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Briefing Note

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Japan's energy security response is creating a renewables blind spot

- *Japan's response to the Middle East energy shock prioritizes reducing liquefied natural gas (LNG) use by increasing coal-fired generation and restarting nuclear power plants, rather than addressing the underlying factors driving import dependence.*
- *Japan's policy response focuses on expanding inflexible baseload generation at the expense of domestic renewable energy that could deliver equivalent energy security benefits without geopolitical exposure. Prioritizing coal and nuclear increases power system rigidity and suppresses renewable integration.*
- *The link between nuclear restarts and renewable curtailment is evident across multiple regions in Japan. Kyushu, Kansai, and Tokyo all show declining renewable output as nuclear capacity comes online. Curtailment dissipates clean energy in the present and weakens future investment in renewable projects by reducing revenue and undermining bankability.*
- *Consumers in Japan bear a dual cost burden: renewable surcharges support curtailed generation, while continued reliance on fossil fuels maintains exposure to volatile import prices.*

Rising geopolitical tensions in the Middle East have once again exposed Japan's dependence on imported fossil fuels, particularly liquefied natural gas (LNG) transiting through the Strait of Hormuz. Recent price increases have compounded concerns about supply security and fuel import costs.

The Japanese government has responded to these challenges by reducing LNG use through increased coal-fired generation and restarting nuclear power plants, positioning these sources as providers of stable and affordable domestic supply.

This approach may result in unintended consequences. As coal and nuclear generation expand within Japan's constrained power system, they may displace domestic renewable energy —

an alternative capable of delivering equivalent energy security benefits at lower cost. This displacement could increase curtailment, undermine investment in new renewable capacity, raise consumer costs, and impede progress toward decarbonization. Japan risks addressing one energy security challenge by reinforcing the conditions that created it.

Japan's established policy response: Coal and nuclear

Japan's response to energy security concerns prioritizes two established measures — expanding coal-fired generation to conserve LNG in the short term and accelerating nuclear restarts over the medium and long term. However, this strategy does not address the underlying factors driving import dependence.

Coal expansion

On 27 March 2026, the Ministry of Economy, Trade and Industry (METI) announced the temporary suspension of the utilization rate cap (50%) on inefficient coal-fired power plants (CFPPs) for fiscal year (FY) 2026. Inefficient CFPPs are defined as those operating below 42% thermal efficiency, with a combined capacity of approximately 9 gigawatts (GW). Raising the utilization rates for such plants could reduce LNG consumption by an estimated 500,000 tonnes annually.

On the surface, this approach appears consistent with Japan's energy security concerns, as approximately 71% of its imported coal comes from Australia, thereby reducing direct exposure to Middle Eastern supply risks.

However, practical constraints have already emerged that may limit the effectiveness of this measure. In March 2026, J-Power's Matsuura CFPP, with a capacity of 2,000 megawatts (MW) in the Kyushu area, reduced its output by 50% due to difficulties procuring diesel fuel for plant operations. Similarly, JFE Steel's Fukuyama facility halted a thermal unit due to a shortage of heavy oil. These developments suggest that even coal-fired generation remains indirectly exposed to disruptions in oil supply chains, potentially constraining the extent to which coal can substitute for LNG.

Nuclear restarts: Accelerating an existing policy direction

Alongside short-term measures, the current Middle East situation may reinforce Japan's longer-term policy direction toward nuclear power.

Tokyo Electric Power Company's (TEPCO) Kashiwazaki-Kariwa Unit 6 (KK6) nuclear power plant, with 1,356MW of installed capacity, was restarted on 21 January 2026, 14 years after the Fukushima accident. It entered commercial operation on 16 April 2026, following a delayed startup marked by multiple shutdowns due to technical faults. KK6 is expected to displace approximately 1.1 million tonnes of LNG annually. Japan's LNG imports transiting the Strait of Hormuz amount to around 4 million tonnes each year, representing 6% of total LNG imports. Prime Minister Takaichi has stated that KK6, combined with the expansion of coal-fired generation, could reduce LNG imports passing through the Strait of Hormuz by approximately 40%. Since taking office in October 2025, she has emphasized the role of nuclear energy in ensuring a stable electricity supply, reducing energy costs, and supporting industrial activity.

As of March 2026, 15 of Japan's 36 reactors were in operation, with a combined electricity generation capacity of 37GW. If all operable reactors were to come online, Japan's LNG demand could fall by a further 12.5 million tonnes annually, underscoring the scale of the opportunity but also exacerbating power system flexibility challenges.

In early April 2026, Japan's Nuclear Regulation Authority revised anti-terrorism requirements to prevent the shutdown of some operational reactors and facilitate further restarts.

The cost of the response

Japan's policy response focuses on expanding inflexible baseload generation at the expense of domestic renewable energy that could deliver equivalent energy security benefits at lower cost. The prioritization of coal and nuclear increases the likelihood of renewable energy curtailment, reduced investment, and higher consumer costs, while jeopardizing the achievement of decarbonization targets.

Curtailment: Inflexible baseload is crowding out renewables

The link between nuclear restarts and renewable curtailment is evident across multiple regions in Japan. Each major nuclear restart has been followed by a reduction in renewable energy generation.

In Kyushu, large-scale solar curtailment began in October 2018 after the restart of Genkai Units 3 and 4, marking the country's first sustained reduction in renewable output. In Kansai, curtailment started in June 2023, when multiple nuclear units were operating simultaneously, and has since become more frequent.

A similar pattern is emerging in Tokyo. After the restart of KK6, TEPCO curtailed renewable output for the first time on 1 March. Generation was reduced by up to 1,810MW during midday hours, representing peak instantaneous curtailment.

The amplifying effect of nuclear output became clear when KK6 returned to full power. On 29 March, with demand about 3,500MW lower than on 21 March and KK6 adding 1,319MW of inflexible supply, curtailment rose sharply. On 29 March alone, curtailment peaked at 3,290MW — more than seven times the level recorded on 21 March without nuclear.

Across 28–29 March, when KK6 operated at full output, curtailed energy (total volume of lost generation) totaled 16.2 gigawatt-hours (GWh), compared with 9.2GWh over 1, 8, and 21 March — nearly double the volume in two-thirds of the time.

Figure 1: TEPCO area nuclear output and renewable curtailment in March 2026 (midday average 11:00–13:00)

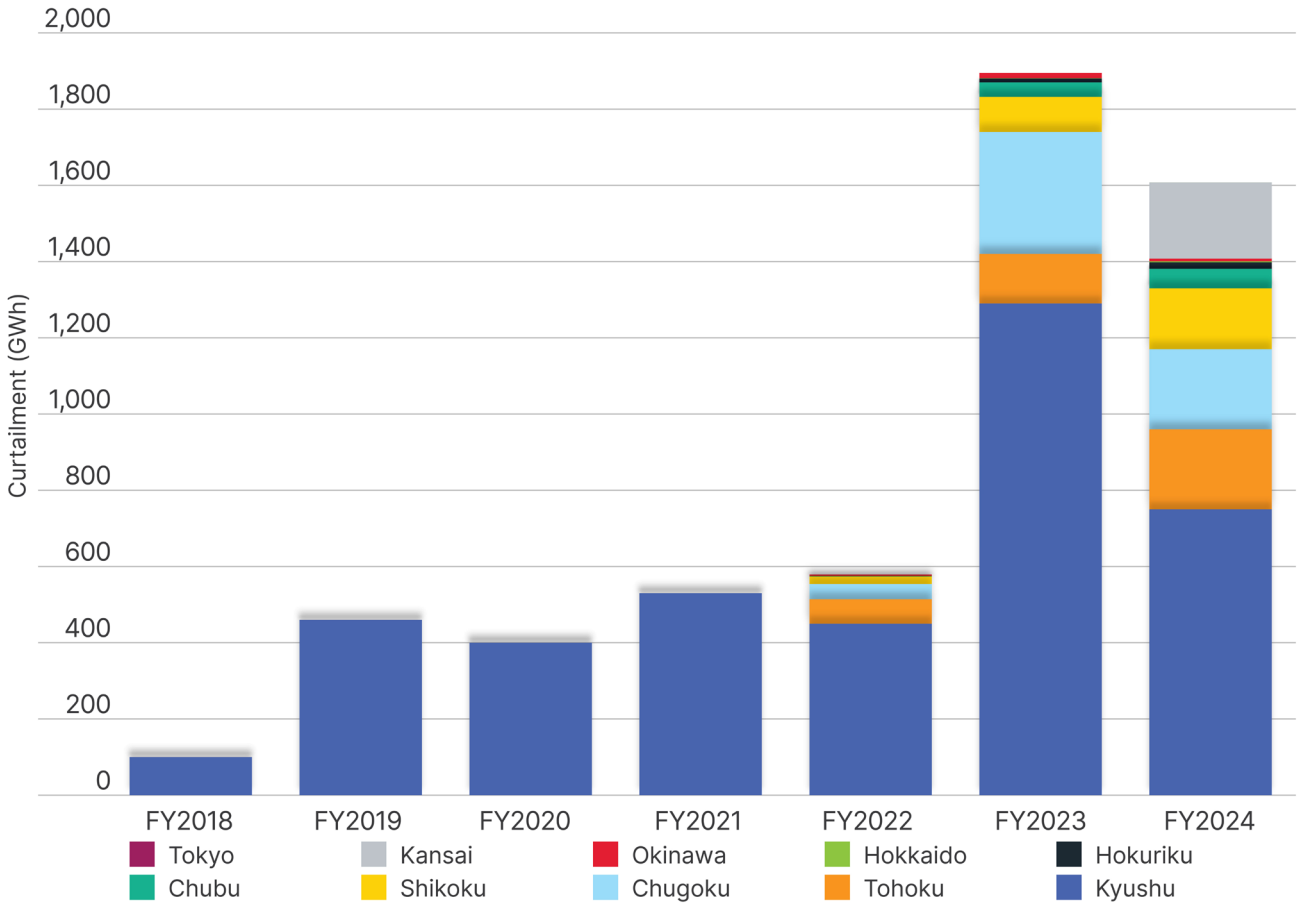
Source: TEPCO.

Note: On 21 March, KK6 was offline. Curtailment = solar + wind curtailment combined, shown as negative.

Nuclear plants operate as baseload generators, maintaining stable output with limited short-term operational flexibility. They cannot be readily ramped down in response to changes in demand or renewable output. Thermal plants — including coal and LNG — also face minimum output constraints of 30%–50% of capacity, limiting their ability to reduce generation. Expanding coal utilization compounds the inflexibility introduced by nuclear restarts, further reducing the power system's ability to absorb variable renewable output.

Curtailment has increased sharply from 100GWh in FY2018 to 1,895GWh in FY2023, with rapid acceleration thereafter. Nationally, 1,740GWh was curtailed in the first half of 2025 alone — a figure that overshadows Tokyo's March 2026 events but follows the same underlying dynamic. By FY2025, all transmission system operators (TSOs) in Japan had curtailment events.

Figure 2: Japan renewable curtailment by region between FY2018 and FY2024



Source: Ministry of Energy, Trade and Industry.

Note: Japan's fiscal year (FY) runs from 1 April to 31 March.

Grid infrastructure adds further constraints to the power system's ability to absorb renewable output. On each day when curtailment occurred in March 2026, the Tokyo area imported power from neighboring regions through interregional transmission lines. On 1 March alone, imports from Tohoku reached nearly 5GW — double the previous year. The power system was discarding internally generated renewable energy while importing power from elsewhere — a paradox that points to structural rigidities in dispatch rules and system operations rather than a supply shortfall. Grid-scale battery storage, which could absorb midday surplus for later use, was instead discharging rather than charging during curtailment periods, reflecting limited installed capacity that cannot play a meaningful balancing role.

Baseload responses jeopardize renewables investment

Curtailment not only dissipates clean energy in the present but also weakens the investment case for future renewable projects. Unlike some European markets, Japan does not provide compensation for curtailed output: lost generation results in reduced revenue, making curtailment risk a direct constraint on project bankability.

Developers are responding by shifting from feed-in tariffs (FITs) — which only remunerate generated electricity — to feed-in premium (FIP) schemes that allow the sale of battery-discharged electricity. This transition supports the integration of storage to mitigate curtailment losses and capture price arbitrage opportunities. As of March 2025, FIP-certified capacity had reached approximately 3.8GW across 1,889 projects, more than doubling year-on-year.

Battery integration increases capital expenditure and adds operational complexity. Moreover, strong investor interest has yet to translate into deployment at scale, as grid connection bottlenecks, policy instability, and high battery costs remain significant barriers. What was once a relatively low-cost and stable investment model is becoming more capital-intensive and risk-sensitive.

Policy signals have compounded this investment uncertainty. From FY2027, all ground-mounted commercial solar — the segment driving the bulk of Japan's utility-scale solar expansion — will be excluded from both FIT and FIP support schemes, regardless of project scale. At the same time, new renewable projects are required to connect under non-firm access arrangements, allowing curtailment without compensation during periods of system congestion.

Removing guaranteed revenue support while exposing projects to uncompensated curtailment risk substantially weakens the investment case for new large-scale solar development — particularly at a time when the energy security case for expanding domestic renewable capacity has rarely been stronger.

Consumer costs are rising

Consumers are increasingly bearing the financial burden of rising curtailment and continued fossil fuel dependence. The renewable surcharge for Japan in FY2026 is JPY4.18 (USD0.026) per kilowatt-hour (kWh), meaning a typical household consuming 400kWh per month pays approximately JPY20,064 (USD126.1) in renewable surcharges alone each year. A rising share of these payments is effectively lost due to curtailment.

In the first half of 2025, Japan curtailed 1,740GWh of renewable output nationwide — equivalent to about JPY6.9 billion in surcharges at the FY2025 rate of JPY3.98 (USD 0.025) per kWh. According to calculations by the Institute for Energy Economics and Financial Analysis (IEEFA), based on TEPCO's demand and supply data, five curtailment events in March 2026 reduced output by 25.4GWh — around JPY100 million in surcharges, or JPY226 million based on FY2025 FIT purchase prices of JPY8.9 (USD0.056) per kWh for commercial solar (over 50kW, non-auction). As curtailment increases alongside further nuclear restarts, the gap between what consumers pay for through the renewable surcharge and what they actually receive is likely to widen.

At the same time, the fuel price shock resulting from the Iran conflict is placing renewed upward pressure on electricity tariffs. TEPCO and Chubu Electric, both heavily reliant on LNG-fired generation, have revised their retail tariff structures to reflect the costs of procured fuel from April 2026. Electricity costs for households are projected to increase by approximately JPY15,000 (USD94.3) from June 2026 under current fuel price assumptions. Government subsidies have so far limited the impact on retail electricity tariffs, though the price increases from April 2026 suggest the underlying exposure to imported fuel costs remains unresolved.

The result is a power system in which consumers are paying for both underutilized renewable energy and continued reliance on imported fossil fuels.

Conclusion

Reducing exposure to LNG imports and maintaining supply stability are legitimate and urgent policy objectives for Japan. However, the current approach prioritizes short-term substitution — replacing LNG with coal and nuclear power — rather than building a more resilient power system, and, in doing so, risks reinforcing the very vulnerabilities it seeks to address.

Simultaneously, renewables are being systematically constrained by inflexible baseload generation and limited system flexibility. Consumers are paying for underutilized renewable energy, while remaining exposed to volatile fossil fuel costs.

A policy realignment is necessary to shield against rising imported fuel expenses. Expanding system flexibility — through transmission investment, storage deployment, and market reforms that prioritize low-cost domestic generation — would allow nuclear and renewables to operate as complementary rather than competing sources.

Energy security depends not only on securing supply, but also on reducing exposure to external vulnerabilities. Without such changes, Japan risks responding to one energy security challenge by entrenching the conditions that created it.

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