

# Japanese Bilateral Energy Cooperation with Poland and Ukraine: Opportunities and Challenges

Yaroslav Sinisarenko

All over the world, the blueprint for economic growth and national security is being fundamentally rewritten with energy at its core. These tremendous shifts have been driven by the gradual rise of challenges connected to energy security, resilience, and self-sufficiency. Europe is no exception as the ongoing conflict in Ukraine serves as a stark reminder of the urgent need for substantial investment and integrated infrastructure to improve energy resilience. Unlike Europe, Japan has maintained technological leadership and expertise in nuclear technology to develop the Small Modular Reactors (SMRs). Hitachi, as part of the Darlington New Nuclear Project (DNNP) is scheduled for commercial operation in Ontario, Canada by 2030. Japan is also increasingly involved in the Eastern European energy network, especially pertaining to Poland and Ukraine. Despite the geographical proximity of Poland and Ukraine, Japan's engagement is tailored to their unique geopolitical contexts. In the future, this country specific approach will establish a framework for a deeply integrated partnership with Eastern Europe, which will be characterized by long-term investment, synchronized technology transfers, and sustained humanitarian cooperation.

## Japan and Poland: Nuclear Expansion and Challenges

While the Smart Grid project, which was overseen by NEDO and its key contractors: Hitachi, SMBC, and Showa Denko Materials (now Resonac), consummated a long-standing partnership between Poland and Japan in the energy sector with its completion in 2021, the demand for Japanese involvement in core industries remains significant and is expected to grow in the future. Despite a historical dependence on the coal industry (still more than 50% as of 2025) Poland is making a concerted effort to transition toward a diversified low-emission mix in order to meet the increasing electricity market demands and EU climate targets. For a pursuit of a sustainable future of the energy system, the previous and current governments have initiated plans for large and small modular reactors intended to fulfill this longstanding objective. Currently, the state-owned Polskie Elektrownie Jądrowe (PEJ) is the leading initiative in partnership with the United States (Westinghouse/Bechtel). The primary goal is to construct a 3.75 GW capacity power plant at the Lubiatowo-Kopalino site using AP1000 reactors. Concurrently, Poland is solidifying its position as a European leader in next-generation technology through the ambitious initiative of ORLEN Synthos Green Energy to deploy a set of GE Vernova Hitachi Nuclear Energy BWRX-300 Small Modular Reactors (SMRs) similar to that used in the Canadian project. Upon successful implementation, this strategy will guarantee the stabilization of electricity prices, reduce the

financial deficits in the energy sector, and, in addition, enable Poland to profitably export electricity to Central and Eastern Europe.

While the European Commission officially greenlit the large-scale nuclear program in December 2025 by approving a PLN 60 billion state aid package, the commercial future of Small Modular Reactors (SMRs) remains more precarious. With the first AP1000 large-scale units now facing revised launch dates ten or more years in the future, the fate of yet-to-be-commissioned modular plants is increasingly uncertain, as most are still in the early stages of design and site selection. Furthermore, despite nuclear energy's inclusion in the EU Taxonomy, any eventual construction will be subject to a rigorous and evolving regulatory framework, especially when it comes to SMR technology. Nevertheless, in order to ensure that they comply with the energy regulations of the European Union and, in addition, to safety protocols that certify optimal and safe operations that usually transcend national borders, serious planning precautions are absolutely necessary. Beyond the Canadian initiative, the viability of SMRs depends heavily on whether the Hitachi's BWRX-300's designs at the Darlington site in Ontario will serve as a critical proof of concept for the global SMR market.

### **Japan and Ukraine: Japanese Humanitarian Leadership**

With the onset of the full-scale invasion of Ukraine by Russia on 24 February 2022, the Japanese government decided to coordinate its diplomatic efforts with the other European nations and G7 members to freeze Russian assets. Subsequently, Japan has used these funds in the form of loans to support the Ukrainian economy. Through the end of 2025, Japan provided over 15 billion dollars in allocated funds, and more is expected due to serious humanitarian crisis of energy supply in the capital. Beyond state-level financial aid, Japanese diplomatic figures and ordinary individuals have expressed support for Ukrainian resilience. An illustration of this is Fuminori Tsuchiko, a volunteer in Kharkiv who has been acknowledged by Ukrainian media for his contributions. Tsuchiko supports local residents by providing daily necessities, including food and household items. To maintain international awareness, he also releases an annual visual testimony of the conflict based on his personal experiences with it.

Going back to humanitarian aid, Japan regularly assisted Ukraine by providing critical infrastructure, including over 2,500 power generators, more than 65 power autotransformers and other generating units under energy-recovery initiatives delivered by JICA and UNDP programmes. According to the Kiel Institute, this ranks Japan among the top 10 contributors of critical infrastructure to Ukraine in terms of accumulated humanitarian aid, which does not yet account for recent announcements of Japan's increased financial and technical assistance, provoked by latest issues of massive electricity shortages, blackouts and damages to critical infrastructure in the state. For that reason, the nature of this cooperation stems from value-driven diplomacy and strategic alignment. Furthermore, the conflict has deepened the Japanese public's understanding of Central-Eastern European perspective concerning regional security. By acknowledging the specific threats posed by the Russian Federation, Japan is better prepared to refine its long-term policy direction for humanitarian and financial engagement in Eastern Europe.

The ability of Ukraine to be proactive and committed in cooperation with Japan is a long-term challenge for the relationship. As bilateral engagement is mostly grounded on humanitarian aid, it also reflects the central issue of to what extent this involvement will survive after the conflict in Ukraine and whether parties will be invested in scaling cooperation in terms of large corporations direct involvement, mutual projects, or even military engagement. The reconstruction of Ukraine, especially the energy sector, will likely necessitate a significant amount of fiscal and material resources to expedite the state's renovation following the war. The electricity shortages in the state, particularly in the capital, are expected to persist for the next 2-3 years, according to the

most optimistic prognosis. This is due to the substantial damage and destruction of three major thermal electricity power plants (CHP-4, CHP-5 and CHP-6) by Russian missile attacks. The regional nuclear landscape is also witnessing significant shifts as Ukraine, historically the one of the most invested states in nuclear utilities in Europe after France and Great Britain, faces unprecedented challenges. While Ukraine continues to operate the continent's second-largest reactor fleet, its energy sovereignty has been pressured by the ongoing conflict and the occupation of key facilities like Zaporizhzhia nuclear power plant. Beyond the war, systematic Ukrainian corruption and bureaucracy in the energy sector that prevents international corporations from getting involved in Ukraine.

Japan, however, promotes Ukraine's course for judicial reforms that will ensure welcoming and understandable conditions for foreign business. For Japan to meaningfully increase its aid Ukraine would have to demonstrate substantial improvements in reducing corruption and similar issues. Rheinmetall AG's experience provides a cautionary tale-international projects that were initially enthusiastic about assisting Ukraine from within but ultimately failed due to the issues with corruption and bureaucracy. It is very difficult to assess Ukraine's post-war situation with already developing engagement of Japanese companies in Poland, and whether this engagement will be therefore mirrored in any stance.

### **A solution to Eastern Europe: Japan and Strategic Synergy?**

As both Poland and Ukraine move along different tracks of cooperation with Japanese energy-related sectors, it can showcase a pattern by which such diverse cooperation will be synergized at the end with the common strategy of Japan of assisting technological-humanitarian needs with its presence in the region. Such policies are consistent with the image that Japan has constructed since the end of the Second World War with a strong emphasis on non-military assistance and will only stimulate the efforts and bonds between parties in a common foreign policy approach. A possible catalyst that would be the limits of the humanitarian approach in the case of Ukraine, energy supply system of Ukraine would be completely redefined, and it would need to have support in its expansion of nuclear foundations, as in the case of Units 3 and 4 in Khmelnytskyi Nuclear Power Plant. The very reason for that lies in the same regard as with Poland: not many European nuclear holders are interested in investing in projects when it comes to Eastern states with heavy budget constraints. European involvement continues to persist in post-war Ukraine, partial involvement in technological advancements will be significantly beneficial to the project, despite power plant designs being engineered during the Soviet Union era.

With synergy in humanitarian courses, everything is much simpler - Russia continues to be the main threat near eastern borders, and the idea of energy security is all along observed in full-scale in Ukraine. This sort of an approach would not be offensive but would rather facilitate the extension of cooperation between parties and a possible pillar of the foreign policy course of Japan connected tightly to Eastern Europe. The challenge remains in understanding the necessity of Japan in the new realities of global politics, particularly related to increasing engagement in Eastern Europe. This is still a subject of significant debate in any current model that is grounded in a lack of foreign policy coordination and a strong diplomatic approach between Japan and Ukraine.

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*Yaroslav Sinisarenko is a policy analyst with a special focus on energy and domestic politics in Japan and Germany. He currently serves as a volunteer at the Poland-Japan Foundation.*