

Out of the Shadows: Can Japan's Nuclear Power Renaissance Reduce Global Emissions?

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Out of the thick political fog produced by Japan's G8 Summit in Hokkaido emerged one key pledge: the world's second-largest economy has announced a 60-80 percent cut in greenhouse gases by 2050, one of the most ambitious national targets. The pledge has since come under intense scrutiny, particularly over the telling lack of mid-term targets and deliberate fudging on the starting or base year for cuts – 1990 or 2008? But one thing remains very clear: nuclear energy will shoulder much of the burden of the country's climate-change strategy.



Power lobby illustration promoting nuclear power

A famously resource-free country, heavily dependent on imported fuel, Japan has long been among a small number of countries

bucking a global trend of freezing or canceling nuclear projects, led by France (which generates about 78 percent of its electricity from 58 nuclear reactors, and is currently building its first new plant in ten years) and followed by South Korea. Japan relies on 52 reactors for about a third of its power generation needs, but aims to push this to 40 percent (60-70 reactors) within the next decade. These plans have accelerated amid mounting concerns about the nation's reliance on oil from the volatile Middle East.

The nuclear stall was set out on Day One by the G8, which noted the growing number of countries that have "expressed their interests in nuclear power programs as a means to addressing climate change." The task in this new environment, said Tokyo, is to ensure nuclear safety, security and non-proliferation – what it calls the "3S." Japan is leading the way in Asia, trumpeted a Ministry of Foreign Affairs statement, with initiatives such as the 14-country "Asian Nuclear Safety Network," which is "sharing experience of the operating of nuclear power plants and improving the capacities of safety regulations."

At home, Japan's plans include an ambitious commercial fast-breeder program, and a huge and trouble-plagued new nuclear reprocessing plant at Rokkasho in the north of the country, which will make Japan one of the planet's largest producers of plutonium. The Ministry of Economy, Trade and Industry (METI) is also expected to green light the construction of the world's first commercial thermal reactor to run exclusively on spent nuclear fuel, known as mixed-oxide.

These schemes are being fiercely resisted. Over 810,000 people, for example, have signed a petition demanding a ban on radioactive releases from Rokkasho. But such criticism, and the decision of some countries such as Germany to scrap nuclear energy will not affect Japan's march to the future, insists the Ministry. "Each country has its own conditions in formulating energy policy. Nuclear power remains important for us," said an official. METI believes that Japan's decision to stick with this policy, despite a string of scandals, huge cost overruns, the high price of nuclear power and unresolved problems of waste disposal may be about to pay off.

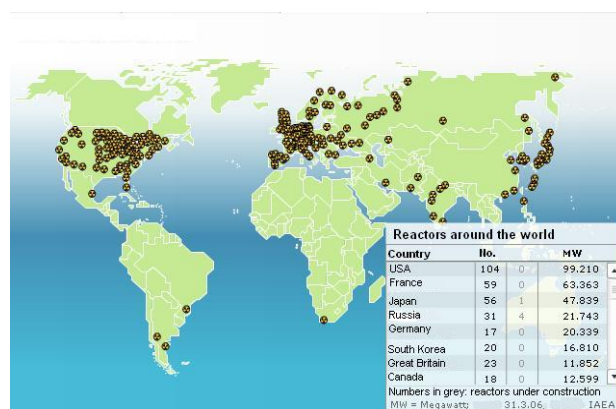


Rokkasho nuclear processing plant

With climate-change fears and soaring oil and gas prices fuelling what has been dubbed a "renaissance" of nuclear power and a promised boom in new construction, Toshiba, Mitsubishi Heavy Industries and Hitachi are gearing up for major expansion at home and abroad. According to The Nikkei business newspaper, analysts expect capital investment by the big three plant and equipment makers to double by more than \$100 million by the end of the decade, doubling production capacity for turbines and reactors. Thousands of nuclear engineers are being hired; Mitsubishi Heavy alone plans to boost the payroll at its nuclear power division by 1,000 from 4,500 within five years.

The prize is a share in the contracts for 150 nuclear plants mooted for construction worldwide over the next 20 years, adding to the

roughly 435 commercial reactors already in operation. Many analysts wonder if these plants will ever be built - nuclear power is still considered too risky and expensive for most commercial investors. "Wall Street doesn't like nuclear power," said the US-based Institute of Energy and Environmental Research recently, summing up a widespread belief that the industry will never be profitable, let alone safe.



World nuclear reactors

But Japan is betting that the growing political lobby behind low-carbon energy will sweep away doubts and put it at the head of the nuclear pack. The lobby has been joined by former British Prime Minister Tony Blair, now a leading climate-change advocate, who in 2006 endorsed building a new generation of nuclear reactors. "I know how incredibly controversial nuclear power is, but you have to look at the facts," he told a Tokyo audience in June 2008. "I don't see any way of achieving climate-change goals without nuclear power in the mix."

Industry leader Toshiba this year announced ambitions to construct 33 plants by 2015, including several in China, a target that Toshiba President Nishida Atsutoshi calls "conservative." In October 2006, the company paid the British government \$5.4 billion for a 51 percent share in Westinghouse Electric, which this year won its first new contract in three decades to build two reactors in the US

state of Georgia and is a leader in the Chinese market. In May, South Carolina Electric & Gas Company ordered two more reactors from Toshiba, to be built by 2016. Nishida told a press conference in May that Toshiba and Westinghouse are aiming for a trillion yen in sales by 2030.

Mitsubishi Heavy, meanwhile, has partnered with French nuclear giant Areva, the world's largest maker of nuclear reactors, and is mulling a stake in Pebble Bed Modular Reactor Pty., a South African government-owned firm that plans to build 24 reactors. The MHI-Areva alliance involves the development and licensing of mid-sized reactors. Mitsubishi Heavy designs and builds reactors; Areva, which does the same, will supply it with uranium, which it mines and reprocesses.

Hitachi and the US-based General Electric Company have merged their nuclear power businesses, consolidating the global industry into three powerful multinational camps: Toshiba-Westinghouse, controlling about half of the world's market for atomic plants, according to Japan's Institute of Energy Economics; Hitachi-GE, which controls about a quarter; and Mitsubishi-Areva (about 15 percent).

In the rear are a small number of growing nuclear powerhouses, notably China, which has 11 reactors currently operating, seven under construction and about another 100 planned or proposed, according to the World Nuclear Association. India and Russia also plan ambitious expansions of existing nuclear programs. South Korea, which is determined not to be left behind by its rival across The Japan Sea, will build ten new plants by 2030, according to The Korea Times, raising the percentage of electricity it generates from nuclear power from 45 to 60 percent.

Table of world nuclear reactors and uranium requirements

The mergers and activity are evidence that the moratorium on plant construction is ending, and Japan's companies are, remarkably, now major players in the global market for nuclear power. "Japan is the leading beacon in this commercial renaissance," says Aileen Mioko Smith, director of anti-nuclear campaigner Green Action. Smith opposes the construction of new reactors, which she says will, in any case, come too late to save the planet. "The story of whether we succeed or win on global warming will be long over before the new plants are up and running. To see nuclear power as a solution to global warming is unconscionable."

Expect a scramble for contracts and raw materials over the next couple of years as an industry many thought had been buried by the 1979 Three Mile Island incident in the US and the 1986 Chernobyl disaster judders back to life. Higher demand has already sent the price of uranium rocketing by 500 percent since 2003, forcing the major players to improvise. Toshiba, for example, is part of a consortium that last year bought into a uranium mine in Kazakhstan, which holds some of the world's biggest reserves. That deal – making Toshiba the first nuclear-plant maker to directly participate in uranium mining – is part of an effort by Japanese manufacturers to move away from their traditional reliance on Australian and Canadian sources.

It may seem counterintuitive that Japan of all places is leading the charge for nuclear power. This, after all, is the only nation to have suffered the horror of an atomic bombing, which killed about 250,000 people in Hiroshima and Nagasaki and left behind vociferous anti-nuclear sentiment and a powerful movement against atomic plants. But staunch technological support from Tokyo's United States ally and corporate pressure to find alternative power sources to Middle-East oil long ago trumped civilian concerns: Japan built its first reactor way back in 1966.

The government assures opponents that the dividing line between civilian and military use is as solid as a reactor wall, despite a growing stockpile of plutonium (45 tons) and political hints that it may one day be used to make an atomic bomb. In practice, that line appears to be increasingly policed not by the political establishment but by public outrage. In 2006, for example, Asō Tarō, the current secretary general of the ruling Liberal Democratic Party, was forced to retreat under a hail of flak when he said the nation should openly discuss the possibility of a Japanese A-bomb. In truth, Asō is only the latest in a long line of conservative Japanese politicians who have favored nuclear weapons. Today he is the leading contender to take power from outgoing Prime Minister Fukuda Yasuo.

As commentator Hanai Kiroku says, Japan's "no-nukes" policy is, in any case, made contradictory by the country's increasingly close security alliance with the US, which puts it under the American nuclear umbrella. "This shows that Japan has lost the moral authority to lead the drive for nuclear disarmament," he wrote in *The Japan Times* in August 2008. "So far as defense policy is concerned, Japan is unequivocal: the core of its defense policy is nuclear weapons," writes Gavan McCormack in [Japan as Plutonium Superpower](#). "To be sure, the weapons are American rather than Japanese, but their nationality is immaterial to their function, the defense of Japan."

The nuclear-first strategy has also survived a series of deadly blunders, including an accident at the Mihama Nuclear Power Plant in Fukui Prefecture two years ago that killed four, and the discovery last year of an earthquake fault close to the world's largest nuclear-power complex in Kashiwazaki-Kariwa. The complex remains closed.



Kashiwazaki, since 1997 the world's largest nuclear power plant

In 2002, the industry weathered another scandal when the government ordered a shutdown of 17 reactors run by Tokyo Electric Power, after it admitted concealing problems and obstructing inspections.

One obvious attraction of the nuclear revival for Japan is a chance to recoup enormous industrial investment during the lean years when much of the world was switched off. Success in the US market would clear a path in Asia, which will account for over a third of the world's new plants, says Michael Richardson, an energy and security specialist at Singapore's Institute of Southeast Asian Studies. "More than 110 power reactors are generating electricity in six Asian countries, with dozens more under construction in Northeast, Southeast and South Asia," he wrote recently. In addition to India, China and South Korea there are emerging economies such as Vietnam, which is about to build its first nuclear plant, with help from Japan's METI. .

With private investors skittish, to say the least,

about laying out huge sums per plant (the new French plant, in Normandy, carries a price tag of \$5 billion, according to The New York Times) state backing is seen as crucial. The US government is offering loan guarantees and tax incentives to plant builders; an appropriation bill aimed at kick-starting 30 new reactors there last year set aside \$18.5 billion. US Department of Energy officials have also been shuttling to Tokyo to ask for financial help from the Japan Bank of International Cooperation, which is, says The Nikkei, planning to dole out loans to the big three.

Even with this help, and the prospect of a slowly cooking planet, nuclear power will be a hard sell, which is why political leaders like Blair have taken to proselytizing on the world stage for its renaissance. US President George

W. Bush is seen as a crucial force in the US revival, and French President Nicolas Sarkozy reportedly helped seal an 8-billion-Euro deal for Areva when he travelled to China in November 2007. Japan's political leaders too, will increasingly become salesmen for their domestic nuke industry, an odd turn of events, perhaps, for a country that has more reason than most to find alternatives.

This is a much expanded version of an article that recently appeared in The Irish Times. David McNeill writes for that and other newspapers, including The Chronicle of Higher Education and The Independent. He is a Japan Focus coordinator. Posted at Japan Focus on September 7, 2008.