

May 2, 2024

The Divided World: Toward Restrengthening U.S.-Japan Nuclear Cooperation

Shoichi Itoh*

Senior Fellow, Energy Security Unit
The Institute of Energy Economics, Japan

“Oppenheimer”, which dominated the 2024 Academy Awards with seven Oscars, triggered public interest in nuclear power once again. The movie was released in Japan eight months after its premiere in the United States in July 2023. The movie, depicting the anguish of Robert J. Oppenheimer, the physicist known as the “father of the atomic bomb” who led the Manhattan Project during World War II, has fomented a controversy in Japan – the only nuclear-bombed country in human history. However, it is high time for Japan, with its experiences of Hiroshima and Nagasaki, to find a fresh opportunity to mull over the importance of using nuclear power for peaceful purposes in the contemporary world. In short, nuclear power in and of itself is not an object of right or wrong, but the crucial point is that nuclear power must be used correctly (or peacefully) and the countries, possessing relevant experience and technologies, have to fulfill their international obligations.

Some Japanese, who visit the US Department of Energy (DOE) for the first time, may be astonished to find the Manhattan Project exhibit in the lobby at its headquarters in Washington, D.C. The exhibit symbolically illustrates that nuclear power was in the background of the DOE’s establishment in 1977 and has remained at the center of US energy policy and strategy to date¹. Approximately half of the DOE’s budget, totaling around \$5.2 billion in the 2024 fiscal year, relates to nuclear power. National Nuclear Security Administration, addressing nonproliferation measures, arms control, etc., accounts for 46% of the entire budget, while 3% is allocated to nuclear energy². In other words, the indivisibility of civilian use and non-proliferation must be understood when discussing nuclear issues.

Today there are 94 nuclear reactors – the largest number worldwide, in operation in the United States, and they account for around 30% of nuclear power generation in the entire world³. In the last decade, the share of nuclear in the US power mix somewhat declined in relative terms against the backdrop of increased gas-fired power generation due to falling gas prices under the US shale revolution and the progressive decrease in the cost of introducing renewables. As of 2023, however, nuclear power still accounted for 19% of power generation in the United States. At Plant Vogtle in the State of Georgia, Unit 3 entered commercial operation in July 2023, becoming the first newly-constructed nuclear unit to come online in the United States over the

*The views expressed in this paper are solely the author’s own and do not represent those of his affiliation.

¹ <https://www.energy.gov/lm/brief-history-department-energy>

² <https://www.energy.gov/sites/default/files/2023-03/doe-fy2024-budget-in-brief.pdf>

³ As of March 2024. <https://world-nuclear.org/information-library/country-profiles/countries-t-z/usa-nuclear-power.aspx>

past more than three decades, and the plant's Unit 4 also followed suit in April 2024.

In the United States, nuclear power enjoys bipartisan support not solely from the perspective of a domestic energy issue, but also as a matter of national security that requires maintenance of the country's robust presence in the global civilian nuclear market. The former Trump Administration emphasized the importance of nuclear power by voicing concerns about stable power supply and energy security, while the Biden Administration is doing so in a way that highlights climate change measures. There is mounting bipartisan concern about the relative decline of the US influence in the global nuclear market amid the gradual expansion of Russian and Chinese presence.

A total of 440 nuclear reactors are operating in about 30 countries on the earth, and 61 reactors (excluding research reactors) are under construction as of May 2024⁴. The international community has revisited the role of nuclear power, which does not emit carbon dioxide when generating electricity, for low carbonization. Europe has gained momentum in returning to nuclear power as a means of freeing itself from dependence on Russian gas in the aftermath of the Ukraine War. In January 2024 the United Kingdom - traditionally a proactive advocate of nuclear power, adopted the "Civil nuclear: roadmap to 2050" which has plans to build new reactors. France, boasting the second-largest number of nuclear reactors in the world, is exploring building upwards of six (confirmed) reactors. Belgium has decided to extend the life span of its nuclear reactors until 2035, although it had initially planned to phase out nuclear power by 2025. Along with Sweden and the Netherlands, there have emerged talks about building new nuclear reactors even in Italy which once followed a decommissioning track. Besides, a move to introduce nuclear power for the first time is picking up momentum in Poland.

At the 28th meeting of the COP (Conference of the Parties to the United Nations Framework Convention on Climate Change) in December 2023, the role of nuclear power as one path to decarbonization was clarified in the consensus document. Alongside that, a total of 25 countries, including the United States and Japan, released a joint declaration endorsing a threefold expansion, compared to 2020, in the world's nuclear installed capacity by 2050. Furthermore, at the first Nuclear Energy Summit, jointly hosted by the IAEA (International Atomic Energy Agency) and the Belgian government in March 2024, had the participation of representatives of 30 or more countries, and then a joint declaration was released vowing stronger international cooperation on bolstering the role of nuclear power generation, including by building new reactors, extending the life-spans of existing reactors and collaborating on making advanced reactors, including SMRs (small module reactors), commercially viable.

According to the STEPS (Stated Policies Scenario) in the World Energy Outlook 2023 released by the IEA (International Energy Agency), it is estimated that the world's installed nuclear capacity will reach 620 GW (gigawatts) in 2050, up by approximately 1.5 times compared to 2022 (417 GW). In the reference scenario of the IEEJ Outlook 2024, it is forecast that nuclear power generation will grow by 25% worldwide in 2050 compared to 2021: Its volume is projected to decrease by around 20% in advanced economies, whereas it is

⁴ <https://world-nuclear.org/information-library/current-and-future-generation/nuclear-power-in-the-world-today.aspx>

to increase by 2.3 times in emerging and developing economies, including China and India. The total volume of nuclear power generation in emerging and developing countries is expected to surpass that of advanced countries by 2040.

In the Global South, including the Middle East, Africa, South America, Southeast, South Asia, etc., the number of countries planning to newly introduce or explore the possibility of introducing nuclear power is gradually increasing. Now, Russia accounts for 40% or more of nuclear reactor exports in the international nuclear power market: Construction of all of the new reactors that broke ground in 2022-2023 were Russian- or Chinese-made. For China and Russia, the increase of their international presence in the civilian nuclear market is not necessarily just a matter of pursuing commercial profits, but also a national strategic priority, eyeing expansion of their geopolitical influence. In this respect, the business conditions on the part of Japanese and US nuclear vendors, exposed to market competition on the principle of the private sector's initiative, are different from fully state-backed Russian and Chinese vendors⁵.

With the world increasingly divided, the rising concern pertaining to Russia and China's growing presence in the nuclear power market is that it is not just a question of market competition or commercial business. In case the nuclear industry in the West, including Japan and the United States, fails to maintain its market competitiveness and to curve the relative decline of the West's presence in the international nuclear market, the West's voice, regarding the peaceful use of nuclear power in the international arena, could be negatively affected accordingly.

The global nuclear non-proliferation regime is based on the NPT (Treaty on the Non-Proliferation of Nuclear Weapons), which entered into force in 1970 (currently 191 countries are parties to the NPT)⁶. Article IV of the Treaty prescribes "the inalienable right" of parties to the Treaty when it comes to the use of nuclear power for peaceful purposes. Today, with the importance of nuclear power increasing from the standpoints of the stability of the international energy market and measures to address global warming, ensuring nuclear security (including by controlling fissile material and guaranteeing the safety of nuclear power-related facilities) is without a doubt emerging as a pressing issue.

However, amid the ongoing struggle for supremacy between the West and Russia/China surrounding the Global South, there are mounting concerns being voiced that the NPT framework is effectively becoming "a facade." At the Tenth Review Conference of the Parties to the Treaty on the NPT, which was held in New York in August 2022 following the outbreak of the Ukraine War, the final outcome document was not adopted due to Russia's opposition. In addition, the first session of the Preparatory Committee for the NPT Review Conference was held in Vienna in July-August 2023 in preparation for the Eleventh NPT Review Conference

⁵ Julia Nesheiwat and Shoichi Itoh, "Atoms for Peace 2.0: The case for a stronger US-Japan nuclear alliance", the Atlantic Council, October 23, 2023.

<https://www.atlanticcouncil.org/blogs/energysource/atoms-for-peace-2-0-the-case-for-a-stronger-us-japan-nuclear-power-alliance/>

⁶ India, Pakistan, Israel and South Sudan have not signed the Treaty. North Korea withdrew in 2003.

<https://disarmament.unoda.org/wmd/nuclear/npt/#:~:text=The%20NPT%20is%20a%20landmark,and%20general%20and%20complete%20disarmament>

scheduled to be held in 2026, but did not result in so much as a chair's summary as a formal document.

The joint statement, "Global Partners for the Future," following the U.S.-Japan Summit Meeting held in Washington D.C. on April 10, 2024, made it clear that both countries recognize "the importance of upholding the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) as the cornerstone of the global nuclear disarmament and non-proliferation regime and for the pursuit of peaceful uses of nuclear energy" and that they "reaffirm the indispensable role of the peaceful uses of nuclear technology, committing to fostering innovation and supporting the International Atomic Energy Agency (IAEA)'s efforts in upholding the highest standards of safety, security, and safeguards"⁷. The "Joint Statement between DOE and the Japan Ministry of Education, Sports, Science and Technology Concerning a Strategic Partnership to Accelerate Fusion Energy Demonstration and Commercialization" was signed at the same time. At the first summit meeting between Japan, the United States and the Philippines, which was held the day after the Japan-U.S. Summit Meeting, the three countries agreed that Japan and the US would support the introduction of SMRs (small module reactors) and civilian nuclear workforce development in the Philippines⁸.

At present Japan has 33 operational nuclear reactors, the fifth-largest number in the world. As of 2024, 12 reactors have resumed operations. Obviously, Japan must move ahead with restarting its reactors while attaching the utmost importance to ensuring safety precautions. At the same time, Japan should be reminded that it could contribute to the maintenance of the international non-proliferation regime and upholding of peaceful use of nuclear power by making the best of the country's nuclear power-related technologies and experience accumulated over the past many decades, and by way of jointly promoting development of next-generation innovative reactors with the United States – Japan's inseparable partner in the nuclear industry, for the sake of sustaining and expanding the West's presence in the global nuclear market. That is, Japan's proactive commitment to the global nuclear future would go far beyond the energy decarbonization perspective. That is exactly the international obligation that Japan, with its experience not only of *Hiroshima* and *Nagasaki* but also of *Fukushima*, is best placed to fulfill.

Contact: report@tky.ieej.or.jp

⁷ <https://www.whitehouse.gov/briefing-room/statements-releases/2024/04/10/united-states-japan-joint-leaders-statement/> ; <https://www.mofa.go.jp/files/100652147.pdf>

⁸ In addition, in October 2022 the governments of Japan and the US announced cooperation on introducing SMRs in Ghana. <https://www.state.gov/united-states-and-japan-announce-partnership-with-ghana-to-support-its-goal-of-being-the-mover-in-africa-for-small-modular-reactor-deployment/>