima nuclear plant in March 2011, the Japanese government is re-evaluating its commitment to nuclear energy. Japan's apprehension about nuclear power is understandable, but closing nuclear plants or rejecting future construction would create substantial—and unnecessary—economic hardship. Japan must identify and fix what went wrong technologically and operationally with the Fukushima reactors. This identification must lead to major reforms—drawing on lessons learned and international best practices—that create a transparent and independent regulatory regime. Such reforms will help to restore public confidence and allow Japan to continue to pursue nuclear energy—which will benefit not only Japan, but the United States and the rest of the world as well. Japanese withdrawal from nuclear power would have negative results for all.*

After an earthquake and tsunami caused equipment failures, meltdowns, and release of radioactive material at Japan's Fukushima nuclear plant in March, there has been much discussion in the Japanese government and among the public about whether to continue production of nuclear power. While Japan's former head of government (prime minister at the time the accidents occurred) Naoto Kan aggressively pursued his country's withdrawal from nuclear energy, the new prime minister (since September), Yoshihiko Noda, has acknowledged its enduring role for Japan. He has not, however, endorsed a new policy. Japan's official post-Fukushima energy policy is scheduled for

Talking Points

- Before the March 2011 earthquake and tsunami in Japan, 54 nuclear reactors provided 30 percent of Japan's electricity. Today, only 11 reactors remain in operation.
- Shuttering all of its nuclear plants would result in a 10 percent power shortage and a 20 percent increase in electricity costs for Japan.
- As the world's fourth-largest economy and fifth-largest exporter and importer, a drawn-out economic slowdown would not only hurt Japan, but would have a negative impact on the rest of the world as well.
- The future of Japan's nuclear industry largely depends on the nuclear sector's success in restoring public confidence in nuclear technology, and the government's success in establishing a credible, independent nuclear regulatory authority.
- A rational analysis that considers the safety record of nuclear power in its totality, and the economic implications of rejecting it, should move the Japanese government on a path of continued use.

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release in summer 2012. Despite this lack of policy clarity, Prime Minister Noda has said that existing reactors would be brought back online as quickly as possible, that construction on reactors that began pre-Fukushima could continue, and that exporting nuclear technology would remain a priority. However, he also has stated that Japan should reduce its reliance on nuclear energy, and has been vague on policies regarding any new reactor construction.

Nuclear Power in Japan Today

Before the disaster in March, 54 nuclear reactors provided 30 percent of Japan's electricity. The Japanese government had planned on increasing that amount to 50 percent by 2030 with two new reactors that were under construction, 12 more planned reactors, and a used-fuel management strategy that included recycling used nuclear fuel, which was in the near-final stage of implementation. Today, only 11 reactors remain in operation, with work halted on other projects. Only one reactor has been restarted since Japan began shutting down nuclear plants for regular maintenance and post-Fukushima inspections. Japan's remaining operating reactors are all scheduled to be shut down for regular maintenance by next summer. Since reactors are generally not being restarted once they are shut down, Japan risks losing most or all nuclear power by that time.

Despite Prime Minister Noda's attempts to restart Japan's idled reactors in the near term and to revive its nuclear sector in the long term, considerable barriers remain. Perhaps most significant is the need to restore local support for bringing shut-down reactors back online. Recently, the mayor of a town about 60 miles from Tokyo became the first local leader to officially call for the decommissioning of a reactor that was shut down after Fukushima. From a practical standpoint, this lack of support is critical because local authorities must provide approval before specific plants can restart.

Local support for nuclear power is not completely eroded, however. It remains somewhat strong within communities that host commercial nuclear power plants.[1] A mayor from the western Japanese prefecture of Yumaguchi was recently re-elected while supporting the construction of a new reactor. Although Yumaguchi is far away from Fukushima, the fact is that nuclear reactor construction brings jobs and economic growth to the regions where they are built. However, support tends to wane in communities that lie just beyond those that host reactors. While their support is secondary, they remain influential in determining whether to restart shuttered reactors.

Safety First

Regardless of the economic benefits, safety must come first. While the risk of a catastrophic accident is extremely small, the consequences are grave. The future of Japan's nuclear industry largely depends on the nuclear sector's success in restoring public confidence in nuclear technology. To date, Japanese industry and authorities are working to do just that. Foremost, Japan is going through a major reorganization of its regulatory agencies. The intention is to combine the Nuclear and Industrial Safety Agency (NISA) with the Nuclear Safety Commission (NSC), and to then place the newly formed agency beneath the jurisdiction of the Ministry of the Environment instead of under the Ministry of the Economy, Trade and Industry, which plays more of an advocacy role.[2] Japan may want to consider going a step further by creating an independent safety agency.

More immediately, all plants are being put through a series of stress tests with strict enforcement of safety regulations. These tests include identifying explicitly which safety measure must be taken and precisely how it will be enforced. The actual reactor will also be subject to stress tests, as will other major plant components, including safety systems, to ensure that they can withstand multiple and simultaneous natural disasters. NISA and the NSC will review the results of these tests, which are to be completed by the year's end.

1. Chester Dawson, "Living by Reactors, Japanese are Split," *The Wall Street Journal*, October 18, 2011.
2. "Japan Redesigns Nuclear Safety Agency After Fukushima," CNN, August 15, 2011, at *http://articles.cnn.com/2011-08-15/world/japan.nuclear_1_fukushima-daiichi-industrial-safety-agency-cabinet-secretary-yukio-edano?_s=PM:WORLD* (October 31, 2011).

Economics Matter, Too

Once the Japanese establish that their reactors can operate safely, they must consider the economic implications of shuttering existing reactors, and of rejecting new construction. Japan chose nuclear energy because the country lacks adequate natural resources to power its modern economy. Japan focused on nuclear energy to minimize its reliance on imports of natural gas, coal, and oil. Now that less than 20 percent of its nuclear resources remain online, it has been forced to begin importing billions of dollars' worth of fossil fuel. According to the Japanese government, fuel prices could increase by nearly $40 billion a year—$312 per person, and $770 per household.[3]

Recovering economically from the March earthquake and tsunami will be very challenging for Japan in and of itself. Adding yet more barriers to that recovery by forcing the shutdown of a major source of affordable energy makes little sense. According to the Japan Center of Economic Research, shutting down all of Japan's nuclear plants over the next year will cause a 1.2 percent annual loss of GDP, which equates to ¥7.2 trillion ($94 billion) in annual losses.[4] The Japanese government estimates that such an occurrence would result in a 10 percent power shortage and a 20 percent increase in electricity costs. Given that Japanese industry accounts for 40 percent of the country's electricity use, such increases would be extraordinarily harmful not only for industry but also for consumers who will see the costs passed down to them.[5]

These losses could be much worse if Japan impatiently turns to renewable energy to replace nuclear. Despite the proclamations of former Prime Minister Kan that renewable energy should cost one-third of what it does today, and one-sixth by 2030,[6] no existing evidence suggests that to be plausible. Solar energy costs about 60 cents per kilowatt hour in Japan as opposed to 6 cents to 8 cents for nuclear energy.[7] A government policy forcing a replacement of nuclear energy with renewable would be economically devastating. Any savings that come to fruition will be the result of market forces and private innovation, not political decrees.

The uncertainty created by the threat of long-term, government-imposed energy shortages is already having an impact. Not knowing whether the government will allow old nuclear plants to come back online prevents utilities from making investments in new sources. Therefore, anything less than allowing old plants to be restarted will result in the long-term power shortages that will likely force companies that produce and consume energy to leave Japan.

This uncertainty is already translating into real-world losses for Japan that could threaten economic growth beyond its borders. While industries have patiently waited in the months following the earthquake and tsunami for power to be restored, they likely will not wait much longer if the government institutes policies that prevent adequate amounts of affordable energy to be brought online. Financial analysts believe that Japanese industry would leave Japan rather than deal with power shortages.[8] As the world's fourth-largest economy and fifth-largest exporter and importer, this would not only make Japan's economic recovery more difficult, but would

3. Hiroko Tabuchi, "Japan Quake is Causing Costly Shift to Fossil Fuels," *The New York Times*, August 19, 2011, at *http://www.nytimes.com/2011/08/20/business/energy-environment/quake-in-japan-is-causing-a-costly-shift-to-fossil-fuels.html?_r=1&pagewanted=all* (October 31, 2011).
4. Japan Center for Economic Research, "The 37th Middle-Term Economic Forecast (2011–2020)," June 2011, at *http://www.jcer.or.jp/eng/pdf/m37r_summary.pdf* (October 31, 2011).
5. Chikako Mogi, "Analysis: Energy Policy Chaos Threatens Japan's Economy," Reuters, August 4, 2011, at *http://uk.reuters.com/article/2011/08/04/us-japan-energy-idUKTRE7731GS20110804* (October 31, 2011).
6. Chico Harlan, "Japan Takes a Shine to Renewable Energy," *The Washington Post*, May 27, 2011, at *http://www.washingtonpost.com/world/asia-pacific/japan-takes-a-shine-to-renewable-energy/2011/05/26/AGm8wuCH_print.html* (October 31, 2011).
7. *Ibid.*
8. Chikako Mogi, "Analysis—Economic Risk Too Great for Full Japan Nuclear Shutdown," Reuters, June 9, 2001, at *http://uk.reuters.com/article/2011/06/09/uk-japan-nuclear-idUKTRE7582VA20110609* (October 31, 2011).

have a negative impact on the rest of the world. Power shortages would likely result in higher near-term prices for goods exported by Japan, such as chemicals, automobiles, and electronics. It would lead to lost markets for those items that Japan imports, such as raw materials, fuel, and machinery.

The situation will be worst for those companies that rely specifically on nuclear power, generated, for instance, by the Hamaoka nuclear plant in central Japan. The utility that operates that plant agreed in May of this year to shut it down at the Japanese government's request. The problem is that significant portions of Japan's automotive industry, such as Toyota, Honda, and Suzuki, rely on that specific plant for power. While the power could eventually be replaced, the slow process will increase costs. Japan's cars will cost more, making them less competitive.

No New Construction—No Exports?

Though Japanese exports of commercial nuclear business totaled just around $200 million last year, the prospects for multibillion dollar projects around the world have attracted significant Japanese investment. Indeed, three of the handful of major nuclear suppliers around the world are Japanese. However, future decisions to forgo new domestic nuclear energy projects could undermine this investment opportunity. Whether legitimate or not, questions will be raised about why Japan deems its reactors unsafe for domestic use but acceptable for export.

The concerns are real, and will increase over time. A Japanese company's ability to compete internationally will likely diminish as its domestic projects close down. The U.S. nuclear industry provides a case in point: It no longer dominates the global commercial nuclear industry as it did when it was building new nuclear plants in the 1970s and 1980s. It has been replaced by companies from countries that have the most recent experience with new nuclear construction—like Japan. France is another strong example. It is a nation that has made domestic nuclear-fuel reprocessing a centerpiece of its spent-fuel management strategy and is now the global leader in spent-fuel management services. If Japan puts an end to new nuclear projects, it will cede its position as a leader in nuclear construction.

This will not only hurt the Japanese economy, but the U.S. economy as well. There are already too few top-quality nuclear suppliers around the world. Reducing the number of suppliers will reduce competition and innovation over the long term. It will also have near-term repercussions. America's primary nuclear companies have developed strong relationships with their Japanese counterparts in order to increase their competitiveness. A strong Japanese nuclear export sector directly benefits American companies. If Japan's industry weakens, so might its U.S. counterparts.

A Japanese Decision

The decision about how, or whether, to pursue nuclear energy is for Japan to make. However, a rational analysis that considers the safety record of nuclear power in its totality, and the economic implications of rejecting it, should move the Japanese government on a path of continued use. Of course, it should not do so blindly or without substantial reforms.

Japan must understand completely what allowed the Fukushima accident to happen. Despite the earthquake and tsunami, those reactors should have been shut down safely. There is never an excuse for the massive release of radiation that occurred there. As Japan fully learns the lessons of Fukushima, it must institute reforms to ensure that the mistakes of Fukushima are never repeated. Japan should not only seek answers internally, but also draw from international best practices. Lastly, it must institute regulatory reforms that correctly align authorities and responsibilities, including establishing a truly independent safety regulatory agency. Once reform is complete, it is time for Japan to restore its position of commercial nuclear technology leadership. It is important not only for Japan—but for the rest of the world, too.

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