



Points of Discussion Concerning the Strategic Energy Plan I: The nuclear power replacement strategy

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Key Points

- Fifty years from now, no operational nuclear power reactors in Japan
- Postponements by politicians and bureaucrats have resulted in an absence of nuclear strategy and playmakers
- Deferred development of less toxic reactors to replace Monju

The Basic Energy Plan is revised every four years with the fifth plan about to be approved by Cabinet decision. Based on the Basic Act on Energy Policy enacted in 2002, the Basic Energy Plan indicates the guiding principles for Japan's medium and long-term energy policy. The first plan was formulated in 2003. Since then, the plan has been revised at intervals of three to four years. The fourth plan was formulated in 2014 as a result of the first reforms in the wake of the accident at the TEPCO Fukushima Daiichi Nuclear Power Plant in 2011.



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As a result, the Long-Term Energy Demand and Supply Outlook produced in 2015 assumed an energy mix for 2030 where nuclear power accounts for 20–22%, renewable energy 22–24%, and thermal power for 56%. The current revision maintains this forecast for the energy mix. Similarly to the previous plan, the fifth plan also avoids any descriptions of replacements for nuclear power energy, choosing to postpone the issue instead.



Aside from the discussions about the situation in 2030 conducted by the Basic Policy Subcommittee at the METI Advisory Committee for Natural Resources and Energy, the Round

Table for Studying Energy Situations was established at this time to conduct parallel discussions at the national level regarding the situation in 2050. The Round Table recommendations specify that the goal is to make renewable energies the main energy source by 2050, and maps out the position for nuclear power as a workable option for decarbonization.

Despite claiming that renewable energies will be the main energy source by 2050, there is very much a problem with the inconsistency of leaving the proportion of renewable energy in the 2030 energy mix at 22–24% without any upward revisions. However, this is not the problem I will explore here. Rather, I will delve into another major problem—the issue of whether nuclear power without a replacement strategy can be an option for decarbonization.

According to the 2012 revisions to the Nuclear Reactor Regulation Act, the policy is to decommission nuclear power plants in Japan a mere forty years after they become operational. A single extension of twenty years can be granted once only if special conditions are met. In brief, reactors are allowed to operate for a period up to sixty years.

At present, there are thirty-nine nuclear reactors at the nuclear power plants in Japan (currently under construction, the Chugoku Electric Power Company's Shimane No. 3 reactor and J-Power's Oma nuclear power plant are omitted from the discussion as the start date of operations is unknown). As indicated in the table, there will be eighteen operational reactors by the end of 2050 even if all reactors are granted an extension to operate for sixty years.

Subsequently, the number of operational reactors will decrease sharply in a short time. By the end of 2060, there will be five reactors (Hokkaido Power Company's Tomari No. 3 reactor, Tohoku Power Company's Higashidori and Onagawa No. 3 reactors, Chubu Power Company's Hamaoka No. 5 reactor, and Hokuriku Power Company's Shika No. 2 reactor). By the end of 2065, only Tomari No. 3 and Shika No. 3 will still operate, and when Tomari No. 3 ceases operations in December 2069, there will be none. As a result, it is definitely not possible to view nuclear power as a valid alternative for decarbonization in the long term.

If we are to continue using nuclear power in some form, the only option to minimize the dangers is to resolutely replace and scrap old reactors as state-of-the-art reactors come online. Without replacement, nuclear power generation cannot provide an alternative for decarbonization.

If aging reactors are scrapped at a faster pace than building state-of-the-art reactors, replacement will not contradict the government's policy of reducing dependency on nuclear power wherever possible. With a replacement program, I believe it will be possible to keep the proportion of nuclear energy in the 2030 energy mix at the fifteen percent level.

Existing commercial nuclear reactors in operation		
Date	If the operational period is 40 years	If the operational period of all nuclear reactors is extended to 60 years
End 2030	18	39
End 2050	0	18
End 2060	0	5 (Onagawa No. 3: January 2062 Hamaoka No. 5: January 2065 Higashidori: December 2065 Shika No. 2, Tomari No. 3)
End 2065	0	2 (Shika No. 2: March 2066 Tomari No. 3: December 2069)
End 2070	0	0
<p>Note: Name and date for decommissioning of remaining reactors indicated in brackets. Source: Compiled by the author based on the Handbook of Electric Power Industry 2010 edited by the Federation of Electric Power Companies of Japan</p>		



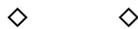
Despite claims that nuclear power will be an alternative for decarbonization, both the Round Table recommendations and the Fifth Basic Energy Plan have adopted a policy of avoiding any reference to replacement. Since replacement requires a timeline of twenty to thirty years, there is not enough time between now and 2050, not to mention 2030, even if no problems occur. Nonetheless, avoiding any mention of replacement seems to be a calculated move by politicians and bureaucrats who persist with postponements of the nuclear power issue because they want as little aggravation as possible.

Nuclear power development in Japan has been advanced as a national policy implemented by the private sector. After the accident at the Fukushima Daiichi Power Plant, TEPCO as the party involved with the accident has apologized deeply to the victims of the disaster in Fukushima so it is only natural that they would like to turn over a new leaf. But, it should not end there. The politicians and bureaucrats who have promoted nuclear power as a national policy should also make a fresh start. However, this is something they wanted to avoid. It strikes me that their tactic is to go from being the party at the receiving end of criticism to the party that is dishing it out.

According to this tactic, TEPCO is still the villain while the politicians and bureaucrats are the champions of justice who are punishing the villain. This is perhaps a penetrating insight, but the role of villain was soon broadened from TEPCO to the electric power industry as a whole, and even as far as the whole of the city gas industry. Meanwhile, the politicians and bureaucrats, fearing that they will face difficulties, have avoided getting deeply involved and persistently postponed the nuclear power issue.

Viewed in this light, we can understand the reasons why the government has not come up with a clear-sighted plan for its nuclear power policy despite engaging enthusiastically with innovation in the electricity and city gas systems since the accident at Fukushima Daiichi Power Plant. By being on the side that zealously dishes out criticism, they have skillfully avoided becoming the party at the receiving end of it. To avoid any misunderstandings, I would like to add that in my view the full liberalization of the electricity and city gas retail industries is in itself an extremely significant reform.

As a result, the nuclear power policy is still adrift despite the seven plus years since the accident at Fukushima Daiichi Power Plant. The next election or the next post is the overriding concern for politicians and bureaucrats whose lines of vision extend no further than three years into the future. However, to accurately hammer out an energy policy that includes nuclear power requires the ability to see at least thirty years into the future. This gap is difficult to fill and we are now in an unfortunate situation where there is neither strategy nor playmakers for nuclear power policy in Japan.



The absence of a strategy or a playmaker extends beyond the replacement issue to the question of how to handle spent fuel. No matter how much the government highlights the issue, a site for final disposal will not be selected as long as the unsafe period for spent fuel is counted in tens of thousands of years. It is imperative to develop less toxic reactors and to shorten the unsafe period to several hundred years to get a decision on final disposal sites. In the Fourth Basic Energy Plan formulated in 2014, the experimental Monju fast-breeder reactor developed by the Japan Atomic Energy Agency was positioned as the starting point for such development.

However, at the end of 2016, it was decided to decommission Monju. When formulating the fifth plan, one of the focal points was how to clearly outline the reasons for developing a less toxic reactor to replace the Monju reactor, but in the end, there were only abstract descriptions. Again, the problem was postponed.

In the five and a half years since the general elections at the end of 2012, the ruling party has

enjoyed a strong foundation for its administration. However, even during this time they have not been able to work out a nuclear power replacement program and have repeatedly postponed the problem. The political situation is likely to grow increasingly difficult in the future. Nuclear power is an important alternative for resource-poor Japan, and one that should not be abandoned at the present time, but it looks as if structured postponements are closing down its future.

Translated by The Japan Journal, Ltd. The article first appeared in the “*Keizai kyoshitsu*” column of *The Nikkei* newspaper on May 14 2018 under the title, “*REnerugii Kihon Keikaku no Ronten (I): Genpatsu ‘Tatekae’ no senryaku shimese* (Points of Discussion Concerning the Strategic Energy Plan (I): The nuclear power replacement strategy).” *The Nikkei*, 14 May 2018. (Courtesy of the author)

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