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Japan Institute for National Fundamentals
Council on the Nuclear Energy Issue

Policy proposals

Get Nuclear Power Back to Japan

Background

A stable energy supply is the fundamentals of a nation. Yet Japan has not squarely addressing this issue.

While Japan had more than 50 nuclear reactors, currently only nine are under operation. The eight years since the Great East Japan Earthquake have been wasted because of unreasonable delay in safety screenings by the Nuclear Regulation Authority (NRA Japan).

Japan is now entirely reliant on imported fossil fuels and faces significant risks in securing a stable and inexpensive supply of energy resources. In addition, Japan needs to take bold action to reduce its greenhouse gas emissions as required by the Paris Agreement. While continuing to efficiently introduce renewable energy sources, now is the time to normalize the situation around nuclear power, which can provide a stable and carbon-free electricity at a large scale. Japan is already shouldering huge costs from importing fossil fuels and subsidizing renewable energy. We need to accelerate the restart of nuclear power plants, prevent the further increase of cost burden on the public, and preserve and develop Japan's nuclear power technology for the sake of future generations.

With this in mind, we make the following proposals.

I. To the Nuclear Regulation Authority Japan: Restore Scientific Rationality

1. Streamline Japan's regulatory system in line with the recommendations and proposals of the IAEA's Integrated Regulatory Review Service
2. Shift from “regulations for halting nuclear power plants” to “regulations for safely operating nuclear power plants”
3. Normalize screenings causing extreme delays in restarting reactors, and avoid repeated shutdowns
4. Present clear conditions and goals for screenings, not changing them midway through, in line with the Administrative Procedures Law
5. Conduct examinations of on-site faults in accordance with internationally established rules
6. Avoid shutdowns due to delays in building facilities for dealing with severe accidents and other contingencies

II. To the Japanese Government: Take the Lead in Resolving Nuclear Power Issues

1. Do not push antiterrorism measures onto electric power companies alone
2. Ensure cooperation with the police, Japan Coast Guard, and Self-Defense Forces on anti-terrorism measures
3. Promote the training of human resources and preserve/develop technologies in the field of nuclear power
4. Enable replacement of existing nuclear plants and construct new ones while ensuring coexistence with renewable energy
5. Ensure steady development of nuclear reprocessing and waste disposal facilities as part of the nuclear fuel cycle
6. Make clear explanation about new regulatory standards including filter vents to the public and reflect these in emergency drills
7. Take responsibility in enhancing people's understanding of nuclear power

Get Nuclear Power Back to Japan

Background

A stable energy supply is the fundamentals of a nation. Yet Japan has failed to properly confront this issue. While Japan had more than 50 nuclear reactors, currently only nine are under operation. The eight years since the Great East Japan Earthquake have been wasted because of unreasonable delay in safety screenings by the Nuclear Regulation Authority (NRA).

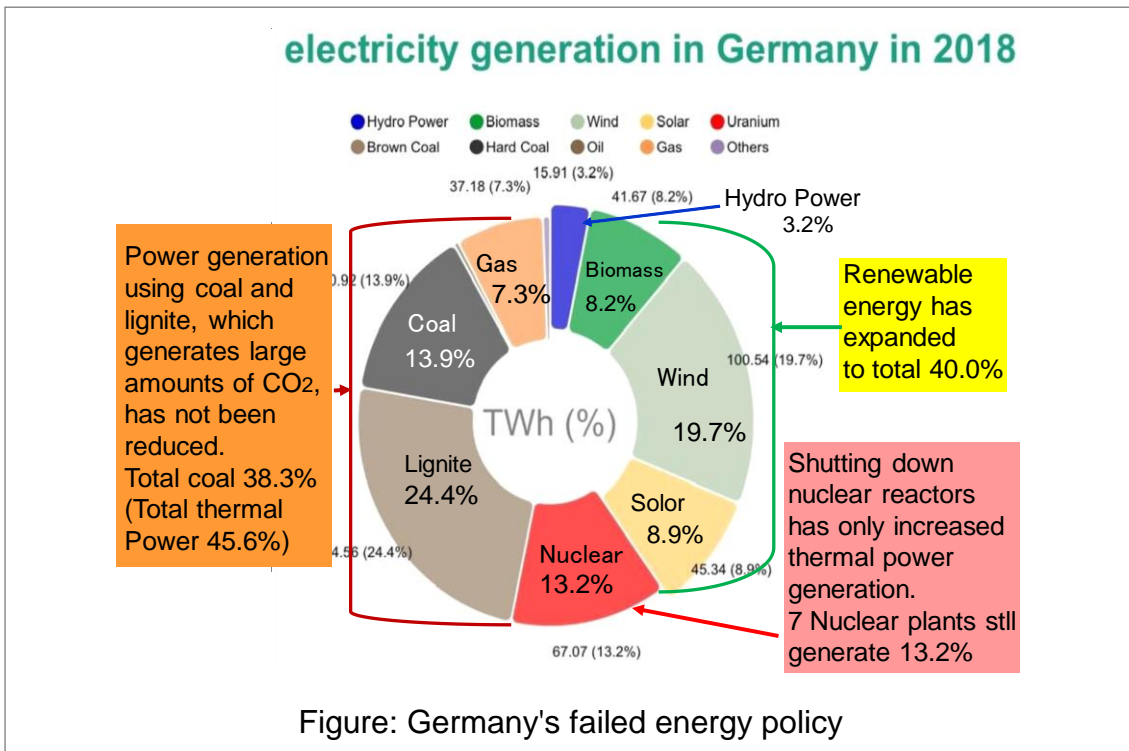
Since Japan has no domestic fossil fuel resources, its energy self-sufficiency ratio is the lowest among major countries. In addition, Japan does not have pipeline or grid connection with neighboring countries. All of these make Japan exposed to high geopolitical risk.

Entry into force of the Paris Agreement has made it a pressing issue to combat climate change. However, due to already high energy efficiency performance, Japan's marginal abatement cost for reducing greenhouse gas emissions is much higher than other major countries. Japan's industrial electricity tariff is already the highest among major countries, being 1.5 to 2 times that of nations such as the United States, China, and South Korea. Among major countries, Japan is the only country facing "quandem", namely, lack of domestic resources, high dependence on the Middle East, high energy costs, and high costs for cutting greenhouse gas emissions.

Restarting nuclear power plants is absolutely crucial for realizing a cost-effective energy mix. Japan is already shouldering huge costs from importing fossil fuels and subsidizing renewable energy. If no nuclear power plants are restarted by 2030 and substituted by thermal power generation, it would cost about ¥27 trillion (\$225 Billion) just to import additional fossil fuels. If nuclear is replaced with renewable energy, the additional cost would be about ¥15 trillion (\$125 Billion) for the subsidies alone.

Since the Fukushima nuclear accident, the false argument that "we don't need nuclear power if we have renewable energy" has been prevailing. Debating renewable and nuclear energy as if it were a binary choice only serves to distort the optimal solution for Japan's energy and climate policies. Germany has decided to phase out nuclear power and is promoting renewable of which share has reached 40% out of total power

generation. However, its CO2 emissions are increasing since intermittenencies of solar and wind power need to be backed up by fossile thermal power plants. Considering Germany's failure, it is clear that the only solution is to ensure coexistence of nuclear and renewable, making use of their respective advantages.



Japan's CO2 emissions decreased by 4.8 percent in fiscal 2018 thanks to the restarting of some nuclear power plants and the expansion of renewable energy. Given power generation from 9 GW (9 units) of nuclear is commensurate with that from 56 GW of solar power introduced with heavy dependence on subsidies, we should squarely recognize the limitations of policies putting excessive priority on renewable.

We need to accelerate the restart of nuclear power plants, prevent the further increase of cost burden on the public, and preserve and develop Japan's nuclear power technology for the sake of future generations.

With this in mind, we make the following proposals.

I. To the Nuclear Regulation Authority: Restore Scientific Rationality

To maintain and develop Japan's nuclear power options, first and foremost, we need to reexamine the regulations on nuclear power, which have deviated from the original mission of reducing risk based on scientific rationality.

1. Streamline Japan's regulatory system e in line with the recommendations and proposals of the IAEA's Integrated Regulatory Review Service

In its report on the 2016 Integrated Regulatory Review Service (IRRS) Mission to Japan, the International Nuclear Energy Agency (IAEA) stated that "the [Japanese] government and NRA should continue their efforts to implement the new regulatory framework to strengthen nuclear and radiation safety" in line with IAEA safety standards. The report added that the NRA in particular needs to "complete, document and fully implement the integrated management system for all regulatory and supporting processes."

However, at present, such a system has not been completed and the progress of screenings has not been made public. Regulations to ensure the safety of nuclear power plants should be based on established international standards. In line with IAEA's proposals, there is an urgent need to streamline and document the NRA's regulatory structure and management – which are now based on its own risk classifications – and ensure regulations are predictable. Priority should be given to compliance screenings for restarting nuclear plants over repeating investigations into ground motion with no identifiable hypocenter.

2. Shift from “regulations for halting nuclear power plants” to “regulations for safely operating nuclear power plants”

Although eight years have passed since the Great East Japan Earthquake, only nine nuclear reactors are currently under operation. Compliance screenings are still stagnant at most nuclear power plants. Such major delay in resuming operation of nuclear power plants is attributed to the regulatory administration of the NRA, which was established after the disaster during the administration of Prime Minister Kan Naoto as an independent committee created based on Article 3 of the National Government

Organization Law. The provisional appointments of Tanaka Shunichi as the authority's first chairman and four commissioners were officially approved by the Diet when the Liberal Democratic Party returned to power.

Chairman Tanaka shut down all the nation's nuclear power plants, saying, "We are temporarily halting all nuclear power plants to undergo screenings in the next six months." There was no legal basis in this so-called Tanaka plan. The long-term shutdown of nuclear power plants has continued under the current chairman, Fuketa Toyoshi. Such lingering shutdown of nuclear power plants is unprecedented in Europe or the United States and has caused an tremendous loss of national wealth due to the fuel costs incurred during this time. We must recognize how this burden is being borne by each and every citizen in the form of higher electricity bills. The purpose of regulations on nuclear power should not be to shut down plants but to ensure they are operated safely, as was originally intended.

3. Normalize screenings causing extreme delays in restarting reactors, and avoid repeated shutdowns

Screenings have taken so many years because of time-consuming process for gathering evidence on whether there are any active faults within the grounds of a plant. Geologic, ground, and seismic assessments—which include analyzing volcanic ash for dating, examining marine terraces to determine if coastal uplift was a result of an earthquake, determining seismic waveforms to use in designs, and finding evidence for liquefaction under important facilities—account for over 70 percent of safety screenings. This is the reason that even after six years, screenings of more than 10 reactors have barely progressed or even gone backward in some cases. The incredibly protracted screening process to resume operations needs to be normalized and repeated shutdowns of nuclear power plants should be avoided.

4. Present clear conditions and goals for screenings, not changing them midway through, in line with the Administrative Procedures Law

The criteria used in screenings should be clearly specified from the outset and should not be changed during the process. Screenings should be streamlined so they can be

completed without delay in accordance with the Administrative Procedures Law. Typical example is the case of facilities for dealing with severe accidents. Their construction period has become insufficient because additional conditions have been imposed one after another during screening process and protracted screening process has shortened grace periods. These problems should be largely attributed to the regulator.

Administrative guidance can only be carried out through the voluntary cooperation of the other party. Therefore, the NRA exercising administrative guidance must not act in a detrimental manner to the other party (the operator) when it becomes physically impossible for the latter to follow guidance because of the time needed to build facilities as required by additional conditions and changes during the screening. Nuclear power plants that have been restarted after passing new regulatory standards should not be halted because new screening conditions are added.

5. Conduct examinations of on-site faults in accordance with internationally established rules

Article 2 section 2 of the Atomic Energy Basic Law states, “The purpose of ensuring safety is to protect the lives, health, and property of the people, protect the environment, and contribute to national security in accordance with established international standards.” The current on-site fault screening process requires proving there is no possibility that on-site faults have moved in the past through assessments of overlying strata*. However, in most of the existing nuclear power plants, the overlying strata has been removed so the plant can be built on bedrock, turning this requirement into a kind of “devil’s proof.”

The IAEA’s safety guide calls for nations to implement best practices by incorporating their good practices together with other means. The countermeasures against severe accidents that are already in place greatly reduce the risks from fault displacement should fault movement occur. Screenings of on-site faults should also be regulated based on established international rules that have been scientifically shown to effectively reduce risk.

* This involves proving the existence of a formation that has been stable for at least 120,000 to 130,000 years on top of the formation that contains the fault.

6. Avoid shutdowns due to delays in building facilities for dealing with severe accidents and other contingencies

Some nuclear reactors that have been restarted are on the verge of shutting down due to delays in building facilities to deal with severe accidents and other contingencies. These facilities are part of anti-terrorism measures and are intended to deal with intentional aircraft collisions. The NRA has ruled that if these facilities are not completed within a five-year grace period, nuclear reactors that have been restarted will have to shut down. However, there are grave doubts as to whether the decision to shut down reactors that had been approved to resume operations is appropriate or actually reduces risk. First of all, even if plants have these facilities, they are not expected to have a deterrent effect. Rather than building facilities with no cost ceiling that are of doubtful efficacy, nuclear reactors could be protected from aircrafts by placing obstructions around the plants, such as poles, wire nets, antennas, wind power generators, or barrage balloons. From the standpoint of deterring terrorist attacks, these would be effective in preventing aircraft from being able to directly strike a reactor.

If a terrorist attack with an aircraft were to happen, as long as a direct impact on a reactor is avoided, there is no difference in the response between a plant with these facilities and one without them. Shutting down nuclear power plants that have finally been restarted due to costly regulations only creates a risk of power outages, increases electricity rates and results in harming national interest. To avoid the risk of large power outages during the Tokyo Olympics, nuclear power plants that have been restarted should continue operating while constructing such facilities. As for nuclear power plants, there should be a flexible reexamination about required facilities.

II. To the Japanese Government: Take the Lead in Resolving Nuclear Power Issues

1. Do not push antiterrorism measures onto electric power companies alone.

Terrorists could attack a nuclear power plant in a variety of ways—from suicide aircraft collisions and attacks on the heart of the plant using drones or small boats, to taking plant personnel hostage. At present, the police are the only means available for countering attacks by armed groups, civilian aircraft, or other methods. This represents a threat to national security, and thus protecting nuclear power plants from terrorism should not be pushed onto private power companies alone.

2. The police, Japan Coast Guard, and Self-Defense Forces should cooperate on antiterrorism measures

The National Defense Program Guidelines referred to protections of nuclear power plants for the first time in 2018. To build on this, it is necessary to amend the relevant laws and establish new regulations to allow the Self-Defense Forces to cooperate with the police in normal times, to increase the number of personnel in basic strategic units responsible for areas where nuclear power plants are located, and to improve the equipment available to these units. There is also an urgent need to develop high-power microwave (HPM) beams capable of neutralizing missile and drone guidance and attacks.

3. Promote the training of human resources and preserve/develop technologies in the field of nuclear power

China and Russia are currently making great strides in building and exporting nuclear power plants. In contrast, Japan's nuclear power technology, which was once among the best in world before the Great East Japan Earthquake, no longer has a global presence. Japan has been ardently developing nuclear technologies to date. It is a grave national loss to leave them to wither.. Industry, academia, and government must work together to encourage talented young people to enter the nuclear power field. To this end, they need to promote training of next generation nuclear power professionals and to develop

nuclear technologies that can compete globally, such as next-generation light water reactors with enhanced natural cooling systems and small module reactors (SMR) that can coexist with renewable energy.

Training of nuclear human resources and technology development in the field of nuclear, which enables simultaneous achievement of long-term energy security and decarbonization, demands clear policy direction on replacement of existing nuclear power plants and construction of new ones.

4. Enable replacement of existing nuclear plants and construct new ones while ensuring coexistence with renewable energy

Discussing the possibility of building new nuclear power plants is currently a non-starter. This is due to the persistent negative image of nuclear power among the public and the media, a mentality that “even if they’re safe, I don’t feel safe,” and government’s evasion from debate on nuclear. In addition, the electricity market liberalization has made utilities reluctant to build new nuclear power plants due to the huge initial investment entailed. Unpredictable regulations have further increased management risk, making new investment impossible. To avoid further deterioration and uncertainty of investment climate, the government should advance the debate over replacing existing nuclear power plants and constructing new ones from long-term national policy perspectives. .

Nuclear power should play the central role in Japan's energy and climate policy as non-fossil fuel, substituting thermal power currently occupying 80% share of total power generation and supplementing intermittency of variable renewable energy.

5. Ensure steady development of nuclear reprocessing and waste disposal facilities as part of the nuclear fuel cycle

Ensuring predictability in screenings of reprocessing facilities making up the nuclear fuel cycle and starting their commercial operation are necessary steps regardless of how the debate over nuclear power proceeds. The isolation and vitrification of high-level radioactive waste offers the highest degree of stability and long-term stability in storage in air cooling facilities and geological disposal. Vitrification contains high-level

radioactive waste through melting and solidifying it to a glass state. The operability of the Rokkasho Nuclear Fuel Reprocessing Plant has been confirmed in pre-use testing.

Statements from a few members of the U.S. Congress demanding Japan to reduce its plutonium stockpile are attributed to information delivered by anti-nuclear groups in Japan (so-called “Washington loudspeaker”). In fact, the IAEA has confirmed that Japan's protections on radioactive substances are extremely robust.

Selection of suitable deep geological disposal sites requires strong leadership by the government. There should be consideration and support to local governments having agreed to conduct document studies so as not to cause unnecessary confusion. In the long term, fast reactors that can incinerate and annihilate high-level radioactive waste will be needed. Using the Joyo reactor and halting the decommissioning of the Monju reactor should be placed as the national policy.

6. Make clear explanation about new regulatory standards including filter vents to the public and reflect these in emergency drills

Explanation of safety measures to the public is an important responsibility of nuclear regulators. In fact, the US Nuclear Regulatory Commission (NRC) places this as one of its most important missions. The public needs clear explanations on important items. They include the progress to date on protective measures such as seawalls and engineering safety facilities (emergency core cooling systems, reactor containment vessels), water injection and cooling by power generating vehicles, pump cars, fire engines, and other equipment in case of severe accidents and the role of filter vents in removing radioactive substances. These areas should also be reflected in emergency drills.

If filter vents are installed, people within a 5-30 kilometer radius of a plant only need to stay indoors, even in a severe accident. Rather than conducting emergency drills that place a large burden on the public, it is more pragmatic to conduct them based on realistic scenario envisioning the use of filter vents and to enhance storage of emergency food and water as well as practicing their distribution.

7. Take responsibility in enhancing people’s understanding of nuclear power

Public understanding is the indispensable element for maintaining and developing nuclear option in Japan to the future. The disaster at the Fukushima Daiichi Nuclear Power Plant has triggered an argument demanding zero risk to nuclear power plants. The government needs to make it clear to the public that no technology is “absolutely safe,” and that nuclear safety regulations have been strengthened significantly to minimize risk in the event of an emergency. The government should also strive to enhance public understanding that nuclear power is essential for Japan with vulnerable energy structure in achieving both long-term energy security and GHG emissions reduction.

Since the Fukushima disaster, local fishermen and farmers have been complaining that rumors have damaged their reputations at home and abroad over the alleged contamination of agricultural and marine products. Moreover, scientifically groundless opposition campaign is rampant not only against nuclear re-start but also against release of decontaminated tritium water into the sea. The government and NRA must counter such propaganda and enhance effective public relations (e.g., government advertisements in major media outlets) by providing accurate scientific evidence showing that radiation levels are no different from natural levels.

Closing: Get nuclear power back to Japan

A stable energy supply is the fundamentals of a nation. Nevertheless, Japan has not been squarely addressing this issue. Japanese energy situation is on the verge of crisis, standing at the edge of a cliff. Efficient introduction of renewable energies and their technological development should certainly be promoted. However, ruling out our nation's precious nuclear power technology will unduly raise the cost of countermeasures and seriously damage our national security. The status-quo is not an option. We must normalize and streamline nuclear regulations, create policy and business environment enabling new investment, and improve the public's energy literacy.

The only thing that can make this possible is unwavering political resolve. The situation is challenging, with a public skeptical about restarting nuclear power plants and the presence of media outlets and opposition parties advocating nuclear phase-out. Yet while public opinion must be taken into consideration in a democracy, there are policies that should be undertaken despite their unpopularity for the sake of the nation's long-term future. Allowing the status quo to continue will negatively impact Japan's economy, energy security, and greenhouse gas emissions. The Abe administration has been resolute in its commitment to strengthening national security, such as in its enactment of security legislation. Although the decisions of the independent commission should be respected, we strongly urge the government to tackle energy policy with the same resolution.

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