[SE2-GB-2] Japan's Nuclear Program after Fukushima

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Full Summary

The panel "Japan's Nuclear Program after Fukushima" was moderated by Ms. Ahn Chak-hee (Deputy General Manager, jTBC), and the panelists were Prof. Shuichi Iwata (University of Tokyo), Mr Katsuhisa Furukawa, (Fellow, Research Institute of Science and Technology for Society), Prof. Il Soon Hwan (Soul National University), and Dr. Tatsujiro Suzuki (Vice Chairman, Atomic Energy Commission of Japan). Though the title of panel was "Japan's Nuclear Program after Fukushima", most of comments provided by panelists and discussions were mainly focused on perceptions towards the Fukushima nuclear accident and lessons learned from it, rather than predictions on the Japan's nuclear program.

The first panelist, Prof. Iwata, started his comment with stating his regret of failure to integrate knowledge from the other field to avoid the accident. He said there was an ancient document which recorded a huge Tsunami experience in Tohoku area about 1200 years ago. He also mentioned there was an Indian nuclear reactor which suffered large Tsunami caused by Sumatra earthquake in 2004. Knowledge from these experiences might be useful to avoid the accident if they were successfully associated with safety of Japan's nuclear power plant.
He also stated the need of "Re-engineering of nuclear engineering" to overcome the limitation of existing sciences. He categorized existing sciences to 6 groups; observation science, experience science, theoretical science, computational science, data science and design science. All of them revealed their limitations by facing Fukushima accident. For example, observation science was not ready to predict earthquakes and Tsunamis. Experience science didn't work well with shortage of information. Theoretical science had a great challenge to make bridges among different theories. Computational science couldn't avoid margin of softwares. Data science was not enough sufficient to extract valuable findings. Design science couldn't succeed in contributing prosperity of society. Taking these points into account, sciences after Fukushima need holistic view and have to balance different solutions.

For the conclusion, he emphasized the importance of association of knowledge from different fields and cases, and needs to prepare good data of Fukushima accident which should be shared over the world.

The second speaker was Mr. Katsuhisa Furukawa. He considered this earthquake as a black swan and the problem which we are facing is how to prepare for and respond to the black swan.

At first, he claimed insufficient preparedness of the government and utilities to nuclear emergency. For example, the emergency response plan which had been prepared by them didn't list the possible situations solely, since there were inadequate assumptions for the basis of emergency response plan, such as number of reactors in emergency situation and existence of external power source (these two assumptions were not true for situation at Fukushima). Also the exercises which had been conducted by government annually before the earthquake were inadequate, since they become merely formalities.

He also pointed that the actual responses taken by the government were questionable. The government didn't implement the original emergency response plan and that decision was made based on a fact that they couldn't establish local headquarter on site because of damage of earthquake to buildings. He considered that fact was not enough for the government to change whole emergency response plan and the government shouldn't do as they actually did. He claimed a lot of separated press conference made situation worse, since they caused conflicts of information and ruined trust with general public. Lack of utilization of accessible resources, such as robotic technology, was also a big problem and it was government's failure to coordinate all resources.

Finally, he presented his own ideas to operate emergency response exercise regionally or internationally, and to create new international authority for nuclear safety regulation. Cooperated exercises are needed because of the concerns of poor preparedness of some other countries, such as DPRK. New international authority is important because IAEA won't be able to perform that role completely because it has conflict of interest between promotion and safety of nuclear energy.

Thirdly, Prof. Hwan stated his observation of the impact of Fukushima accident. He started his presentation from similarities between Japan and Korea. There are three major similarities of energy situation in Japan and in Korea; lack of fuel resources, fear of energy shortage and dependency to nuclear power production. In the more general sense, Japan and Korea have a lot of similarities such as lack of transparency for their bureaucracy and tendency to avoid

reputational damage. Moreover, Japan was a role model for Korea and Korea should learn from Fukushima accident.

After that, he emphasized the importance of nuclear energy business and the right decision to depend on nuclear power which was made by both Japan and Korea. He considered that one of the central issues raised by Fukushima accident was a failure of bureaucracy, especially lack of independent regulatory body, which might be important for Korea to learn. At the end, he proposed annually Fukushima forum and stated we have to learn a lot from this accident and make it as a new start for growth.

The last but not least, Dr. Tatsujiro Suzuki expressed his points. At first, he stated that Fukushima accident is not over yet though the title of panel is Japan's Nuclear Program "after" Fukushima. Reactors at Fukushima are relatively stable and under control but need much more time to be settled. Clean-up of surrounding area is the most challenging and important issue though the radiation diffusion is about one-tenth of Chernobyl accident.
Secondly, he emphasized the importance of clean-up and maintenance of areas suffered by radiation diffusion and the ensuring welfares of the people who once lived there and are evacuating at this moment. "How soon can they back to their own place?" is the most considerable question to answer.

He claimed the importance to learn lessons from this accident and he introduced governmental report on the Fukushima accident which released recently. It already includes most of the points mentioned by other panelists.

At the end, he pointed out the short term and long term challenges for the Japan's energy policy. For short term, ensuring the safety of existing nuclear reactors will be the biggest challenges since the fact that all of existing nuclear reactors will be shut downed by the end of next year without restart of operation after regular inspection period. On the other hand he introduced government's decision to scrap its plan to expand share of nuclear energy and start discussion with a clean slate. He also introduced prime minister's speech at OECD including four pillars of Japan's energy policy; implementation of highest safety standard to nuclear power plants, expansion of renewable energy, efficient use of fossil fuels and improvement of energy saving. Rebuilding public trust is the biggest issue and majority of the public consider they should gradually move to reduce nuclear power plants in Japan.

From the floor, there were questions on following topics; establishment of new international organization for nuclear safety, problem of Japan's nuclear regulatory body, rationality of building nuclear power plants at earthquake-prone area, cancellation of Japan's nuclear energy policy.

There was a negative comment on establishment of new international organization for nuclear safety because of difficulty to create international consensus, but Mr. Furukawa answered it with step-by-step approach, such as start from small commission with peer review method and gradually strengthen it. To the comment that IAEA is already playing the role as an authority of nuclear safety, he emphasized again IAEA has conflict of interest because of its multiple pillars. But at the same time, he understood we should choose better way from strengthening IAEA and creating new international organization.

Though many people claimed political independency is the most crucial problem for Japan's nuclear regulation, Dr. Suzuki stated that technical independency is also important. In Japan, it is difficult to find nuclear experts who are completely independent from industry and utility, and also difficult to cultivate expertize in governmental organization because of its personnel system which circulate people every few years.

A question on rationality of building nuclear power plants at earthquake-prone area made an argument. Prof. Iwata stated that safety systems have done well to shut down reactors for the response to earthquake and the accident was a typical multiple organization failure which we have to overcome. Prof. Hwan stated that main cause of the accident and we already have technology to improve safety of nuclear power plants which haven't introduced to Fukushima reactors.

To the question on Japan's nuclear energy policy, Dr. Suzuki confirmed that Japan's government just cancelled its original plan to expand nuclear power. Government didn't cancel its nuclear fuel cycle policy or international nuclear export. New nuclear energy policy will be decided after debates.