



Coal awaits transport at a Japanese port. Almost all of the nation's supply is imported.

ENERGY POLICY

Bucking global trends, Japan again embraces coal power

Plans for new coal plants imperil efforts to cut emissions

By Dennis Normile

Most of the world is turning its back on burning coal to produce electricity, but not Japan. The nation has fired up at least eight new coal power plants in the past 2 years and has plans for an additional 36 over the next decade—the biggest planned coal power expansion in any developed nation (not including China and India). And last month, the government took a key step toward locking in a national energy plan that would have coal provide 26% of Japan's electricity in 2030 and abandons a previous goal of slashing coal's share to 10%.

The reversal is partly a result of the 2011 disaster at the Fukushima Daiichi Nuclear Power Station, which punctured public support for atomic energy. Critics say it also reflects the government's failure to encourage investment in renewable energy. The coal revival, they say, has alarming implications for air pollution and Japan's ability to meet its pledges to cut greenhouse gas emissions, which account for 4% of the world's total. If all the planned coal plants are built, it will "be difficult for us to meet our emissions reduction goals," Minister of the Environment Masaharu Nakagawa noted earlier this year.

Not long ago, coal was on its way out in Japan. In 2010, coal plants accounted for 25% of Japan's electricity, but the powerful Ministry of Economy, Trade and Industry (METI) planned to reduce that share by more than half over 20 years. The ministry counted

on nuclear power to pick up the slack, with its share of the nation's electricity set to increase from 29% in 2010 to 50% by 2030.

But the 2011 Fukushima nuclear accident forced a reassessment. All 54 of Japan's reactors were shut down pending compliance with new safety standards. Just seven have restarted. Utilities have turned to liquefied natural gas and coal, which surged to provide 31% of the country's electricity in 2014.

In many other nations, natural gas has replaced coal as a fuel source because gas costs less. But in Japan, "coal is cheap," says Takeo Kikkawa, an energy economist at Tokyo University of Science and a member of an METI advisory council on energy. That's because the nation must import natural gas in its relatively expensive liquefied form.

The new energy plan would cement coal's central role. Endorsed on 26 March by an METI advisory council, and likely to be adopted by the Cabinet later this year, it calls for nuclear plants to be restarted, boosting their share of electricity generation to between 20% and 22% by 2030. Renewable energy's share would rise slightly, to between 22% and 24%, with solar energy alone accounting for 7%. But fossil fuels—coal, oil, and natural gas—would provide 56%.

That reliance on coal will make it difficult for Japan to fulfill its pledge to cut greenhouse gas emissions by 26% below 2013 levels by 2030, and by 80% by 2050. Those cuts will be even harder to achieve if now-shuttered nuclear power plants aren't restarted.

Power industry officials, however, claim

they can limit emissions by building so-called clean coal plants and systems for capturing carbon. As an example, they point to Unit 2 at the Isogo Thermal Power Station in Yokohama. Completed in 2009, it uses a so-called ultrasupercritical cycle, which generates steam at very high heat and pressure, boosting the plant's efficiency to 45%, compared with 30% to 35% for conventional plants. The result is the world's lowest emissions per unit of power, according to the International Energy Agency's Clean Coal Center in Paris.

But such plants are costly. And critics note that more than half of the proposed coal stations will use more conventional—and polluting—technologies. The environment ministry projects that if all the planned plants are built, by 2030 coal's carbon emissions would more than offset the cuts Japan wants to make elsewhere. A yet-to-be-published Greenpeace study concludes that if the plants operate for 40 years, they would also emit pollutants that would cause more than 60,000 premature deaths.

Public opposition and projections of declining electricity demand have some utilities rethinking plans for new plants. The Electric Power Development Company of Tokyo announced last week that it is abandoning plans for two new 600-megawatt coal plants near Kobe. In all, companies have now canceled six planned coal plants announced since 2012, according to the environmental group Kiko Network in Kyoto.

Japan's turn to coal represents a missed opportunity for renewable energy, says Tomas Kåberger, an energy specialist at Chalmers University of Technology in Gothenburg, Sweden, and chair of the Tokyo-based Renewable Energy Institute. After the Fukushima accident, he notes, the government adopted incentives for renewable power and started to tweak energy markets to make renewables more competitive. The moves led to a surge of investment in solar power.

But Kåberger says under current rules, Japan's 10 regional utilities can still give their own generating plants priority access to transmission lines, which they also control. This creates uncertainty for those trying to sell renewable power into the grid. Such issues, together with subsidy cuts and other policy changes, last year led to a 32% decline in investment in solar power, says Hisayo Takada, Japan energy project leader for Greenpeace Japan in Tokyo. As a result, Minister of Foreign Affairs Taro Kono said at a symposium last month in Tokyo, "The situation in our solar energy sector today can only be described as lamentable." ■

IMAGE: MICHAEL HANSON AND BHARTANJAN S. BHULLAR