

Impacts on Overseas Nuclear Power Development Policies by the severe accident at Fukushima Daiichi Nuclear Power Station

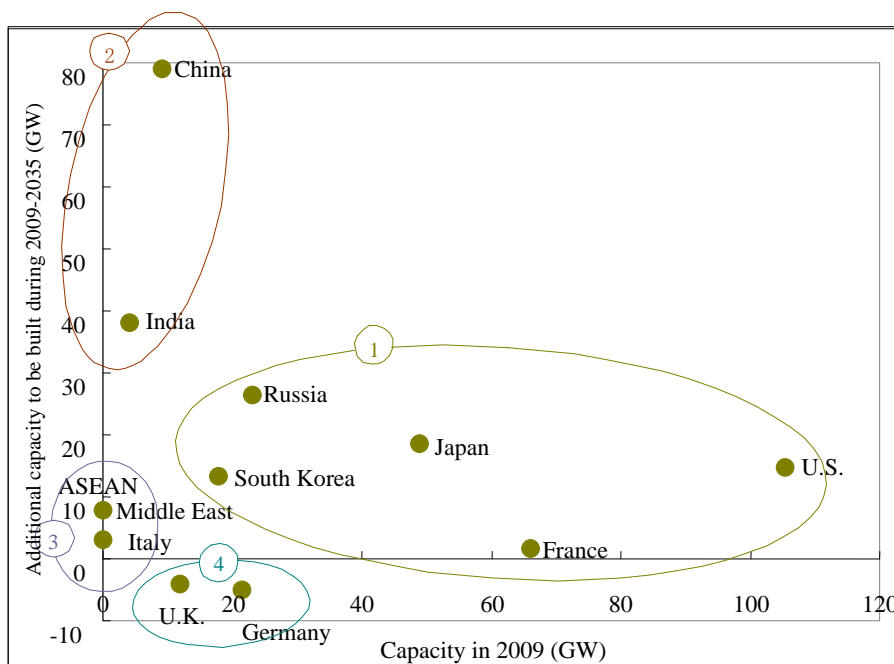
The Institute of Energy Economics, Japan

The severe accident at Fukushima Daiichi nuclear power station has triggered discussions on the safety of nuclear plants in many countries in the world. Some countries have halted plans to build new nuclear plants or to prolong operations of existing ones. Some others have vowed to make no change in their basic nuclear power promotion policy while implementing safety checks.

Based on national conditions, major countries are classified by nuclear power development policy into four groups – (1) Countries using and promoting nuclear power, (2) Countries required to substantially expand nuclear power, (3) Countries planning to introduce nuclear power and (4) Countries tending to switch from nuclear power. The accident has had different impacts on these groups. Views will grow in general more critical about nuclear power, however, trends of determination of energy portfolios would not drastically change that each country may choose its own course based on the energy, environmental, economic, industry and other conditions.

1. National nuclear power development policies

Figure 1 maps data for existing nuclear power capacity and additional capacity expected to be built by 2035 in major countries (or regions). The horizontal axis indicates capacity at the end of 2009 and the vertical axis additional capacity to be built by 2035.



The map and the relevant classification means as follows:

(1) Countries using and promoting nuclear power: These countries have proactively promoted domestic and overseas nuclear power development in order to improve energy self-sufficiency rates or to contribute to industrial growth strategies. While the numbers of new nuclear plants required to be built differ from country to country, they have persistently positioned the nuclear as one of their strategic industries.

(2) Countries required to substantially expand nuclear power: These countries are required to build far more nuclear power capacity to meet growing energy demand.

(3) Countries planning to introduce nuclear power: These countries have so far kept from depending on nuclear power under their respective energy conditions and are planning to introduce nuclear power for such reasons as growing energy demand and saving fossil fuel resources.

(4) Countries tending to switch from nuclear power: These countries have already had nuclear energy included into their energy portfolios and see little need to expand nuclear power capacity.

2. Reactions in major countries or policy responses to Fukushima accident

(1) Countries using and promoting nuclear power (U.S., France, South Korea and Russia)

On March 15, the U.S. Department of Energy announced that there would be no change to the basic U.S. energy policy of pursuing the best energy mix for a low-carbon society. It also stated that the United States would learn numerous lessons from the Fukushima accident and continue efforts to improve the safety of nuclear plants. In France, President Nicolas Sarkozy endorsed the European Union's decision to conduct stress tests of existing nuclear plants in the region and said that France would pursue energy self-sufficiency without abolishing nuclear energy. Russian Prime Minister Vladimir Putin ordered Rosatom Director General Sergey Kiriyenko to check the safety of nuclear plants in Russia immediately after the Fukushima accident. At a meeting of the nuclear committee, the South Korean government confirmed its policy of promoting nuclear power generation indispensable for stable electricity supply. It also launched safety checks on domestic nuclear power plants in a bid to take full advantage of lessons learned from the Fukushima accident.

The reactions such as safety checking or stress tests basically rests on the premises that these countries will maintain their basic policies to position nuclear power as an important energy source and continue their nuclear energy use while trying to further improve nuclear safety.

(2) Countries required to substantially expand nuclear power (China and India)

On March 16, China's State Council announced that the government would check the safety of domestic nuclear power plants in response to the Fukushima accident and review medium to long-term nuclear plant construction plans under licensing by the completion of the safety checks. This could make it difficult for China to achieve its aggressive plan to expand its nuclear power generation capacity to 86 GW by 2020. China has so far implemented the plan at a rapid pace and still have made no change to its policy of promoting nuclear energy over a long term. In India, Prime Minister Manmohan Singh ordered emergency safety checks on domestic nuclear power plants in operation, while Environment Minister Jairam Ramesh vowed that there would be no change to the

government's nuclear development policy.

As indicated above, the two countries plan to promote nuclear power development over a long term even at a slower pace than in the past while trying to improve the safety of nuclear plants, based on their energy conditions that require them to secure energy supply meeting growing demand.

(3) Countries planning to introduce nuclear power: (UAE, Turkey, Vietnam, Italy, etc.)

These countries have made various responses. After the Fukushima accident, the secretary of the Abu Dhabi Water and Electricity Department stated that Abu Dhabi should introduce nuclear technology and make no change to its plan to launch operations of the first nuclear reactor in 2017 because electricity shortages resulting from gas shortages are serious, and also renewable energy sources alone cannot satisfy fast-increasing electricity demand. In earthquake-prone Turkey where anti-nuclear movements grew in response to the Fukushima accident, the natural resources minister said there would be no immediate change to the governmental consultations with Japan and Russia on the introduction of nuclear power. In a media briefing on Vietnam's nuclear energy introduction plan on March 16, Vietnamese nuclear agencies stated that no change had been made to the Ninh Thuan Province nuclear plant construction plan as approved by the government. They indicated their determination to implement the plan while taking thorough safety measures.

Meanwhile, Italy, which revised a relevant domestic law to introduce nuclear power generation in 2009, has decided to freeze procedures for nuclear plant site selection and construction for one year.

As shown above, those countries which plan to introduce nuclear power generation to meet energy conditions including growing electricity demand and have decided on specific initial nuclear plant construction programs have thus indicated their intentions to proceed with their programs while improving safety. Some countries in this group, however, might have grown more cautious about nuclear power development.

(4) Countries tending to switch from nuclear power (Germany, Sweden, etc.)

These countries feature growing arguments against nuclear energy.

Germany indicated the fastest response to the Fukushima accident. On March 15, only three days after the accident occurred, Prime Minister Angela Merkel declared a moratorium on a plan adopted only last year by the Cabinet to prolong operations of domestic nuclear power stations and suspended operations of seven nuclear power plants. Concerns on the safety of existing nuclear power plants have spread throughout Europe. At an emergency meeting of EU energy ministers in Brussels on March 21, there were calls for implementing the stress tests of all nuclear power plants in operation in the EU area as soon as possible. In the next week, the Western European Nuclear Regulators Association submitted specific stress test plans to the EC. They have been implemented gradually. In the United Kingdom, the government, in a bid to check nuclear plant safety, temporarily suspended its new nuclear plant construction program aiming to launch operations of the first one in 2018.

While arguments grow for switching from nuclear energy, these countries already have nuclear power plants in operation accounting for major shares of their respective power capacities. It is unrealistic for them to switch from nuclear energy promptly without securing alternative energy sources. Stress tests of existing nuclear power plants rest on the premises of their continued use. Given that no stress tests should be proposed without such premises, nuclear energy would not be abolished immediately in response to the Fukushima accident both in Germany that has promptly declared a moratorium and in the United Kingdom that suspended the new nuclear plant construction program. At the same time, however, positive movements that had grown for nuclear energy use have been lost in those countries who does not suffered from serious power shortage threats so far..

3. Conclusion

The impacts of the Fukushima accident on overseas nuclear power development, as explained above, commonly indicate that safety requirements for nuclear power will be raised further and that meeting higher safety standards will be the key to future nuclear energy development. While countries that position nuclear power as an important part of an energy portfolio have maintained their basic policies of giving priority to nuclear power development, those that have traditionally been sensitive about nuclear power development have tended to review nuclear development plans or grow more discreet. Future reactions or responses to the Fukushima accident may differ from country to country depending on its respective energy conditions and policies just as they have done so far.

Contact: report@tky.ieej.or.jp