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Maintaining green energy security and preventing dependence on China

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Key points

- Liquefied natural gas (LNG) is one of the few energy sources for which China is dependent on the United States, Australia, and Japan.
- Accelerating decarbonisation policies to break away from dependence on Russian gas will only replace Russian risks with Chinese risks.
- Expanding China's nuclear power exports will make the economies of importing countries more dependent on China.

Policy recommendations

- Quad countries should align their decarbonisation policies – ideally through an intergovernmental conference on energy security – to prevent China's energy dominance.
- The US and Australia should continue producing natural gas to provide a steady supply as well as to maintain Chinese dependence on LNG, which must pass through a shipping choke.
- Quad countries should dissuade other countries from obtaining nuclear reactors from China, including by providing them with technical and financial support.

Decarbonisation aimed at Russia increases China risk

In response to tight natural gas supply demand and skyrocketing prices triggered by the Ukrainian invasion, countries accelerated their decarbonisation policies, including introducing renewables. However, this shift has been exposed as a security risk. The overdependence on China for renewable energy, its technology, and supply chains is a significant concern.

In 2022, the International Energy Agency released a report stating China's share of the significant manufacturing stages of solar panels will exceed 80 per cent[1]. The Global Wind Energy Council published a 2023 report showing China's share in turbines, the critical wind power component, reached about 60 per cent[2]. The acceleration of decarbonisation aimed at energy independence from Russia has thusly replaced Russian risk with Chinese risk.

The US has taken decisive action. It has imposed tariffs on Chinese solar photovoltaic products and invoked emergency import restrictions (safeguards) under Section 201 of the 1974 ***Trade Act***. Concurrently, the Biden administration promoted reshoring the photovoltaic industry in June 2022. This included the ***Defence Production Act*** of 1950 and the subsequent ***Inflation Reduction Act*** (IRA) in August 2022. Chinese products, which accounted for half of US solar PV equipment imports in 2011, consequently fell to 3.5 per cent of total imports in 2021[3].

However, reshoring is more challenging. The US has had to meet demand by exempting Southeast Asian imports from tariffs. In Japan, which once held a high market share in solar panels, companies have withdrawn from the business, making in-house production extremely

difficult. Japan is, therefore, looking to India as an alternative to China. Yet, India is also currently dependent on parts imports from China. Chinese manufacturing costs are lower than those in India, the US, and Europe by, respectively, 10 per cent, 20 per cent, and 35 per cent[4]. The Indian government placed tariffs on imports of solar modules, cells, and inverters beginning in August 2020 and is pursuing a domestic production policy in solar power-related industries. Japan should invest in building a supply chain in India, especially by licensing Poly Silicon's manufacturing technology. This would be in anticipation of diversifying the supply chain for hydrogen and ammonia produced by solar, one of Japan's decarbonisation strategies.

Choke points for Chinese LNG imports

Australia is among the world's largest LNG exporters, along with the US and Qatar. A study shows the most significant export destinations in 2022 were Japan, the People's Republic of China, and the Republic of Korea, with 39 per cent, 28 per cent, and 15 per cent of market share, respectively[5]. Australia and Japan have had a good relationship in the energy sector, with Japan investing in upstream Australian natural gas. Still, this good relationship is currently on shaky ground.

Australia's 'Safeguard Mechanism' was revised and came into effect in July 2023. It states new gas fields must purchase carbon credits or reduce emissions to net zero through carbon capture and storage as soon as operational. Backfill projects for existing reactors are considered new, and the reduction of the annual CO2 emission baseline also applies to existing reactors. Japanese companies have already invested in gas field projects, with production scheduled to begin in the first half of 2025. This policy shift by the Albanese government has led to the need to track back-fit costs and seek alternative locations, such as Canada. Australia should implement measures to support carbon capture and storage within one to two years, like the US IRA. This would secure Australia's position as a natural gas exporter, despite the pressure on domestic consumption due to high natural gas prices.

There are also national security reasons. From Kpler's data, a trajectory analysis shows that about 27 per cent of China's top 11 LNG imports pass through the Taiwan Strait. LNG from Western Australia additionally passes through the Second Island Line. LNG from the US also passes through the Tsugaru Strait between Hokkaido and Honshu, Japan. This is a choke point for China. Since the war in Ukraine, the Chinese government intends to expand natural gas imports from Russia through pipelines. However, it still depends on LNG for about 40 per cent of its natural gas.

Turning back China's dominance in nuclear energy

China has become a veritable nuclear superpower, with 55 reactors in operation, 24 under construction, and 44 in the planning stages[6]. Its momentum is expanding, not only domestically, but also globally through exports. Regarding security, there are concerns about losing control over spent nuclear fuel and the possibility of losing Western influence over safety standards. Furthermore, since nuclear power plant exports are accompanied by long-term financing, the importing countries increase their fiscal (and political) dependency on China.

Romania previously decided to install two Chinese reactors, but scrapped this contract in January 2020[7]. It then switched to projects with the US, France, and Canada. In addition, the US NuScale Power will install six small modular reactors (SMRs). Western countries should use Romania as a model case of the risks of long-term dependence on China. They should also provide technical assistance and financial support to countries considering installing Chinese reactors, including for the preliminary assessment of potential SMR sites in each country.

Conclusion

Energy security has long been a central issue. A new risk has emerged in accelerating decarbonisation policies: dependence on China for technologies such as renewables, nuclear, and their supply chains. This is truly the rise of green security.

The Quad needs to look beyond its own decarbonisation policies to ensure they are aligned to deter China's dominance. Therefore, an intergovernmental conference on energy security should be set up in the Quad as soon as possible.

Notes

[1] International Energy Agency, "Solar PV Global Supply Chains," ***An IEA Special Report***, 07 July 2022, accessed 24 October 2023, https://www.iea.org/reports/solar-pv-global-supply-chains

[2] Global Wind Energy Council, "Global Wind Report 2023", 27 March 2023, accessed 24 October 2023, https://gwec.net/wp-content/uploads/2023/03/GWR-2023_interactive.pdf

[3] VOA News, "US to Investigate Use of Chinese Materials in Imported Solar Panels", 4 April 2022, accessed 30 October 2023, https://www.voanews.com/a/us-to-investigate-use-of-chinese-materials-in-imported-solar-panels-/6515081.html

[4] International Energy Agency, "Solar PV Global Supply Chains," ***An IEA Special Report***, 07 July 2022, accessed 24 October 2023, https://www.iea.org/reports/solar-pv-global-supply-chains

[5] Energy Quest, "Australian 2022 LNG export revenue over A$90 billion", 5 January 2023, accessed 24 October 2023, https://www.energyquest.com.au/australian-2022-lng-export-revenue-over-a90-billion/

[6] World Nuclear Association, "Nuclear Power in China", updated August 2023, accessed 24 October 2023, https://world-nuclear.org/information-library/country-profiles/countries-a-f/china-nuclear-power.aspx

[7] World Nuclear News, "Romania restarts approach to new Cernavoda units", 16 July 2020, accessed 24 October 2023, https://www.world-nuclear-news.org/Articles/Romania-restarts-approach-to-new-Cernavoda-units

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About the Quad Tech Network

The Quad Tech Network (QTN) is an initiative of the NSC, delivered with support from the Australian Government. It aims to establish and deepen academic and official networks linking the Quad nations – Australia, India, Japan, and the United States – in relation to the most pressing technology issues affecting the future security and prosperity of the Indo-Pacific.

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