

# Japan's Nuclear Reactor Fleet: The Geopolitical and Climate Implications of Accelerated Decommissioning

**J**apan is at a crossroads. It must choose whether to revive its domestic reactor fleet and civil nuclear industry, which would likely require significant investment and political capital. However, this investment made now would pay dividends for Japan's energy security, its ability to meet ambitious climate goals, and for international civil nuclear exports and nuclear governance. Nuclear energy could play a unique role in helping Japan meet its domestic energy demand while mitigating climate change.

Japan's choices are domestically and internationally significant as Japan—alongside the United States—will help determine the future of global nuclear energy and climate leadership. To be successful, Japan will need to reconsider the importance of a robust domestic reactor fleet, even as it is in the process of decommissioning part of that fleet. This report makes the following policy recommendations:



# Policy Recommendations

---



**Japan must use its existing nuclear fleet in the near and long term to 2050:** Japan's existing nuclear power is important to reducing GHG emissions and meeting Japan's 2030 climate pledge and 2050 net-zero goal. Reactor life extensions, if done scientifically, rigorously, and without unreasonable costs, should be seriously considered if they can be done safely. While still far below what was envisioned prior to the Fukushima Daiichi nuclear accident, their operation provides needed legitimacy for Japan's civil nuclear export program and makes an essential contribution to Japan's domestic sources of energy and the reduction of global GHG emissions. Japanese regulators should consider, based on scientific research in the United States and elsewhere, whether some nuclear reactors' lives could be extended safely with appropriate protocols beyond sixty years and institute policies and regulations to encourage life extension.



**Japan must remain involved in global civil nuclear trade:** This is critical to help ensure the maintenance of the present international order based on strong, legally binding nonproliferation and safety standards. Japan needs to work with like-minded countries—including the United States, the ROK, Canada, and the countries of Western Europe—to develop advanced nuclear technologies through research, demonstration, and deployment. Importantly, Japan needs to maintain a presence in the domestic and global commercial market in the short and long term.



**Japan needs to develop a role for advanced nuclear technologies, including SMRs, which it should deploy as early as feasible:** These reactors would help achieve Japan's vision of a decarbonized society and regain its influential position in global civil nuclear exports. Importantly, advanced nuclear technologies also would assist in the deployment of renewables and the decentralization of the grid, and they would provide a source of low-carbon energy that could replace coal in the energy mix. Advanced nuclear technologies could provide flexible generation to complement renewable energy and replace thermal generation; nuclear technologies can also facilitate hydrogen production along with supporting energy integration technologies.



**Japan should rebuild its nuclear energy workforce and public trust in nuclear power:** Japan must rebuild its nuclear energy workforce and reverse the precipitous decline in the number of nuclear science students through extensive public education efforts that stress safety and the contribution of advanced reactors to the uptake of renewable energy and the mitigation of climate change.



**Japan should regain its leadership position in the climate battle:** It can do this by accelerating the adoption of advanced nuclear power and expanding its renewable energy production, especially wind and geothermal, in the short term and marine energy in the longer term. Nuclear power should complement and work with growing renewable energy to enable a retreat from fossil fuels, especially coal.

---

In the short and medium term, Japan's current fleet of large-scale reactors is of tantamount importance for both energy independence and climate goals. Japan should apply its expertise in technology and innovation to help deploy the next generation of nuclear reactors and participate fully in the global energy transition.

Japan's energy transition is underway. Success will mean creating a new energy system that is socially acceptable, adequately addresses energy security, and supports its ambitious net-zero clean energy goals. Nuclear energy, especially in conjunction with renewables or other clean energy sources like hydrogen, can play an essential role in helping Japan reach a high level of energy independence and security, partner on civil nuclear exports with the United States and other allies, and achieve its decarbonization and climate goals.

