

### **At the 14th Japan-Taiwan Energy Seminar**

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On April 19, the 14th Japan-Taiwan energy seminar took place in Taipei. Since the first one in 2001, the seminar has been held alternately in Taipei and Tokyo. In the latest seminar as well as earlier ones, Japanese and Taiwanese energy policy and industry stakeholders and energy experts such as those from think tanks participated to frankly discuss Japanese and Taiwanese energy problems and bilateral energy cooperation.

About 50 Taiwanese participants in the seminar included Bureau of Energy Director-General Lin Chuan-neng and other senior BOE officials, executives of energy companies such as state-run oil and electricity firms, and experts from think tanks including the Industrial Technology Research Institute, the Institute of Nuclear Energy Research and the Taiwan Institute of Economic Research. Following opening remarks by Director-General Lin and Masakazu Toyoda, chairman of the Institute of Energy Economics, Japan, participants discussed Japanese and Taiwanese challenges and bilateral energy cooperation in four sessions – (1) general energy policies, (2) power market reform, (3) new technologies such as hydrogen, electricity storage and smart energy systems, and (4) LNG problems. In each session, the Japanese and Taiwanese sides made their respective presentations before active discussions based on the presentations. In the following, I would like to summarize the points that were particularly impressive for me at the seminar.

First, I strongly felt that Taiwan is stepping up efforts to phase out nuclear power plants under the present administration. Two years after the inauguration of the Tsai Ing-wen administration, Taiwan is considering and implementing strategies under the administration's energy policy calling for a nuclear-free homeland. Taiwan now has three nuclear power stations operating six reactors with capacity totaling 5.2 GW. Nuclear power generation had been positioned as a baseload power source but has recently reduced its share in the power mix. Taiwan plans to cut nuclear energy's share in the power mix from the still high level of 9% in 2017 to zero in 2025. It has decided not to use the existing three nuclear power stations and the fourth one that is close to completion after construction costing nearly 1 trillion yen. Taiwan's nuclear power generation has achieved good performance in terms of safety and capacity factors. However, the Taiwanese people have been strongly concerned about nuclear safety. Amid growing anti-nuclear movements after the Fukushima accident in Japan, the current Taiwanese administration has decided to pursue a nuclear-free homeland.

The decision has been significant for overall energy policies and became the most important point in the first session dealing with general energy policies. In the other three sessions as well, the nuclear energy problem was a key background factor. How will Taiwan (1) promote power market reform, (2) develop and diffuse advanced technologies to expand renewable energy as an

alternative to nuclear energy, and (3) secure stable supply of LNG expected to play a greater role in power generation, while proceeding with the nuclear phaseout? With such question in mind, the Taiwanese side was apparently willing to learn lessons from and promote energy cooperation with Japan that has energy policy challenges similar to those in Taiwan and has faced and tried to resolve various problems.

Energy policies must be designed to simultaneously achieve the so-called 3E's – energy security for the state and its people, environmental conservation and economic efficiency. For Japan and Taiwan, nuclear safety must be added. Their policies thus must pursue the 3E's plus S. National strategies and initiatives to achieve the 3E's plus S must meet national conditions. As a matter of course, therefore, any national decision should be respected.

The energy turnaround to eliminate nuclear power generation in 2025 will be a major challenge for Taiwan. In exchange for cutting nuclear energy's share in the power mix from 9% in 2017 to zero in 2025, Taiwan plans to expand renewable energy's share from 5% to 20% and gas's share from 39% to 50% while lowering coal's share from 39% to 30%. At the seminar, the Taiwanese side explained policies and plans to substantially expand renewable energy over the next eight years. We understood that Taiwan gives priority to increasing solar photovoltaics generation capacity to 20 GW and wind power generation capacity to 4.2 GW by 2025. Through discussions at the seminar, I felt that Taiwan sees technology development for power storage and demand side management as important for the expansion of intermittent renewable energy.

As LNG is planned to become the most important baseload power source with its power mix share rising to some 50% due to the nuclear phaseout in 2025, Taiwan's LNG procurement is expected to expand by 6.75 million tons or about 40% from 16.79 million tons in 2017 to 25.34 million tons in 2025, according to a Taiwanese report at the seminar. When all Japanese nuclear plants were shut down after the Fukushima accident, LNG power generation accounted for about 50% of total generation, making stable LNG procurement a very important challenge. Then, Japan suffered from the so-called Asian premium on LNG prices indexed to rapidly increasing crude oil prices. Given the Japanese experience, stable LNG procurement at competitive prices is likely to become a key challenge for Taiwan. While the LNG market remains a buyer's market with oversupply, future developments are uncertain. Stable LNG procurement will remain a key challenge both for Taiwan and Japan. Then, cooperation between LNG consuming countries including Japan and Taiwan will remain important along with dialogue between LNG consuming and producing countries.

Regarding the 3E's, the target power mix for 2025 indicates that Taiwan intends to achieve energy security by raising its energy self-sufficiency rate through the expansion of renewable energy even with nuclear power generation being phased-out and to suppress carbon dioxide emissions by expanding renewable energy, reducing dependence on coal and promoting energy conservation. However, the combination of the sharp nuclear and coal decline and the substantial renewable energy and LNG expansion is likely to boost overall power generation costs. Particularly, the expanding share for intermittent renewable energy will bring about the problem of costs for integrating intermittent power supply into power grids, leading Taiwan to consider how to hold down total cost increase in the electricity system. The Taiwanese side is keenly interested in Japan's

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present energy policy discussions covering these points. It is significant for Japan and Taiwan to promote their dialogue and cooperation to realize well-balanced energy policies and mixes for the 3E's.

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