Reflecting on Japan's Energy Policy Review

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Japan's energy strengths and weaknesses assessed by the IEA

After enduring the Great East Japan Earthquake, the ensuing tsunami, and the resulting accident at Fukushima Nuclear Power Plants, our nation has embarked on an energy policy review from the ground up. I look forward to bold efforts that proceed with needed reviews, which should follow from accurately assessing the advantages and challenges of the energy policy to date, and which consider the current circumstances of Japan's energy position.

International Energy Agency (IEA) appraises and recommends improvements to the energy policies of member nations every five years through an audit held from three perspectives, or the '3E's: energy security, environmental sustainability, and economic efficiency. The superiority of Japan's energy policy is noteworthy for establishing energy security through ample petroleum stockpiling, LNG development, and energy diversification that includes nuclear power; successful energy conservation through innovative policies like the Top Runner Program; and leading energy technological development inside and outside the nation through solid research and development programs.

On the other hand, from a perspective of energy security, a challenge is the reinforcement of power grid alignment between electric power companies, and especially between eastern and western Japan. The IEA has appealed this need to the Japanese government for more than 10 years. The nations of the EU are mostly unified at 50 Hertz, for example. Their power grids are mutually linked and create a unified market as basic security. In comparison, the current system in Japan is quite unusual among developed nations, with different frequencies between the East and West, and the IEA considered this a serious power outage risk under an emergency. It is truly unfortunate to see that 3.11 proved the IEA assertions to be correct.

For the future, the deployment of machinery that can generate at both 50 and 60 Hertz is possible at the time for replacement of the relatively fewer generators in eastern Japan as a way to unify with the 60 hertz of western Japan over a horizon of around 15 years, and this plan should be decided sooner than later. Interconnecting grids internationally between neighboring South Korea or with Russia by deploying DC high-voltage transmission technology can expand the buffering function of the market. In particular, Korea, which has a comparable energy mix to Japan, recently experienced massive power outages caused by system failures. The two countries can easily surmise that mutual grid interconnectivity for sharing in emergencies is indeed a countermeasure. In relation to the above, the separation between power generation and transmission, the consolidation of electric utilities and promoting entry of operators employing renewable energy sources are some of the urgently needed domestic power market reforms to create a fair, efficient, and open market.

Incidentally, reinforced alignment of the grid to create one domestic market and to enlarge the market by linking overseas can promote the usage of renewable energy such as solar and wind power that continually fluctuates over time. The competition in this unified market can sharpen and enhance the commercial instincts of the power companies as well. This type of policy reform is exactly the reason why a wind power generating company in Spain became the world's largest wind-power generating company. These reforms killed two or three birds with one stone, and represent fundamental EU energy policy. I feel that we currently have an excellent opportunity to debate all of the options with no sacred cows, with reference to energy

market reforms already advancing overseas like this.

Experience of, and overcoming the Fukushima Nuclear Power Plants Accident contribute to our energy knowledge base

Another note by the IEA concerns the low utilization rate of nuclear power generation. Currently, the utilization rate is at an abnormal level of 25%. If no restarts are authorized in the future, all of the nuclear power plants will stop operating in the summer of 2012. In addition, alternative fuel costs will require expenditures of 3 trillion yen (37.5 billion dollars) annually. Compared to the IEA member nation average of 85%, the utilization rate was already quite low at 70% before the Fukushima accident. Although difficult to assert after Fukushima, the IEA concluded at the time that over-regulation was possibly an issue. Of course, the most pressing issue now is to increase the safety of nuclear power plants through the thorough elucidation of the Fukushima accident. Safety and assurance, however, are not the same. The IEA noted that if a power plant is deemed scientifically safe, over-regulation for the purposes of assurance would invite higher cost.

With respect to the position of the regulatory agency for nuclear power, the form of an independent regulatory committee like the United States Nuclear Regulatory Commission (NRC) was noted as desirable. But even if not, the IEA suggested that the independent nature of the Nuclear and Industrial Safety Agency (NISA) should be more clearly explained to the general public and investors. In addition to reinforcement of power grid connections, enhancement of supporting measures to further introduce renewable energy was noted as necessary. Among these points, with respect to enhancement of supporting measures for renewable energy, a new law for a mandatory purchasing program was enacted, and division of the NISA was decided. Discussions have just started, however, for measures to increase energy security.

Petroleum stockpiling constituted energy security in the 20th century, but the stable supply of electric power represents the issue facing energy security in the 21st century. For instance, industries and households successfully conserved 20% of electricity consumption at peak times on weekdays during the electricity-saving effort last summer. This success offers gold nuggets of wisdom in considering demand management for the future. In addition to managing fluctuations on the supply side, smart grid technologies that intelligently match the demand side to supply with smart meters will be important for energy security in the 21st century. There are many other technologies that can enhance energy security, such as electric vehicles on the demand side, as well as power storage, hydrogen fuel cells, superconductive transmission with zero transmission loss, carbon dioxide capture and storage, methane hydrate mining, etc. Japan could contribute to the world through the development of these technologies.

Assistance arrived to Japan from around the world after 3.11, and the world is now focused on how Japan will recover from this unprecedented hardship. I had the opportunity to speak with energy policymaker ministers with whom I have had long-time acquaintances when I was invited last year in October to the IEA ministers' meeting. I was greeted with words of encouragement: "Nobody is asking Japan to abandon nuclear power plants, but to continue their operations safely. For that reason as well, share with us your lessons learned from the Fukushima accident. Then nuclear power plants around the world have a chance to become safer." Japan can give back, in other words, by sharing its lessons learned from the earthquake and Fukushima.

The Fukushima Nuclear Power Plants accident has prompted a review from the ground up for Japan's energy policy. The 21st century will be an era calling for comprehensive energy security through the supply of highly sustainable electric power, by skillfully balancing among natural gas (and the impending shale gas revolution), cleaner coal, safer nuclear power, and renewable energy. Japan should consider the nation's energy mix and design of its electricity market by keeping in mind the hallmarks of energy security throughout Asia and around the world. I have also heard of criticism from many friends abroad,

that Japan has become ingrown as of late. Now is a splendid opportunity for Japan to redeem itself. After all, the eyes of the world have been focused on Japan since the Fukushima accident.