Commentary

Recent Nuclear Policy Trends in Major Countries Post Fukushima Accident

The Institute of Energy Economics, Inc. Japan,
Tomoko Murakami

The accident at the Fukushima Daiichi Nuclear Power Plant led to discussions in many countries. While there are countries that are freezing new construction or extension of the operation of existing power plants, there are also other countries that are not planning to change their basic policy of nuclear energy promotion. In circumstances wherein severe attention is paid toward securing the safety of nuclear reactors, the actual state of future nuclear energy development is assumed to reflect the energy, environmental, economic, and industrial situation of individual countries.

I. Categories of Nuclear Energy Development Trends of Each Country

As of May 2011, nuclear power is used in 30 countries around the world. However, its position and development policy differs among these countries depending on the macro situation of their energy, economy, and industry.

Figure 1 shows the mapping of the capacity of existing nuclear power plants and the capacity of facilities of major countries (regions) around the world that are predicted to be newly built by 2035. The horizontal axis represents the capacity of existing facilities by countries (region) as of the end of 2009, whereas the vertical axis represents the capacity of the facilities predicted to be newly built by 2035.

The following is the categorization indicated by this map.

Countries that use/promote nuclear energy: Countries that have been actively developing nuclear power nationally and actively expanding internationally from the perspectives of improving the rate of energy self-sufficiency or strategic industrial growth. Though the necessity of new facilities of each country is different, they commonly position nuclear energy as their strategic industry.

(1) Nuclear energy high-growth countries: Countries that require large-scale construction of new facilities in the future due to the increase in energy demand.
(2) Countries considering the introduction of nuclear energy: Countries that were able to function without nuclear energy until now but considering its introduction in the future due to increasing energy demand and necessity of saving fossil fuel.
(3) Countries tending toward abandoning nuclear energy: Countries that already have

DOI : 10.15669/fukushimainsights.Vol.1.64
© 2021 Atomic Energy Society of Japan. All rights reserved.
Originally published in Journal of the Atomic Energy Society of Japan (ISSN 1882–2606), Vol. 53, No. 7, p. 489–490 (2011) in Japanese. (Japanese version accepted: May 16, 2011)

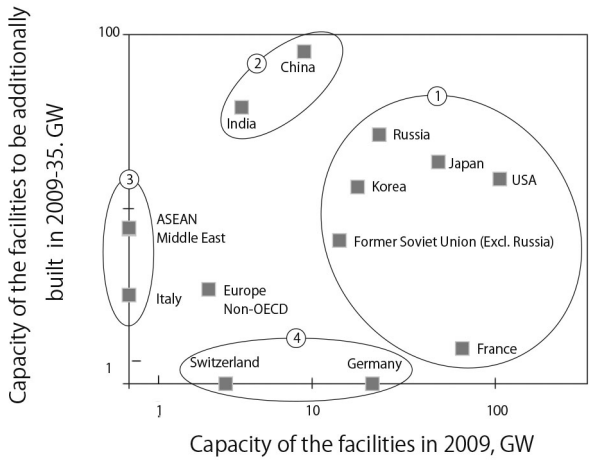

Figure 1 Current capacities of nuclear power plants in major countries around the world and the prediction of their new facilities by 2035

(Source), "Direction of International Nuclear Power Development 2010", Japan Atomic Industrial Forum, April 2010, and "Asia/World Energy Outlook," (Foundation) The Institute of Energy Economics Japan, October 2010

nuclear energy in their energy portfolio and do not need further expansion.

II. Reaction of Other Countries to the Fukushima Daiichi Nuclear Power Plant Accident and the Current Status of Their Policy Responses

1. Countries Using/Promoting Nuclear Energy (the US, France, South Korea, and Russia)

The United States Department of Energy made a statement on March 15, 2011 that said there will be no change in its basic energy policy that aims for the energy best mix toward low carbon. It also stated that it will learn many lessons from the accident in Japan and will continue to improve safety. Although there are construction projects of new power plants that are suspended due to the withdrawal of the business operators, they are caused not by the accident but by an increase in the construction cost and fund burden that were already causing problems even before the accident. The accident "is not considered to have reversed the renaissance."

In France, President Sarkozy immediately after the accident said that "it is impossible for France to abandon nuclear energy for its energy self-sufficiency" while promoting safety check of its nuclear energy facilities. President Putin of Russia instructed Sergey Kiriyenko, the director general of Rosatom, to conduct an inspection on the safety of nuclear reactors in Russia immediately after the accident. However, this was conducted with the premise of maintaining Russian nuclear energy. The South Korean government made a statement at the nuclear energy committee held on May 6 that safety of the design/operation of the nuclear reactor facilities within South Korea was verified after their safety inspection. Moreover, it also presented safety improvement measures in 50 points that enabled safe operation of

nuclear power plant even during the worst natural disasters.

As seen above, there is no change in the basic policies of these countries, which positions nuclear energy as an important energy source while further improving its safety.

2. Nuclear Energy High-Growth Countries (China and India)

On March 16, the State Council of the People's Republic of China made a statement that said it will conduct inspection of Chinese nuclear reactor facilities in response to the accident in Japan and suspend its medium- and long-term plans, including the plans for new construction that are currently under consideration, until the completion of the inspection. Although this reduced the likelihood of achieving the "86 million kW by 2020" plan that was progressing in high speed until then, there is no change in its policy to promote nuclear energy in the long term. As planned, the Ling Ao Nuclear Power Plant under construction is predicted to start its operation in June 2011. In India, on April 26, Prime Minister Singh restated the policy of the country to maintain its active development of nuclear energy and announced the preparation for establishing an independent organization for safety evaluation of nuclear power plants in India.

Thus, even though there is a possibility of slight slowdown due to safety verification, there is no change in the policy of both countries to promote long-term development due to the necessity for securing energy supply that meets the increased demand.

3. Countries Considering the Introduction of Nuclear Energy (UAE, Turkey, Vietnam, Indonesia, etc.)

There have been various reactions from the countries in this category. The minster of Abu Dhabi Water and Electricity Authority clearly stated that "nuclear energy is a technology that should be introduced to our country and there is no change in the plan to start the operation of the first unit in 2017" because "expansion of renewable energy alone will not be enough to satisfy the rapidly increasing demand for electric power" immediately after the accident. President Medvedev of Russia met the Prime Minister Erdoğan of Turkey on March 16 immediately after the accident and discussed the installation of Russian nuclear reactor in Turkey. On March 16, the ministries responsible for nuclear energy in Vietnam stated that "the construction plan in Ninh Thuan Province was approved by the government and there is no change in the plan" in the media briefing on the nuclear power introduction plans for the country and expressed their firm resolution to strictly enforce the safety measures concerning the nuclear energy introduction. During the Association of Southeast Asian Nations (ASEAN) summit held in Jakarta, Indonesia, on May 06–May 08, it was agreed to improve information sharing and transparency related to nuclear energy issues within the area while confirming the policy to employ the safety standards of the International Atomic Energy Agency (IAEA) for the development. The background of this agreement is the fact that there still are many countries intending to actively develop nuclear energy.

These trends show that among the countries considering the introduction of nuclear energy due to energy-related issues, e.g., increase in electric power demand, or countries that already have concrete construction plans, the basic intention is to pursue the existing plans while ascertaining safety. However, it is also true that countries that do not meet the aforementioned conditions are increasingly cautious about developing nuclear energy.

4. Countries Tending Toward Abandoning Nuclear Energy (Germany, Switzerland, etc.)

Discussions on reconsidering nuclear energy in these countries are uniformly severe.

The country that responded most swiftly was Germany. On March 15, only three days after the accident, Chancellor Merkel announced moratorium of the extension of German Nuclear Power Plant operation that was approved by the cabinet only a year earlier and seven existing reactors were shut down immediately. Following this on May 30, the ruling coalition parties agreed to decommission every nuclear power plant in Germany by 2022. Switzerland also agreed on a national objective to decommission its five nuclear power plants by 2034 on May 25. The concern about the safety of existing nuclear reactors is spreading throughout Europe. On March 21, an emergency meeting of EU energy ministers was organized in Brussels; it was decided that safety stress test will be conducted at every nuclear power plant currently operating in the EU. On May 24, specifications that can withstand large-scale natural disasters as well as man-made phenomena were decided. However, European power companies have been conducting individual safety inspections prior to this.

The problem in the tough debate on abandoning nuclear energy is that the existing nuclear reactors are in operation with a considerable share in many major European countries. Early abandoning of nuclear energy is not realistic without securing alternative energy sources. The premise of the “safety verification” of existing reactors is the continuation of nuclear energy or it is unthinkable unless at least continuation is being considered. Even the countries Germany and Switzerland that promptly decided on total decommission are not in situation to immediately abandon the usage of nuclear energy due to the current situation. Moreover, instead of perceiving the accident as a direct trigger, it is more reasonable to view the freezing of new construction as a result of the ongoing argument over the cost competitiveness and the relative relation with other energy trends has been repeatedly progressing and retreating but is now in the trend of falling backward in response to the accident.

III. Summary

To summarize these points, while countries that position nuclear energy as an important part of their energy portfolio maintain the basic policy to value it, countries that were already cautious about nuclear energy increased its inclination toward caution. As the demand for countries around the world to learn lessons from this accident and secure the safety of nuclear power plants increases, a common important factor involves satisfying the strengthened safety standards. However, it is inferred that the fact that nuclear power is adopted (or not adopted) according to the energy/economic situation and cost competitiveness of each country is not going to change in the future.