



The energy quest: elevating the Quad's role in the Indo-Pacific

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Key points

- Energy security remains an ongoing challenge in the face of escalating geopolitical tensions and the emergence of inward-focused domestic industrial policies.
- Renewables are set to assume an increasingly prominent role as the Quad economies position themselves for energy transitions and strive for low-carbon, resilient growth.
- The extraction and processing of critical minerals, essential for facilitating a green energy transition, exhibit significant geographical concentration, elevating the vulnerabilities within the energy landscape.
- The growing digitisation of the energy sector is undeniably crucial; however, it also exposes the sector to increasing security and privacy risks.

Policy recommendations

- The Quad should encourage technology co-development and transfer to mitigate the potential hazards of supply chain monopolisation and future disruptions. Incorporating digital resilience into both technology research and development initiatives will be critical.
- The Quad should strengthen sector-specific partnerships aimed at harnessing synergies and enhancing clean energy capacity, production, and distribution.
- The Quad should strive to extend the scope of the Quad Plus framework to facilitate synergies and avoid being overshadowed by conflicting and competitive actors in the Indo-Pacific region.
- The Quad should aim to harmonise global green policies and uphold the principles of equity and justice as central tenets of the just energy transition agenda.

The landscape of energy insecurity

Over recent years, a series of significant geopolitical and economic factors have profoundly impacted the energy landscape, including the Covid-19 pandemic and the recent invasion of Ukraine. These developments have far-reaching implications for the Quad, constraining critical energy supplies. Furthermore, the new age of energy insecurity is increasingly shaped by countries looking inwards and devising domestic climate policies, most notably, Washington's **Inflation Reduction Act** (IRA) and Europe's Green Deal industrial plan¹, which threaten to derail rapid clean energy transitions in other geographies. The illusion of increased self-sufficiency may render a false and temporary sense of resilience, yet an interconnected global energy system must remain the cornerstone of an energy-secure world order.

Fossil fuels, namely coal, natural gas and oil, continue to remain the dominant sources of energy among the Quad countries. The Indo-Pacific region accounts for almost 60 per cent of the world's greenhouse gas (GHG) emissions and houses some of the world's most vulnerable countries to climate change.² If countries fail to promptly establish pathways for clean and resilient energy supply chains, it could lead to pervasive energy insecurity and economic

instability. As signatories of the momentous Paris Agreement,³ there is a significant push for renewables among the grouping. Quad countries are proactively integrating clean energy sources into their energy mix, encouraged by remarkable technological advancements and the declining costs of renewable technologies. Inevitably, renewables will play a central role in realising the Quad countries' net zero commitments.⁴

Critical minerals and rare earths are crucial ingredients for clean energy proliferation at scale; and the concentration of these resources in a few countries presents significant geopolitical risks. Australia supplies 50 per cent of global lithium, while Congo and China provide 70 per cent of cobalt and rare earths respectively. The concentration is even higher in the processing stage, with China refining 60-90 per cent of these minerals.⁵ In contrast, the world's largest oil supplier, Saudi Arabia, contributes less than 15 per cent of the global oil supply.⁶ Given this context, achieving diversification of clean energy supply chains, especially critical minerals, will become essential. Adding to this complex scenario, China's recent imposition of licensing requirements on the exports of the niche metals gallium and germanium has also raised serious concerns. Monopolisation of existing clean energy supply chains poses a significant threat to a rapid global green transition.

Digitisation is currently bolstering the safety, productivity, accessibility, and sustainability of energy systems. Although there is considerable potential in leveraging digitisation for energy, there are also significant challenges related to security and privacy risks.. The expansion of the Internet of Things (IoT) is amplifying the potential 'cyber-attack surface' within energy systems.⁷ Effective measures will require collaboration between private enterprises and governmental bodies to prevent and address incidents such as the 2015 cyberattack that disrupted significant portions of the power grid in western Ukraine.⁸ Privacy and data ownership will represent significant concerns for consumers as increasingly detailed data is gathered from a growing array of interconnected devices and appliances.⁹

The Quad's role in strengthening energy security and clean energy supply chains in the Indo-Pacific

The Quad nations recognise the importance of reducing dependency on fossil fuels in the interest of both energy security and addressing climate change, and have collectively committed to making resilient clean energy supply chains a key agenda priority. This section provides recommendations to strengthen the Quad's role in this regard.

Promote technology co-development and transfer

As demand for renewables technology and associated critical minerals rises in the future, it is important to foster collaboration among jurisdictions to enhance cost optimisation, stabilise pricing and most importantly ensure that the technologies serve the needs of all countries. Technological innovation and key critical minerals are often geographically concentrated, and therefore, cross-country collaborations can help build joint capacities that will reduce the risk of supply chain monopolisation and future disruptions.¹⁰ The Quad can be instrumental in forming networks of top-class innovation labs with representation from the grouping and other member countries in the Indo-Pacific. Furthermore, it can facilitate joint ventures between private companies to this end. These efforts will also serve as an opportunity to promote green entrepreneurship and bring within the fold SMEs engaged in innovative green solutions.

Technology transfer will be equally critical. For instance, India recently discovered almost 6 million tons of lithium within its jurisdiction, but may take up to 20 years to build the necessary capacities for extraction without urgent technological support.¹¹

Moreover, it is important to incorporate digital resilience into both technology research and development initiatives, while at the same time bearing in mind the policy and market frameworks to address the security and privacy risks discussed in the previous section.¹²

Establish sector-specific partnerships

In 2021, the grouping announced the 'Quad clean-hydrogen partnership' to scale production, boost demand, and reduce costs for hydrogen supplies. Similarly, the US and Australia founded the 'Energy Resource Governance Initiative' to improve critical mineral supply chains.¹³ At the G20 Energy Ministerial this year, India proposed the Global Biofuel Alliance to accelerate sustainable biofuel deployment, which serves as yet another notable example.¹⁴ Similar sector-specific partnerships on cooling, decarbonising freight transport, minimising methane emissions in the natural gas sector, fuel ammonia etc. are far more effective in drawing synergies and fostering collaboration among countries to boost clean energy capacity, production and flows.

A broader Quad plus framework

China's diplomatic inroads in Solomon Islands serves as a compelling reminder of the need to bolster relationships with countries in the Indo-Pacific. Strengthening these ties is crucial to promoting mutual interests and prosperity in the region. Including other countries will strengthen the plurilateral nature of the Quad and help draw complementariness and synergies in pursuing shared goals. India and Singapore have joined hands in connecting their power grids through undersea cables, which will allow India to sell renewable energy to the latter.¹⁵ Enabling grid connectivity among countries in the Indo-Pacific, as well as Africa, where energy demands are projected to rise significantly, holds immense potential in ensuring energy availability, access, affordability, and sustainability across the region and beyond. By fostering interconnectivity and collaboration in the energy sector, particularly on power grids, countries can leverage their diverse energy resources to meet growing demands and address common energy challenges collectively. The International Solar Alliance (ISA), led by India and France, can play a pivotal role in spearheading these efforts to facilitate dialogue, knowledge sharing, and investment in clean energy infrastructure. To draw out an analogy, the five-member BRICS grouping invited six more countries to join the alliance as permanent members in the spirit of strengthening multipolarity and fostering Global South collaboration on common challenges.¹⁶

Harmonise global green policies and ensure just energy transitions

The Indo-Pacific is home to many countries disproportionately vulnerable to climate change and energy supply disruptions. For instance, the Covid-19 pandemic's impact on freight rates was particularly pronounced on trade routes to developing regions in the Indo-Pacific.¹⁷ As global economies prime themselves to transition towards green and clean sources of energy, the principles of energy equity and justice must remain central to the agenda. The Quad may consider instituting reconceptualised Just Energy Transition Partnerships (JETPs) that are not limited to coal phase-downs, but instead focus on sectoral transformations by investing in project-based/sector-specific activities including cooling, decarbonising long-haul freight transport, electric vehicles etc.¹⁸

Furthermore, the Quad must leverage its collective powers to hold dialogue, promote cooperation and harmonise the green policies of Western economies such as Europe's Fit-for-55 plan, which includes a Carbon Border Adjustment Mechanism (CBAM), as well as the US **Inflation Reduction Act** (IRA). For instance, the former seeks to tax imports of carbon-intensive hydrogen, while the latter proposes to offer substantial subsidies of three dollars per kilogram on green hydrogen, providing a domestic competitive advantage that threatens to undercut low-cost producers in other countries. To this end, the Quad may consider establishing a more collaborative Global Green Hydrogen Alliance to strengthen cooperation and ensure fair competition.¹⁹ Furthermore, long-term concessional financing will be critical for economies in

the Indo-Pacific on their journey towards decarbonisation. The Quad could perhaps undertake a re-examination of risk-rating metrics that have so far burdened Global South nations with a premium on capital stemming from biased country risk perceptions.²⁰

Notes

¹ Jason Bordoff and Meghan L O’Sullivan, “The Age of Energy Insecurity, How the Fight for Resources Is Upending Geopolitics”, *Foreign Affairs*, 10 April 2023

² M Woods, “Clean-Energy Supply Chains in the Indo-Pacific: Prioritizing the Quad’s Role”, *Institute for Security and Development Policy*, 2022, accessed 2 August 2023, <https://isdp.eu/publication/clean-energy-supply-chains-in-the-indo-pacific-prioritizing-the-quads-role/>

³ United Nations, “Paris Agreement”, *United Nations*, 2015, accessed 2 August 2023, https://unfccc.int/sites/default/files/resource/parisagreement_publication.pdf

⁴ M Woods, “Clean-Energy Supply Chains in the Indo-Pacific: Prioritizing the Quad’s Role”, *Institute for Security and Development Policy*, 2022, accessed 2 August 2023

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⁶ Alexandra Twin, “The World’s 10 Biggest Oil Exporters”, *Investopedia*, updated 28 July 2023, accessed 25 October 2023, [https://www.investopedia.com/articles/company-insights/082316/worlds-top-10-oil-exporters.asp#:~:text=Saudi%20Arabia%20is%20the%20world's,the%20United%20States%20\(7.11%25\)](https://www.investopedia.com/articles/company-insights/082316/worlds-top-10-oil-exporters.asp#:~:text=Saudi%20Arabia%20is%20the%20world's,the%20United%20States%20(7.11%25))

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⁸ Jason Bordoff and Meghan L O’Sullivan, “The Age of Energy Insecurity, How the Fight for Resources Is Upending Geopolitics”, *Foreign Affairs*, 10 April 2023

⁹ International Energy Agency, “Digitalization & Energy”, November 2017, <https://iea.blob.core.windows.net/assets/b1e6600c-4e40-4d9c-809d-1d1724c763d5/DigitalizationandEnergy3.pdf>

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¹¹ Arunabha Ghosh, “Can India Become a Green Superpower?”, *Foreign Affairs*, 20 June 2023, accessed 25 October 2023, <https://www.foreignaffairs.com/india/can-india-become-green-superpower>

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About this paper

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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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