

www.NEWSBASE.com

Japan Liquid Power A NewsBase Research Special Report

£150

November 2015

❖ Safe but dirty

The Fukushima disaster in March 2011 led Japan to shut all of its nuclear power capacity and increase its reliance on oil-fired power generation.

❖ Nuclear restart

Tokyo is now intent on bringing its nuclear power plants back on line, though domestic opposition will see some capacity closed for good.

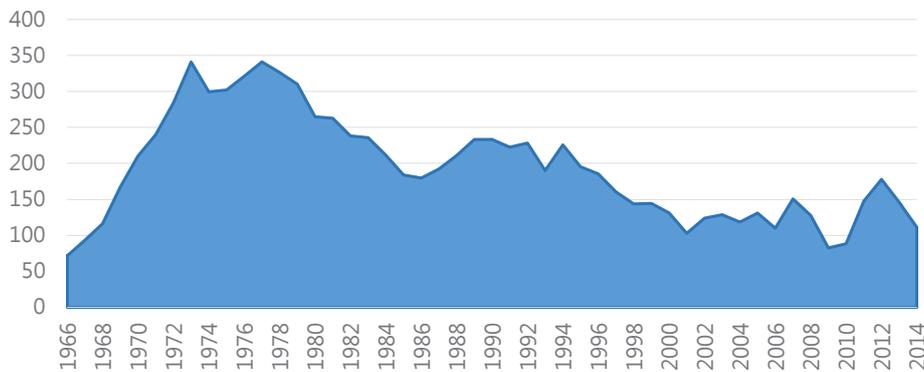
❖ Demand dampener

The country's efforts to bring its nuclear reactors back on line have material implications for future global oil demand.

Have a question or comment? Contact the authors of the report:

Christopher Moghtader
Head Analyst, NewsBase Research
chrism@newsbase.com
Prof. Gav Don
CEO, NewsBase Research
jgd@newsbase.com

Japan Oil-Fired Power Generation, bn kWh (annual)



Source: IEA

- ▶ the last few years is now likely to slow significantly. (See *Renewables in Japan* sidebar)

Japan also added nearly 4,000 MW of extra coal plant capacity in 2013 alone and, taking advantage of low prices, coal consumption in Japan reached record levels in August this year. With the government opening up the retail electricity market from April 2016, there are plans to construct 40 more coal plants over the next decade.

Over time, the focus of new plant additions will likely shift back towards LNG and renewables, as the government introduces stringent new coal plant efficiency regulations in a bid to address environmental opposition and curb carbon emissions. The net result in 2014 was 114 billion kWh generated from oil, using around 550,000 bpd.

But, as far as the government is concerned, this is all something of a stopgap.

To leave around a sixth of national power capacity idle while money is spent on alternative new plants is a painful waste of resources – even before fuel costs are taken into account.

Fossil fuel import costs rose by US\$270 billion (or 60%) between 2010 and 2013, decimating Japan's trade surplus, increasing government debt and undermining its energy security. As if that were not bad enough, the nuclear shutdown has threatened thousands of jobs, led to revenue losses for utilities companies, increased electricity prices for households and industry and caused carbon emissions targets to be missed.

If nuclear plants are not restarted then power companies will be faced with substantial asset write-downs, which will then be offset against tax bills. The government, the industry and power plant workers want nuclear power back on line as soon as possible.

The start-up of two reactors at the 1,780-MW Sendai NPP in August and October 2015 was an important first step in this direction. *NBR* expects more reactors to restart soon – notably the Takahama 3 and 4 reactors, and Ikata 3.

Not all on side

If the government's reasoning is clear, so is the apprehension of those who oppose nuclear power on principle. Before Fukushima, Japan ▶▶

Renewables in Japan

As part of its energy mix strategy released earlier this year, the Japanese government has said it wants to increase renewables' share of Japan's power generation mix to around 22-24% by 2030, up from around 10% in 2013.

At present, most of Japan's renewable power comes from hydro-electricity and biomass. But the government is focusing on other forms of renewables over the next 15 years, including solar, wind and geothermal.

Research suggests that Japan has 220,000 MW of unused wind capacity and 70,000 MW of unused geothermal capacity (the former offering perhaps 25% average capacity utilisation and the latter close to 100%). However, it is solar which is stealing all the headlines at the moment. The Japanese solar PV market has grown rapidly over the last few years, propelling it to one of the world's largest, comparable to those in Germany and China. Japan's solar PV capacity increased from 6,600 MW at the end of 2012 to 23,300 MW by the end of 2014, while generation more than tripled, from 7 bn kWh to 24.4 bn kWh. According to Bloomberg, Japan is expected to add another 12,700 MW of capacity this year – although we have not seen any hard data to support this, and think this estimate is excessive.

Such rapid growth is unlikely to be sustained. The solar rush began in 2012, when the government introduced a feed-in-tariff that guaranteed 42 yen per kWh (around US\$0.52 at 2012 rates) for renewable energy sold to the grid and sparked a rush of small producers.▶▶