Volume 10 | Issue 54 | Number 75 | Article ID 4681 | Dec 31, 2012

A Solar Future? Prospects, Problems, and Japan's Solar Energy Plans□□太陽熱による将来？期待、問題、および日本の太陽エネルギー計画

Asia-Pacific Journal Feature

Between 2012 and 2014 we posted a number of articles on contemporary affairs without giving them volume and issue numbers or dates. Often the date can be determined from internal evidence in the article, but sometimes not. We have decided retrospectively to list all of them as Volume 10, Issue 54 with a date of 2012 with the understanding that all were published between 2012 and 2014.

Asia-Pacific Journal Feature

In the midst of the Fukushima crisis, Japanese Prime Minister Kan has tied his political future, and likely that of his party, to an anti-nuclear direction.

At the G8 in May, he pledged to forge an energy policy that would see the percentage of Japan's energy needs met through renewables such as solar energy double to 20% in the 2020s. This is a decisive turn away from the previous government mandate to increase the amount of Japan's energy generated by nuclear power from 30% to 50% in the same timeframe. He has followed this up by appointing an energy review board that includes proponents of solar and other green energy technologies.

Kan has offered concrete numbers, stating that he wants 10,000,000 houses with solar panels in the next twenty years. He has also pledged to build the groundwork for a research and investment plan to decrease the cost of solar energy to 1/3 of the present level by 2020 and 1/6 of the present level by 2030. Critics have pointed out, however, that these are goals without concrete plans to back them up.

There will be significant challenges. The cost of a kilowatt hour of energy produced through various energy sources in Japan is reported by the Mainichi Shimbun as:

Nuclear: 5.3 yen

Coal: 5.7 yen

LNG: 6.2 yen

Oil: 10.7 yen

Hydro: 11.9 yen

The current cost of solar energy ranges between 43 and 49 yen an hour. The "hidden costs" of nuclear energy – which include the reprocessing of spent fuel and the decommissioning of reactors – are said to be factored into the 5.3 yen cost assessment. In effect, at present rates, solar energy is nearly 10 times as expensive as nuclear, but it seems

https://doi.org/10.1017/S155746601203834X Published online by Cambridge University Press

certain that the costs of the cleanup and decommissioning of many reactors following the Fukushima Daiichi meltdown and growing public suspicion of other nuclear sites are not included. In addition, Andrew DeWit explains how innovations such as "feed in tarrifs" can help to bring down the cost of solar power.

Unnamed Ministry of Economy, Trade, and Industry insiders are said to have told Mainichi sources that without a technological revolution, it will be very difficult to meet Kan's goals. This may be, however, an example of organs of the Japanese government working at crossed purposes as the Ministry of Economy, Trade, and Industry has long been a key supporter of plans to dramatically increase Japan's reliance on nuclear energy.

The Mainichi also reports, however, that a Tokyo University energy resource specialist, Associate Professor Mogi Gento, has predicted that if nuclear power is abandoned by 2050 there will be no negative effect on the Japanese economy.

He bases his calculations on the assumptions that solar panels will be manufactured domestically and that unused land will be employed for their installation. The *Mainichi* piece indicates that the Mogi study was commissioned by one of Japan's power companies.

At present, about 1/3 of Japan's energy needs are met through nuclear power, one of the highest levels in the world. The burning of fuels provides approximately 60% with solar and all other power sources making up the 10% balance. Solar alone provides a bit over 1% of Japan's energy needs, but even this modest number places Japan as the third biggest solar power producer in the world behind Germany and Spain, showing how much work on green energy technology is still needed.

The plan outlined by Mogi is based on an incremental phase-out of nuclear power and a corresponding increase in the amount of energy generated by solar power technology. With current technology, the amount of space needed to lay down solar panels that could produce as much energy as nuclear power plants did before the 3.11 accident is 10,000 square kilometers. This is equivalent to just over 2.5% of Japan's total land mass. Mogi argues that this would be possible at present if farmland that has been allowed to go fallow was turned over to solar energy generation.

Mogi concedes that there will be a medium term increase in the price of electricity by 0.6 yen per kilowatt hour (meaning a yearly increase of just over 5000 yen per person or just over 40 dollars). From the 2030s, rates would decline.

Citing the jobs that would come with developing an intensive solar panel production industry, particularly in rural areas facing high unemployment rates such as the tsunami devistated north, Mogi argues, "In the beginning, the cost of solar energy production is higher than that of other energy sources, however, if everything is manufactured domestically, this will not be a drain on the economy".

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Other Asia-Pacific Journal articles and essays on Japanese energy issues include:

Furukawa Takuya, How Japan's Low Carbon Society and Nuclear Power Generation Came Hand in Hand

Yuki Tanaka and Peter Kuznick, Japan, the Atomic Bomb, and the "Peaceful Uses of Nuclear Power"

Andrew DeWit, The Earthquake in Japanese Energy Policy

https://doi.org/10.1017/S155746601203834X Published online by Cambridge University Press