Current Issues of Japan's Nuclear Energy Policy[1]

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Thank you Mr. Chairman.

Distinguished guests, ladies and gentlemen, it is a great pleasure for me to have the chance to give you a quick overview of the Japanese nuclear energy policy.

Japan has now 53 operating nuclear power generation units of which total capacity is 48 GWe. They have supplied about 30 % of total electricity generation in Japan since 2000. This nuclear power is raising the energy self-supply ratio from 4 % to 19 % and contributing to the significant reduction of carbon-dioxide emission to the atmosphere in Japan.

The goal of nuclear energy policy in Japan is therefore to realize a society in which nuclear power generation will contribute to both the improvement of energy security and the reduction of carbon dioxide emission as a major player and in a sustainable manner.

The key policy objectives to pursue this goal are;

- Continue to assure nuclear nonproliferation, security and safety;
- Improve the capacity factor of existing nuclear power plants and steadily add new plants;
- Ensure the public trust in both nuclear facility operators and nuclear administration including safety regulation, securing adequate human resources and maintaining the science and engineering basis necessary for nuclear power generation;
- Establish nuclear fuel cycle activities including radioactive waste management;
- Promote research and development (R&D) of fast breeder reactor and its fuel cycle technology, nuclear hydrogen production, fusion reactors and other innovative nuclear energy technologies; and
- Strengthen international cooperation for pursuing mutually beneficial promotion of nuclear energy use in a manner that is efficient, safe, and secure, and strengthens nonproliferation regime.

As for the recent actions related to the first objective of assuring nuclear nonproliferation, I would like to point out two actions. First, Japan has adopted, in addition to the guidelines of the Nuclear Suppliers Group (NSG), the acceptance of the Model Additional Protocol (AP) as a condition of all nuclear exports. Second, the Atomic Energy Commission (AEC) is asking the top managements of the government and industries to cultivate a nuclear

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safeguards culture and a nuclear security culture in the workshops dealing sensitive materials and information, clarifying that they are responsible to arouse awareness regarding the importance of safeguards and security activities among peoples working in their organizations.

As for actions to maintain the public trust in both plant operators' safety management and the Government's regulatory activities for nuclear safety, an urgent one is the re-evaluation of seismic safety of every nuclear facility in Japan, taking into consideration of lessons learned from the July 2007 seismic event at Kashiwazaki-Kariwa nuclear power plant in which the seismic input to the plant significantly exceeded the level of design basis seismic input. We hope that this review activity will be completed in a year or so.

As for operation and construction of nuclear power plants (NPPs), an urgent issue is to improve the capacity factor of the operating plants and construct new NPPs steadily, as the government is to decide the request to significantly reduce carbon dioxide emission from electric power generation sector before 2020.

In the past twelve months, however, though the average capacity factor of pressurized water reactors (PWRs) was about 80 %, that of boiling water reactors (BWRs) was about 50 % as many BWRs experienced unexpectedly strong seismic input and has been forced to suspend the operation until the re-evaluation of seismic safety is accepted by the regulatory authority. Therefore the completion of aforementioned seismic safety review of existing plants and the improvement thereof based on the review is again a high priority task in our society.

As for new builds, currently 3 units are under construction and 12 units are in planning stages: it is expected that at least nine units will be completed before 2018.

In order to promote the construction of NPPs as planned, the AEC is asking relevant organizations to maintain a firm nuclear science and engineering knowledge basis for nuclear power generation in the society and assure sufficient supply of quality human resources by supporting stable research and development activities that challenge to diverse tasks important for enriching the knowledge basis for regulatory organizations and the nuclear industry and by encouraging universities to promote attractive nuclear education, training and research.

In the nuclear fuel cycle sphere, Japan's strategy is to reprocess used-fuel from light water reactors (LWRs), using the recovered plutonium and uranium in LWRs, fabricating them into mixed-oxide (MOX) fuel and to vitrify high-level radioactive waste from the reprocessing.

Currently the JNFL is expected to start commercial operation of the Rokkasho Reprocessing Plant in a year or so, carefully overcoming the difficulty in establishing the operating procedure for the vitrification facility.

We are also expecting the electric utilities to construct so-called away-from-reactor interim storage facilities for used-fuel, as the generation rate of used-fuel will be larger than the capacity of the RRP.

It is vexing to report that the today's situation of the selection of a municipality that will entertain the siting of the geologic disposal facility of high-level waste (HLW) is almost the same as that I reported in this seminar two years ago.

Although the Nuclear Waste Management Organization (NUMO), an authorized organization to promote the disposal activity, has strengthened public information activities as to the importance of the disposal facility, no municipality has applied to the invitation yet. The AEC has been strongly recommending the NUMO and the government agencies concerned to strengthen public information activities so that the public could overcome the uneasiness and the NIMBYism they feel about the disposal facility, informing the scheme of the public support for the sustainable development of the municipalities that accept the siting, from the viewpoint of equity of benefit, as well as the safety and the importance of the facility.

One of the major actions for the research and development of innovative nuclear energy technology is to develop the next generation LWRs that will be competitive in the social and economic conditions in 20-30 years, taking into account revolutionary changes in science and technology on the horizon, such as high burn-up fuel, seismic isolation technology, advanced construction technology and advanced information technology for human friendliness and on-line inspection and maintenance for high plant availability. We hope that its basic designs will be completed in 2015.

The other major task is the research and development of fast breeder reactor and its fuel cycle technology. The goal of the project is to commercialize a fast reactor and its fuel cycle system by 2050 or so and we are currently promoting the R&D of innovative technology candidates from the viewpoint of realizing a design that satisfy design requirements of enhanced safety, economy, reliability and fuel utilization, low heat generation rate of radioactive waste and increased proliferation resistance. We hope that the JAEA will provide a conceptual design that will satisfy these requirements in 2015.

As for the international nuclear cooperation, the goal is to nurture and maintain international atmosphere for any country to be able to utilize nuclear energy in a manner that is efficient, safe, secure and support nonproliferation.

To pursue this goal, we put emphasis on efforts to;

- Assist newcomer states to develop necessary infrastructure for nuclear energy utilization;
- Contribute to the multilateral activities of the IAEA and NEA, etc. as they are providing

indispensable opportunities for global community to cooperate for better world;
- Promote mutually beneficial cooperative activities with other countries in the areas of technology innovation and combating global warming.

It should be mentioned at this juncture that last week Japan's Prime Minister Hatoyama and US president Obama confirmed that both countries were pursuing many of the same nuclear energy technology goals and so faced many of the same technical challenges and already had significant nuclear energy cooperation under the Japan - U.S. Joint Nuclear Energy Action Plan and would build on existing programs in those areas such as fourth generation technologies and advanced fuel cycle technologies.

The AEC is also recommending nuclear industries in Japan to contribute to the promotion of nuclear energy utilization in the world, as they have demonstrated their capability to complete NPP construction projects on time and on budget and supply high quality systems and components, including the largest forged components in the world to domestic and foreign customers.

Specifically we are suggesting them to work with electric utilities with a view to sharing with foreign operators the organizational culture to value quality, a sense of security, cleanliness of workplaces and visualization cultivated in Japan by providing unique technological solutions that reflect these value systems as added value.

Finally let me touch upon Japan's position on the strengthening of international nonproliferation regime.

Japan is a firm believer of the necessity and effectiveness of the IAEA safeguards system for the assurance of nuclear nonproliferation in the world and would like to continue to support and cooperate with the IAEA for strengthening this function.

At the same time, we have recognized the international reality that forces us to consider the universalization of the IAEA safeguards as only a part of international nonproliferation policies.

At this moment, the IAEA is encouraging member countries to take concrete actions to establish fuel supply assurance mechanisms to make it unnecessary to construct a small uranium enrichment plant in newcomers.

The next step in this respect should be regional used-fuel storage centers and reprocessing centers for fuel suppliers to entertain cradle to grave services.

Here again I would like to point out that the head of both Japan and the US agreed last week that both countries intent to work together and with other countries to explore ways to enhance a new framework for civil nuclear cooperation, including assurances of fuel supply, so that countries can access peaceful nuclear power without increasing the risks of

proliferation and agreed that cradle-to-grave nuclear fuel management could be one important element of the framework.

In conclusion, Japan is firmly committed to make nuclear technology politically as well as technologically sustainable. Japan will do so in cooperation with international society and with the US in particular as collaboration is essential to the success in rising to these challenges and as nuclear energy is an asset for mankind to design a sustainable future.