【論文】

What is the biggest obstacle for Indonesia's clean energy transition for energy security and how can Quad countries address it?

Takahiro Kamisuna[1] and *Shu Uchida*[2]

Introduction

Since the late twentieth century, clean energy transitions have become an emerging agenda among international policymakers, environmental activists and scholars. In this context, the clean transition from traditional fossil-fuel based energy to renewable energy has gained political momentum at the global level and has become institutionalised in domestic policymaking processes. The international community has, perhaps optimistically, envisaged the aim of 'green growth', in which economic growth and environmentally sustainable development are able to coexist, and environmental policies could even drive tangible economic growth (Jacob, 2013; Hickel & Kallis, 2020). From this perspective, the logic of 'grow now – clean up later', which prioritises economic growth before tackling environmental issues, is disfavoured as a less effective approach; and the idea of green growth has become central as a new logic of growth, in the age of clean energy transition (Ekins & Zenghelis, 2021; Lebdioui, 2024).

Countries in the so-called Global South, however, have faced a dilemma between the clean energy transition and national industrial development. While the international pressure to move away from fossil fuels has encouraged developing economies to accelerate the clean energy transition with enormous financial support from developed countries, the domestic industries still require large volumes of cheap fossil fuels to achieve rapid economic growth. Indonesia is a typical example of this dilemma between green and economic growth. While the country holds enormous reserves of coal, which underpins the domestic industrialisation, Indonesia is the world's biggest miners and producer of nickel, potentially for batteries of electric vehicles (EVs) (Huber, 2021 December 8). Reliant on both old and new energy resources, Indonesia has taken a pragmatic approach to clean energy transition, burning domestic coal while attracting international investment in EV downstream industries.

When the international community tackles the clean energy transition, the arguments tend to involve high-level policy discussions without understanding the actual politics on the ground. This was apparent in our panel discussion, held in Bali in June 2024, at the US State Department-sponsored 'Workshop for Rising Think Tank and Academia Opinion Leaders

[1] Centre of Development Studies, Department of Politics and International Studies, University of Cambridge
[2] Associate Professor, Organization for Regional and Inter-regional Studies, Waseda University

from Quadrilateral Security Dialogue (Quad) and ASEAN Countries';[3] it highlighted not only the global-level issues of the clean energy transition, but also challenges at national and local levels in Southeast Asia. Based on this discussion, therefore, this article depicts the substantial challenges posed to political economy by the clean energy transition at the national and local levels, focusing on the case of Indonesia. By doing so, we attempt to suggest a constructive approach to the clean energy transition that Quad countries could employ.

Energy Security and Quad

This article employs clean energy transition and green growth in Indonesia as key terms. Our approach is, however, to understand the energy transition and following green growth as a part of the process of 'energy security', broadly defined. Hence, the article initially defines the foundational concept of energy security, underpinning our empirical argument.

Energy security is scholarly understood as an idea that consists of three key elements: the reliability of supply, the affordability of supply, and environmental sustainability (Ostrowski, 2018, p. 1). More practically, International Energy Agency (IEA)[4] defines energy security as "the uninterrupted availability of energy sources at an affordable price." Yet, IEA simultaneously acknowledges multiple dimensions in energy security. It says that "long-term energy security primarily deals with timely investments to supply energy in line with economic development and environmental needs, while short-term energy security focuses on the ability of the energy system to react promptly to sudden changes in the supply-demand balance" (IEA, 2019).

Sustaining energy security, therefore, inevitably includes elements of political economy and governance and market. Taking these discussions into account, this paper broadly defines energy security as "ensuring the reliability, affordability, and sustainability of energy supply through the diversification of energy sources, infrastructure, investments, and market governance, as well as the international politics and strategies related to securing long-term energy supply" (Prontera, 2017, p. 7).

But, how does the effort to sustain energy security could resonates with the idea of Quad? Here, one should track back the origin of Quad in fully understand its fundamental roles. Indeed, Quad, is often viewed as a framework to counter increasing China's influence in the Indo-Pacific. Yet, its origins can be traced back to the humanitarian assistance provided by Japan, the United States, India, and Australia in response to the devastating Indian Ocean tsunami of 2004. This collaboration marked the beginning of the loosely organized Quadrilateral Security Dialogue. In 2007, under the leadership of former Japanese Prime

[3] https://dcnglobal.net/forums/forum/strengthening-indo-pacific-collaboration-for-development
[4] IEA was established in 1974 as an autonomous body within the framework of the Organisation for Economic Co-operation and Development (OECD) at the initiative of U.S. Secretary of State Henry Kissinger in response to the first oil crisis (IEA, 2019).

Minister Shinzo Abe, the Quad framework took shape. However, concerns from some nations regarding the potential provocation of China led to a diminished emphasis on its security-oriented aspects in subsequent years.

The statement issued at the Quad Summit in December 2024 highlighted that "the Quad is a diplomatic network of four countries committed to supporting a free and open, stable and prosperous Indo-Pacific that is inclusive and resilient (US State Department 2024)." While the notion of a free and open Indo-Pacific (FOIP) remains central, the listed areas of focus include climate change, cancer, pandemics, quality infrastructure development, maritime domain awareness, STEM education, counter-terrorism efforts, critical and emerging technologies, and cybersecurity (US State Department 2024). These priorities underscore the distinction between the Quad and security-centric frameworks such as AUKUS.

The humanitarian assistance provided after the Indian Ocean tsunami serves as a reminder that the Quad's primary role is not that of a security alliance but a diplomatic framework for jointly addressing various challenges in the Indo-Pacific region, including those faced by ASEAN. This perspective is further reinforced by the statement (2024), "We reaffirm our unwavering support for ASEAN's centrality and unity as well as mainstreaming and implementation of the ASEAN Outlook on the Indo-Pacific." The significance of ASEAN, including Indonesia, within the Quad framework remains substantial. Therefore, the Quad functions as a vital platform for regional cooperation, focusing on shared challenges and emphasizing the centrality of ASEAN in achieving a stable and prosperous Indo-Pacific.

The following sections delve deeper into the specific challenges Indonesia faces, which are the main themes of this article.

Indonesia in the global energy transition

The idea of green growth is crystalised as the market growth of green industries. The IEA has recently reported that investment in major clean energy technologies reached USD200 billion in 2023, a more than 70 per cent increase from 2022 (International Energy Agency, May 2024, p. 22). Batteries gained the largest investment in 2023; the industry is dominated by China, followed by the United States and European Union (EU). The green economy has been growing as a gigantic global market over the decades, and China has been a dominant player in clean energy and green manufacturing industries (IEA, March 2024).

Indonesia has benefited from this growth of the green economy. The country is known as the biggest producer of nickel, which is potentially used for EV batteries. Over the last decade, Indonesia's nickel production has surged, due to the increasing global demand in EV industries. In 2023, Indonesia accounted for 50 per cent of the world's nickel production (Rachman, 2025). China has been the biggest investor in Indonesian nickel, particularly for the nickel smelting industries in the Central, Southeast Sulawesi and North Maluku provinces (Sangadji & Ginting, 2023). Furthermore, the majority of nickel ore from Indonesia has been

exported to China since 2010, while Japan used to be the biggest importer of Indonesian nickel ore until the early 2000s.[5] In 2019, the entire export of Indonesian nickel ore had nearly doubled since 2010, 95.6 per cent of which was exported to China. Thus, the global energy transition and rise of China as an industrial giant have transformed the industrial structure of Indonesian nickel mining.

Likewise, China has been the biggest and most influential investor in Indonesian nickel in downstream – or *Hilirisasi* – industries, by choosing a completely different strategy in foreign investment from Japan. Unlike the Japanese quality infrastructure investment, which exclusively invests in technologically advanced industrial fields such as clean coal and, more recently, hydrogen, China has made enormous investments in various sectors in multiple countries, including conventional fossil fuels and the recent renewable energy.[6] Indeed, this extraordinary domestic and international investment has shaped the new Western narrative of China's 'overcapacity'.[7]

China's overcapacity in investing in green industries has underpinned Indonesia's grand ambition for 'green' industrialisation (Lu, 2024, February 13). Chinese firms built a number of nickel smelters in Sulawesi and North Malulu islands in Indonesia, thus increasing the domestic capacity of nickel processing in Indonesia as the part of Belt and Road Initiatives (BRI) (Tritto, 2023). Apparently, overcapacity in Indonesian nickel smelters had a negative impact on the global nickel supply chain. The *Financial Times* has recently reported a nickel price plunge, while Indonesia is accelerating the nickel output.[8] The nickel price peaked at $ 45,795 in March 2022, and has sharply declined to $16,865 in March 2024. Consequently, Indonesia has oversupplied nickel, despite the price decline.[9]

The dominance of Chinese capital in the global EV market has triggered a retaliation from the United States. In 2022, the Biden administration implemented the Inflation Reduction Act (IRA), which substantially reflects the US concerns regarding economic security over its adversaries or 'covered nations'; i.e. China, Russia, North Korea and Iran (Buffie, 2024, February 28). Indeed, the fact that 65 per cent of EV battery components are produced in China, and the country refines two-thirds of the world's nickel, lithium and cobalt for EV batteries, spurred the creation of the regulation (Deaux, et al., 2023, December 1). Importantly, the IRA's subsidies exclude minerals produced by firms with over 25 per cent ownership by China; Indonesian nickel is obviously not fit with eligible (Bikales & Snyder,

[5] Data from Observatory of Economic Complexity: https://oec.world/en/profile/country/idn
[6] Mercator Institute for China Studies, *Powering the Belt and Road: China supports its energy companies' global expansion and prepares the ground for potential new supply chains*. 27 June 2019. https://merics.org/en/tracker/powering-belt-and-road; *Nikkei Asia Review*, 'Chinese investment in Asia rose 37% in 2023, led by Indonesia'. 7 March 2024. https://asia.nikkei.com/Spotlight/Belt-and-Road/Chinese-investment-in-Asia-rose-37-in-2023-led-by-Indonesia; China Africa Research Initiative, 'Chinese FDI In Africa data overview'. http://www.sais-cari.org/chinese-investment-in-africa#:~:text=Chinese%20FDI%20in%20Africa%20Data,US%241.8%20billion%20in%202022;
[7] Nathaniel Taplin, 'China's Overcapacity is already backfiring'. *The Wall Street Journal*, 16 April 2024. https://www.wsj.com/world/china/chinas-overcapacity-is-already-backfiring-86f29e4a
[8] A. Anantha Lakshmi, 'Indonesia to accelerate nickel output despite low global prices'. *Financial Times*, 29 March 2024.
[9] Shinichiro Arakawa, 'Nickel and lithium prices plunge as Chinese EV demand loses steam'. *Nikkei Asia Review*, 6 February 2024.

2023 November 6). Against this backdrop, the Indonesian ambition of *Hilirisasi* (downstreaming industries) is on the brink of changing its direction, and Jakarta has started to 'diversify' the ownership of nickel projects, to reduce the dependency on Chinese firms (Lakshimi, 2024, July 26).

The Indonesian clean energy transition is, therefore, placed in the middle of the changing global market in which China has emerged as a revisionist power, and the rise of economic security – in pursuit of which the US has attempted to diminish the Chinese market domination. The clean energy transition is at the heart of the great powers' competition to lead the market in emerging green industries and technologies. While Indonesia has benefited from this green industry boom, the challenge in the next several years is to find a balance between easy-to-secure Chinese investment and stark market regulations imposed by the US and its Western allies.

In the context of this US–China trade war, Indonesia has attempted to develop its domestic green industry, rather than achieving a substantial energy transition. Indonesia is ambitiously envisaging the future roadmap of its domestic EV industry, from downstream to upstream. As the country holds the largest production of nickel materials, Indonesia aims to develop its domestic industry based on this natural resource. While Indonesia has been willing to dominate the global nickel supply, against the US IRA regulation, the biggest nickel producer attempted to establish its domestic supply chain of EVs within Indonesia, thus competing with other Asian manufacturing hubs such as Thailand and India (Cyrill, 2023, October 18). Chinese EV producers such as BYD, and more recently, the Hyundai Motor Company and LG Energy Solution from South Korea, have been committing to EV battery manufacturing in Indonesia (Sandi, 2024, February 15; *Kontan*, 2024, September 23). Hence, Indonesia has ambitiously pursued the resource-based green industry, amid the global energy transition.

By contrast, the clean energy transition in Indonesia has rather stagnated, despite international financial supports. The US–Japan-led Just Energy Transition Partnership (JETP) has financed Indonesia for its clean energy transition since the G20 Leaders' Summit, held in Bali in November 2022. Under the JETP funding, Indonesia boldly aims to reduce its peak greenhouse gas (GHG) emission to 290 metric tonnes of CO_2, and to increase the share of new and renewable energy (NRE)[10] mix to 34 per cent by 2030 (CSIS Indonesia & Tenggara Strategics, 2023). Against this ambitious target, Indonesia has excluded private coal power plants from the JETP finance plan, to keep a stable energy supply for the nickel smelters in North Maluku and Sulawesi islands (Reuters, 2023, October 30). Furthermore, the Indonesian government has recently reduced the renewable energy target from 23 per cent to 17 per cent by 2025, which makes the ambitious target less realistic (*The Jakarta Post*, 2024 January 16). The backsliding of the clean energy transition apparently benefits coal oligarchs, most of whom also hold nickel mining companies, while extending the use of coal as long as possible.

[10] Note that NRE includes coal-based 'new' energy such as coal gasification (Hariandja, 2023, March 1).

The domestic cost of the global clean energy transition

The local cost of Indonesia's dependence on its own resources, however, has been considerable. Indonesia's resource-based green industry has caused overlogging of forestry areas in nickel mining sites, some of which is apparently illegally carried out. A recent report from the *Financial Times* estimates that 'at least 76,301 hectares – an area the size of New York City – of tropical forests has been cleared within 329 nickel concessions'. More alarmingly, around 30 per cent of the forest area has been logged since 2019, to fulfil demand for EVs and the batteries (Ruehl & Dempsey, 2023, October 8).

The overexploitation of nickel mining resources is inevitably associated with cases of corruption among national and local elites in Indonesia. One of the biggest relating to nickel mining is that of Mandiodo Block, located in North Konawe regency in Southeast Sulawesi province. In this case, an Indonesian businessman, Windu Aji Sutanto, and former director-general of Minerals and Coal in the Ministry of Energy and Natural Resources, Ridwan Djamaluddin, were arrested for conducting an illicit mining business. Windu's mining company Lawu Agung Mining illegally purchased the nickel quota documents to sell nickel to Chinese-operated smelters in Morowali regency, Central Sulawesi province; as a result, 'state losses reached Rp5.7 trillion (about US$373 million)' (*Tempo Magazine*, 2023, August 21; Budi, 2024, April 25). Ridwan Djamaluddin was arrested for masterminding the manipulation of the illegal documents for Lawu Agung Mining. This corruption case became fairly sensational in Indonesia, as Windu was a former deputy of President Joko Widodo's transition team, when he was running for the presidency in 2014.

At local levels, dirty money from illegal logging and mining has flown to the funding of political candidates in local elections (Jong, 2023, March 21). Although Indonesia is often perceived as a stable democracy, money politics has become rampant nationally and locally after the democratic transition (Aspinall & Berenschot, 2019). Resource-producing provinces are additionally prone to the pattern of money politics (Morishita, 2008; Aspinall & Van Klinken, 2011). Indeed, the author's interviews with local people and NGOs in nickel-producing Southeast Sulawesi and North Maluku provinces in Indonesia highlight the pattern of money politics based on the nickel mining business.[11] Likewise, most of the prominent local candidates or their families often own nickel mining companies.

The negative influence of the overexploitation is mainly found among the most vulnerable people in local communities. Overcapacity in the mining and processing sectors has caused land rights violations, deforestation and water pollution in nickel-producing provinces. In North Konawe regency in Southeast Sulawesi province, sea water has been polluted by nickel mining activities, resulting in the displacement of the *Bajo* indigenous ethnic group, who make their living with local fishing businesses (Salman, 2024, May 13). On Obi Island in North Maluku province, it was reported that the nickel smelting operation by Harita Group's

[11] Confidential interviews with local citizens and NGO employees in Southeast Sulawesi and North Maluku Province in 2024.

subsidiaries had a harmful impact on the local community and environment. Harita Group is the one of the biggest conglomerates in Indonesia, owned by Chinese Indonesian business tycoon Lim Hariyanto Wijaya Sarwono. In particular, Harita Group has significantly benefited from its palm oil and mining businesses, which made Lim one of Indonesia's 10 richest people (Putri, 2023, August 19). Harita's subsidiary, PT Trimegah Bangun Persada Tbk. (NCKL) has recently started to operate the first high-pressure acid leaching (HPAL) smelter in Obi Island. The Chinese-financed HPAL technology converts low-grade nickel ore into mixed hydroxide deposits or hydroxide precipitate (MHP), which will be further processed to produce EV batteries (*Kompas*, 2023, December 14). NCKL became the first Indonesian firm to successfully operate HPAL-driven nickel smelters.

According to a report from Trend Asia, an Indonesian local NGO, Harita's subsidiaries in Obi Island (including NCKL, PT Gane Sentosa Permai, PT Halmahera Persada Lygend, PT Megah Surya Pertiwi and PT Halmahera Jaya Feronikel) have devastated local plantations and polluted the natural springs, rivers and sea water. Their nickel operation has further caused residents' health problems, with air pollution due to dust from the smelters in the island. While islanders have protested against Harita's nickel business, the company has repeatedly intimidated locals who defend their land and living space (Trend Asia, 2023, April 12); a local NGO reports that the company dispatched *Preman* (gangsters) (JATAM, 2023). The reality of the clean energy transition in Indonesia is, therefore, rather 'dirty'; it involves environmental degradation, land conflicts and human rights abuses, resulting from oppressive national mining policies and uncontrolled illegal exploitations in nickel-producing provinces.

Quad's approach to the clean energy transition in Indonesia

In the Quad summit meeting in Wilmington, US, on 21 September 2024, the four leaders from Japan, the US, Australia and India showed their commitment to supporting the implementation of the ASEAN Outlook on the Indo-Pacific (AOIP). Materialising the Quad–ASEAN partnership, however, still faced challenges. Our discussion at the workshop in Bali showed that ASEAN countries' attitudes towards Quad are not necessarily favourable, without a clear conceptualisation and tangible investments. Indeed, Indonesia, which initiated the drafting of AOIP, is not very active in engaging with Quad (Jaknanihan, 2021, May 11). Given the principle of ASEAN Centrality, ASEAN countries are reluctant to be involved in the US–China contestation, in order to avoid potential domestic and regional conflicts, such as they experienced over the last century.

Hence, the Quad–ASEAN partnership should be constructed as a form of comprehensive cooperation for economic, environmental and security benefits. In this respect, supporting a clean energy transition in ASEAN countries is the perfect fit, as it comprehensively covers different circumstances that both Quad and ASEAN countries face.

Accordingly, Quad countries engage in the global clean energy transition based on their different strengths. The 'Wilmington Declaration Joint Statement' from the summit explicitly

sets out the roles of different Quad countries. While Australia will promote the Clean Energy Supply Chains Diversification Program in the Indo-Pacific region, India has shown commitment to investing $2 million in new solar projects, and Japan has committed $122 million in grants and loans for renewable energy projects in Indo-Pacific countries[12]. Meanwhile, the US will keep working on mobilising private capital to invest in solar, as well as wind, cooling, batteries, and critical minerals for the expansion and diversification of supply chains.[13]

As well as these engagements, institutional development of the clean energy transition should be offered, together with green investment and loans, to accelerate diversification of Indonesia's nickel supply chain. As we have explained the lack of sustainable mining governance behind the rapid green growth is obvious in Indonesian mining sectors. Indeed, the rapid and large-scale investment from China has been further accelerating the prioritisation of 'green' industrial growth in Indonesia in exchange for environmental degradation and displacement of local indigenous communities (Tritto, 2023). In order to accelerate the diversification of Indonesia's nickel supply chain more equitably and sustainably, Quad countries could offer capacity-building for 'cleansing' governance to assist the clean energy transition, while financing the clean energy projects. This would create a more resilient supply chain for the clean energy transition, between Quad and ASEAN countries.

Although Indonesian nickel industries have been dominated by Chinese investment, Indonesia has recently attempted to diversify its investment, avoiding unnecessary entanglement in the global friction stemming from U.S.-China rivalry (Lakshimi, 2024, July 26). The first and foremost task for the Quad nations in supporting Indonesia's energy transition through capacity-building efforts is to alleviate Indonesia's concerns regarding the Quad itself. As previously noted, while Indonesia seeks to reduce its dependence on China, it does not wish to provoke China by aligning too closely with the United States. Furthermore, Indonesia is likely wary of being subjected to the imposition of Western values.

Accordingly, the Quad must ensure that Indonesia understands its framework not as a platform for like-minded nations to address shared challenges based on multilateralism but rather as a minilateral initiative. This approach acknowledges that even in the absence of complete alignment in values, collaborative efforts to solve pressing issues can proceed on a case-by-case basis. Naturally, shared values facilitate the establishment of deeper and more enduring relationships. However, in a rapidly evolving world, prioritizing pragmatic problem-solving, even at the cost of relatively shallow or short-term alliances, is also a viable strategy.

Thus, the primary task for the Quad nations is to emphasize that their identity lies in a certain degree of ambiguity and flexibility. They must demonstrate that their purpose is not to impose Western values on ASEAN, including Indonesia, with its diverse background. Instead,

[12] 'The Wilmington Declaration Joint Statement from the Leaders of Australia, India, Japan, and the United States', 2024, September 21. Retrieved 12 October 2024 from https://www.whitehouse.gov/briefing-room/statements-releases/2024/09/21/the-wilmington-declaration-joint-statement-from-the-leaders-of-australia-india-japan-and-the-united-states/

[13] ibid.

the Quad should clearly position itself as an entity that prioritizes pragmatic problem-solving on a selective basis. This approach will enable the implementation of measures by the Quad to ensure Indonesia's energy security and, ultimately, foster stronger relations between the Quad and ASEAN.

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