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**Taiwan: Reaching net-zero by 2050 looks more and more unlikely**

Over the past weekend, the people of Taiwan cast votes for referendums that are of strategic importance for the island's geopolitical and economic development. In particular, the proposals to complete the construction of the Datan liquefied natural gas (LNG) receiving terminal and revitalise the Lungmen Nuclear Power Plant are considered as critical for the chipmaking powerhouse to secure its energy supply but facing attacks from political opponents and environmental conservationists.

Located in the Guantang Industrial Area of northern Taiwan, the Datan terminal is designed to receive 3 million tons of LNG per year, supporting the island's target of massively increasing natural gas in its energy mix from 40% to 50% by 2025. The plan has been strongly opposed by environmentalists citing it will damage the 7,000-year-old algal reef along the Taoyuan coastline, despite its operator's efforts to minimize its environmental impacts by redesigning its layout to maintain the flow of nutrients. The Lungmen Nuclear Power Plant is an unfinished project with 2,700 MW capacity located in New Taipei City, where work has been halted since 2014 following the Fukushima-Daiichi accident in Japan. The proposal to resume the unfinished project directly contradicts the ruling party's "zero nuclear" policy by 2025 yet perceived by energy experts as an important source of baseload power while the island gradually phases down the use of coal.

The fact that the ruling Democratic Progressive Party (DPP) and opposition Kuomintang (KMT) have both switched sides on these very 2 projects historically have proved the referendums to be more political than anything else. Considering Taiwan's target to achieve net-zero by 2050 and its current heavy dependence on imported energy, the fate of these 2 projects deeply concerns many chipmakers on the island, whose production have already been heavily impacted by the shortage in electricity and water supply earlier this year.

The logistical snarl caused by the pandemic showed how vital it is to keep auto and tech production lines running, and yet an unstable electricity supply is an even bigger threat to the semiconductor industry. As the world's biggest chipmaker, Taiwan Semiconductor

Manufacturing Co (TSMC) alone consumed 5% of Taiwan's total electricity consumption, exceeding that of Taipei city. And the situation could only exacerbate once TSMC starts commercial production of its 3-nanometer chips in 2022, by then its annual power consumption is expected to rise to 7.2% of the island's total consumption. As we mentioned in another article, Taiwan's push for green transition has been largely driven by corporations as they want to win over more environment-conscious clients, and many of them have voluntarily committed to using 100% renewable energy. However, neither policymakers nor company executives should ever underestimate the importance of a stable electricity baseload in supporting the economy.

Several blackouts in Taiwan earlier this year highlighted the government's challenges in providing a stable electricity supply, let alone decarbonating its grid and reducing dependence on imported energy. In 2020, the island imported an overwhelming 98% of its energy and ranked the 2nd highest in coal dependence among developed economies. With the use of coal in the electricity generation mix stagnating at around 45% in recent years, reducing it drastically to the target of 30% by 2025 seems highly unlikely even if renewable capacity could quadruple from 5% to 20% during the same period as the government predicted, and even more unlikely without a sufficient supply of baseload energy coming from natural gas or nuclear.

The voting results indicated the people of Taiwan decided to finish the construction of the Datan LNG terminal and to abandon the nuclear plant project. Aside from the referendums' political nature, it might be worthwhile to look at the issues through the lens of energy security. On one hand, the island's current pathway to net-zero is clearly challenging, if not problematic, as evidenced by the supply gap created by the decline in coal power output and limited increase in alternative baseload energy.

On the other hand, the island's ever blooming chipmaking industry is set to consume even more electricity than it is today. As the demand for chips increases and the manufacturing process advances, the chipmaking powerhouse's increasing energy consumption trend is unlikely to reverse anytime soon. Policymakers need to look not just to the energy it needs right now but also to the energy it will need ten to twenty years from now if it is to power the island's future.

The island will thus become even more dependent on LNG and oil imports and will most likely not be able to meet its objective of becoming net-zero by 2050.

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