The Rise of Clean Energy Nationalism in Southeast Asia and Its Policy Implication

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Submitted by
Muhamad Izham Abd Shukor
51-228212

Academic Supervisor
Professor Jun ARIMA

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I take sole responsibility for any analysis, fact, or translation errors and the views expressed in this research paper.

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1.0 Decarbonising Southeast Asia

Southeast Asia comprises 11 countries that can be divided into two geographic regions, i.e., the countries connected to mainland Asia, consisting of Vietnam, Laos, Cambodia, Thailand, Myanmar, and Peninsular Malaysia; and the islands of Southeast Asia consisting of Singapore, Indonesia, Philippines, East Malaysia, and Timor-Leste. These countries, except Timor-Leste[1], form a regional organization grouping known as the Association of Southeast Asian Nations (ASEAN), a regional organization aimed at promoting cooperation and collaboration among its member states.

ASEAN countries are recognised as emerging markets, home to about 660 million people and boasting a combined GDP of USD 3.1 trillion in 2020, tripled from about USD 1.0 trillion in 2005. (IMF, 2023). As the economy grows, living standards and household income in many ASEAN countries increase, and so does energy consumption. The total energy supply of the region has seen a growth of 2.6% annually since 2005, much faster than the global average of 1.3% annually (IEA, 2022a). The relationship between economic growth, energy demand and emissions in the region, as well as the growth trends, are shown in **Figure 1**.

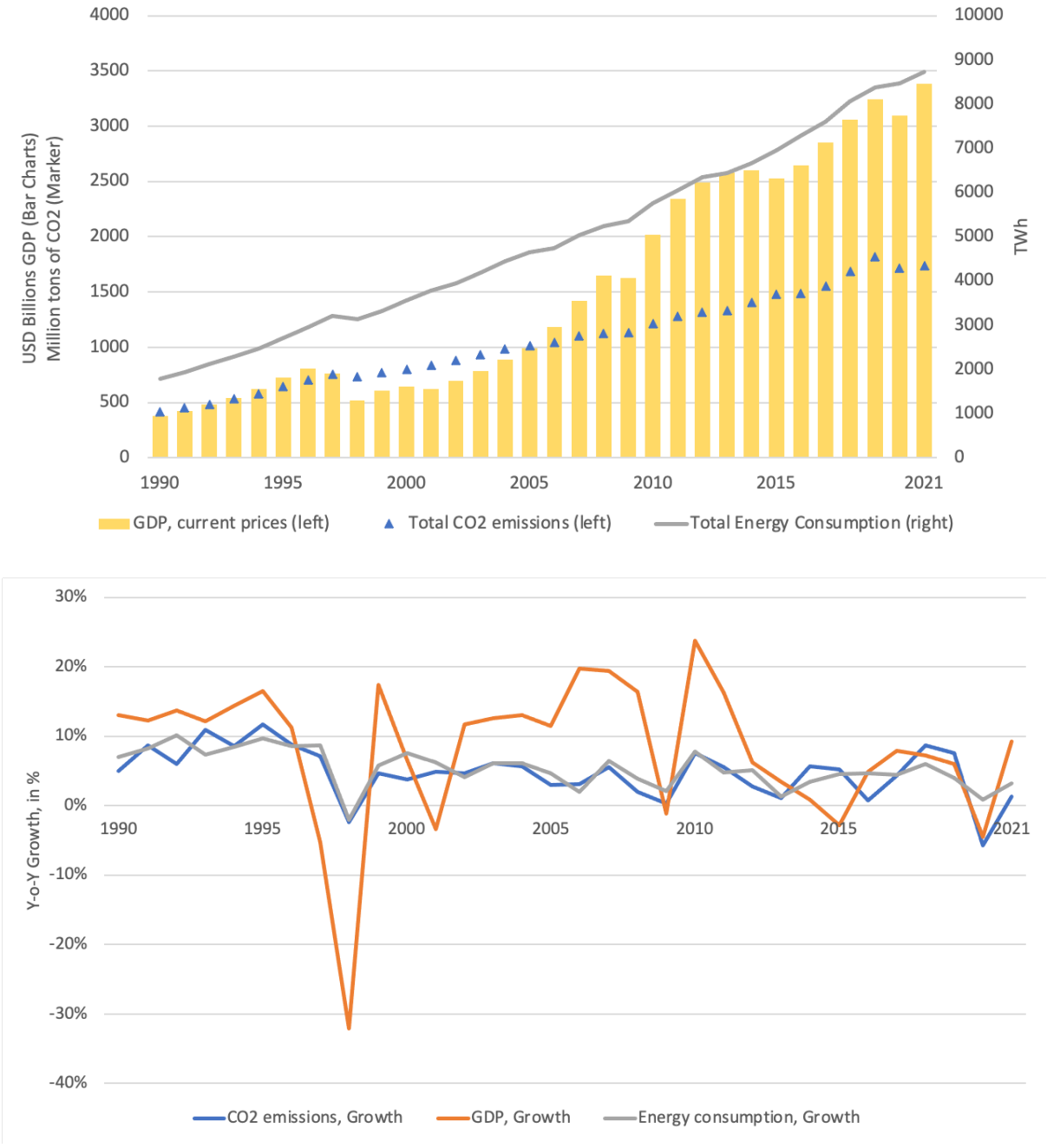
The region is expected to continue its growth trajectory, with an expected annual growth rate of over 6% per year, positioning it as the 4th largest economy in the world by 2028 (IMF, 2023) while ASEAN Centre for Energy (ACE) forecasted that the energy supply in the region may double, from 654 million tonnes of oil equivalent (mtoe) in 2020 to 1,288 mtoe in 2035.

Recently, there has been a growing recognition of climate change in the region, leading to increased emphasis on the green economy and clean energy as key drivers of growth in ASEAN, alongside digital transformation, carbon neutrality, and regional interconnectivity, among other factors (ASEAN Secretariat, 2022a, p. 4). Despite the heavy reliance on fossil fuels, which accounted for 83% of the overall energy supply in 2020 and is projected to increase to 85% by 2035 according to the ACE. Therefore, there is a pressing sense of urgency for ASEAN member states to transition from thermal fuels to renewable energy (RE) or other

[1] In Nov 2022, the ASEAN Leaders agreed in principle to admit Timor-Leste to be the 11th member of ASEAN (ASEAN Secretariat, 2022b). For this paper, Timor-Leste's policy will not be discussed.

forms of clean energy. This shift is crucial to mitigate emissions and reduce the risk of irreversible damage caused by climate change.

Figure 1: ASEAN GDP, Energy Consumption and Emission in Real Terms and year-on-year growth for these indicators, 1990-2021



Source: (Crippa, 2022; IMF, 2023; Hannah Ritchie, 2022)
Note: Total Energy Consumption data, retrieved from online sources uses Watt-hour units for uniformity. The data includes energy use in all economic sectors regardless of the form.

To support the region's vision of becoming cleaner and climate-friendly, the ASEAN Ministers on Energy Meeting (AMEM), a ministerial-level meeting for energy policymakers in the region agreed to set a target of 23% renewable energy of total energy supply by 2025 and a reduction of 30% energy intensity (EI) reduction on GDP in 2025 from 2005 levels in 201 (ASEAN, 2016, p. 2), which later revised upward to 32% in 2020 (ASEAN Secretariat, 2020, p. 4). With the hopes of furthering the energy transition, AMEM committed to a new target of 35% renewable energy in electricity generation capacity by 2025 (ASEAN Secretariat, 2020, p. 2). Although these targets are regional aspirations, it is a non-binding commitment, which some countries may contribute more towards achieving the end goal.

To strengthen the region's resolution to reduce emissions, nearly all ASEAN members pledged the net-zero target in conjunction with the 26th Conference of Party (COP-26) for Climate Change in 2021. ASEAN also called upon developed country Parties to support developing countries in various areas including scaling up and shifting investments towards climate-resilient infrastructure such as renewable energy (ASEAN Secretariat, 2021, p. 6). It shows that clean energy is expected to play a very big role in the region as an instrument to reduce emissions and as part of the economic growth engine.

With climate targets and clean energy goals that are looming in the next two decades and coupled with potential economic growth from clean energy itself, some ASEAN countries are becoming more nationalistic in their approach to promoting and executing clean energy projects for the benefit of their own country. Therefore, this paper aims to explore what is the main drivers that shift some ASEAN countries into becoming more nationalistic in their approach, the existing policy on clean energy, the policy implication on clean energy nationalism and a few case studies as examples. Finally, this paper provides policy recommendations that can be considered by ASEAN members in advancing clean energy usage in the region.

2.0 Framing Clean Energy Nationalism

To fully grasp the concept of clean energy nationalism, it is essential to establish a comprehensive framework or definition that encompasses its various policies and drivers. This framework serves as a fundamental basis for understanding the multidimensional nature of clean energy nationalism and effectively analysing its scope and implications.

2.1 Contextualising Clean Energy and Critical Mineral Nationalism

The notion of "clean energy and critical mineral nationalism" consists of two key elements: clean energy and resource nationalism. While clean energy is often used interchangeably with renewable energy, there is a subtle distinction between these sustainability terms. Clean energy refers to "*electricity or nuclear power, that does not pollute the atmosphere when used, as opposed to coal and oil*". On the other hand, renewable energy is defined as "*a form of energy that can be derived from a natural source, such as the sun, wind, tides, or waves, without exhausting natural resources or causing severe ecological damage*" (Collins Dictionary, 2023).

The International Energy Agency (IEA) includes the minerals necessary for clean energy technologies, such as nickel and cobalt, due to resource requirements (IEA, 2022b, p. 5). Clean energy technologies require a massive amount of critical minerals for the energy transition to happen fully. According to the IEA, the world will need 6 times more critical minerals than today to achieve the Paris Agreement target by 2050 (IEA, 2022b, p. 9). The production of raw minerals is highly concentrated in a few countries such as China produces 60% of global rare earth minerals while the Democratic Republic of Congo (DRC) controls 70% of cobalt production and Indonesia has more than 30% share of nickel produced (IEA, 2022b, p. 13).

2.2 Defining Clean Energy and Critical Mineral Nationalism

In the realm of critical mineral nationalism, which is encompassed within the scope of resource nationalism, scholars and governments have extensively discussed its socio-economic impact and policy implications on global trade. From resources rich countries such as South Africa, it can be defined as the "*desire of the people of resource-rich countries to derive more economic benefit from their natural resources and the resolution of their governments to concomitantly exercise greater control over the country's natural resource sectors*" (Southern African Institute of Mining and Metallurgy, 2012, p. 18).

On the other hand, a higher demand for resources, which in turn pushes the resource's price high has been identified as the major motivation for an increase in resource nationalism, particularly through an increase in more restrictive government policies, though not necessarily nationalization (Monaldi, 2020), (Sergei, Anton, & Konstantin, 2011, p. 3), (Ward, 2009, p. 9).

Arbatli defines resource nationalism as "*the complete set of strategies that a host state uses to increase control over natural resource wealth at the expense of foreign participation and investment*" (Arbatli, 2018, p. 102) while a study by the United Kingdom (UK) government conceptualize resource nationalism as "*anti-competitive behaviour designed to restrict the international supply of a natural resource*" (HM Government Horizon Scanning Programme , 2014, p. 2).

By combining both of these definitions, clean energy and critical mineral nationalism can be defined as a host state's strategy or behaviour aimed at increasing control over clean energy by restricting the international supply of renewable energy or the materials needed for clean energy technologies. The key distinction between traditional resource nationalism and clean energy nationalism is the expanded coverage of the resources, which now includes non-extractive resources like solar irradiation and wind potential, in addition to traditionally extractive resources such as minerals, oil, and gas.

3.0 Methodology

This study employs a methodology centred on the collection and analysis of secondary data. A comprehensive review of existing journals and literature was conducted. A systematic search approach was implemented to identify relevant scholarly articles, research papers, reports, national publications, official announcements, regional databases, news clips and case studies about the nationalization of clean energy and critical minerals. Online academic databases, such as JSTOR and SSRN-Elsevier, were utilized to access a wide range of peer-reviewed publications in the field.

The reading selection includes the relevance of the content to the research objectives through rigorous criteria such as the credibility of the authors and journals, and the recency of publication. Key search terms and keywords were employed to refine the search and ensure the inclusion of comprehensive and diverse perspectives. Subsequently, a systematic approach to the information and synthesis was undertaken and thematic analysis was employed to identify recurring themes, trends, and arguments across the readings to derive meaningful insights and develop a comprehensive understanding of the subject matter.

It is important to note that this study relies solely on secondary data sources and pose some limitation including the potential for bias in the selected literature, the scope and coverage

of available publications, and the inherent limitations of the original studies. However, every effort was made to address these limitations by employing a robust and systematic approach to source selection and analysis.

4.0 Drivers of Clean Energy and Critical Mineral Nationalism in Southeast Asia

A report by the UK Government identifies three primary drivers behind resource nationalism. Firstly, the increasing global population leads to a higher demand for resources, resulting in upward price pressure. Secondly, the uneven distribution of resources across the world contributes to disparities in access and availability. Thirdly, the governance of resources tends to disproportionately benefit a minority of business groups (HM Government Horizon Scanning Programme , 2014, p. 2). While the first two factors can be considered natural outcomes, the occurrence of the third factor is observed in many countries, regardless of their level of development. Additional forms of resource nationalism, as proposed by Ward, include examples such as the windfall tax on the oil and gas industry in the UK in 2009 and Western Australia's gas reservation policy in 2006 (Ward, 2009, p. 10). These instances highlight alternative manifestations of resource nationalism aimed at capturing a larger share of resource profits or ensuring domestic availability.

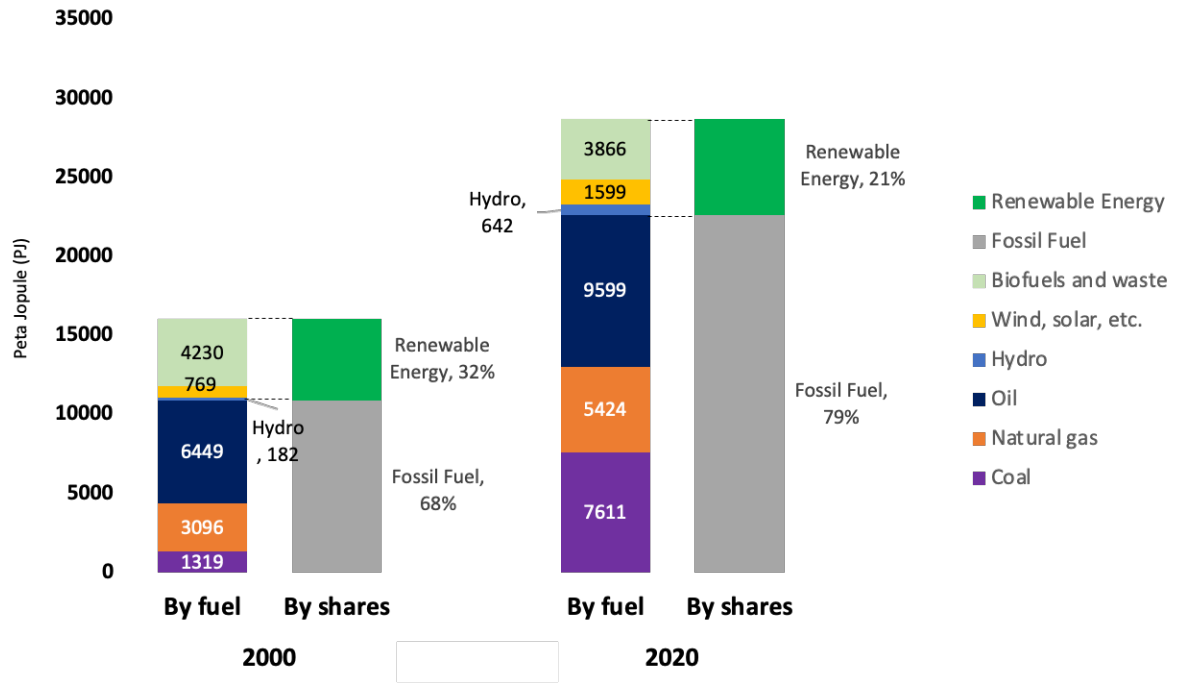
The rise of clean energy nationalism in Southeast Asia is driven by several justifications that intentionally or unintentionally motivate this phenomenon. These factors can be categorized into two groups: internal factors and external factors. The internal factors encompass (1) economic growth, competitiveness, and job creation; (2) energy security and self-sufficiency and (3) domestic energy policy. On the other hand, the external factors comprise an international commitment to reduce carbon emissions, as evidenced by global agreements such as the Paris Agreement and the emerging concept of the Carbon Border Adjustment Mechanism (CBAM)[2] in international trade adds another layer of external pressure.

[2] CBAM is a tool to put a fair price on the carbon emitted during the production of carbon intensive goods that are entering the EU, and to encourage cleaner industrial production in non-EU countries (European Commission, 2023)

4.1 Economic Growth, Competitiveness and Job Creation

Southeast Asia has seen tremendous economic growth over the past two decades, resulting in increased energy demand in the region. The growing energy demand, however, was predominantly met by an increased reliance on fossil fuel as shown in **Figure 2**. Fossil fuel shares increased from 68% in 2000 to 79% in 2020, doubling in 20 years period (IEA, 2022a). As the demand for clean energy, particularly in the industry and service sectors, continues to grow, ASEAN recognized the potential of clean energy as a catalyst for economic development, driving them to prioritize investments and policies that promote the growth of the clean energy sector.

Figure 2: ASEAN Energy Supply, 2000-2020



Source: (IEA, 2022a)

In 2022, nearly 1,000 companies have pledged some form of carbon reduction or carbon neutrality goals across various sectors. This is driven by customers' preference for low-carbon products, the need to mitigate commercial risks and brand positioning (IEA, 2022c, p. 16). Governments in the ASEAN region are attracted to these commitments as they seek foreign investment and economic opportunities in the clean energy sector. By aligning with the sustainability goals of major companies, governments can create a supportive environment for clean energy development and benefit from job creation and economic growth. However, not

all ASEAN members such as Singapore or Brunei Darussalam, are not capable of producing clean energy at a large scale due to land limitations.

In addition to meeting clean electricity demand in sectors like industry and services, clean energy also provides opportunities for ASEAN members to expand and diversify their economies through value-added downstream clean energy supply chains. Instead of solely exporting raw materials, such as nickel, there is a bigger potential to be involved in the supply chain by attracting foreign investors to set up their factories to produce a finished product locally (Östensson, 2019, p. 206). This justification has been used by several ASEAN members such as Indonesia and the Philippines to exert more control over the resources (Chen, 2023).

4.2 Energy Security and Self-Sufficiency

While sustainability is consistently integrated into ASEAN governments' energy policy decision-making, energy security plays a significant role in shaping the region's long-term plans (ASEAN Secretariat, 2020). An important indicator for assessing energy security is the level of net imports or self-sufficiency in the fossil fuels (ACE, 2022, p. 34). The reason self-sufficiency is important is that some countries have a high concentration of one particular energy resource, such as coal, which leads to lower diversity but a high level of self-sufficiency while other countries have to import this fuel. Clean energy is recognized as a viable solution to reduce import dependency, enhance self-sufficiency, and diversify fuel sources within countries (Shukor & Sinocruz, 2017, p. 5). For example, Japan has been trying to increase its self-sufficiency ratios which were only 12% in 2019 by focusing on building more renewable energy (ANRE, Japan, 2022)

Renewable energy prices are often stable and predictable while fossil fuel prices are often volatile due to factors related to geopolitical or market (Ölz, Sims, & Kirchner, 2007, p. 64). For ASEAN, increasing clean energy is seen as a crucial pathway to improving energy security and self-sufficiency, as well as diversifying energy sources (ASEAN Secretariat, 2022c, p. 2). Consequently, securing clean energy for domestic consumption becomes a driving force behind clean energy nationalism in the region. However, it's important to note that at the country level, policy focus may differ from regional commitment, contingent upon each country's economic strength and capacity.

4.3 International Commitment to Reduce Carbon Emissions

External factors play a significant role in driving clean energy nationalism. The international commitment to reduce carbon emissions, as evidenced by global agreements such as the Paris Agreement, in which all ASEAN members are signatories, influences the policy decisions of Southeast Asian countries. The world has agreed to limit the temperature increase to 1.5°C above pre-industrial levels (UNFCCC, 2023a).

One of the mechanisms established under this agreement is the emission trading schemes (UNFCCC, 2023b). Under this mechanism, importing countries can claim carbon credit from projects in other countries that are generating renewable energy. Given that carbon credits are becoming increasingly important for many countries to meet their commitment under the Paris Agreement, buying or importing renewable energy will be one of the fastest ways to reduce national emissions (The World Bank, 2022). Carbon credit claims potentially become a flashpoint in climate change negotiation in the future and turn into a geopolitical issue if it is not managed wisely.

4.4 International Trade Dynamics

The emerging concept of the Carbon Border Adjustment Mechanism (CBAM) in international trade adds another layer of external pressure. According to the European Commission, it is designed to encourage cleaner and more sustainable production in non-European Union (EU) countries and create a level playing field for EU industries by incentivizing trading partners to adopt similar climate policies (European Commission, 2023). Although the first phase of this mechanism is expected to roll out in October 2023, this policy received various feedback from developed and developing alike. Reinsch and Benson argued that there are three possible outcomes that the CBAM could produce: (1) increase trade protectionism; (2) non-EU countries adopting higher climate standards following the EU's lead; or (3) a scenario that resembles the status quo (Reinsch & Benson, 2022, p. 15).

In 2019, the EU was the third largest trade partner for ASEAN after China and the US, accounting for 10% of the region's total trade valued at US$ 280.6 billion (ASEAN Secretariat, 2020). Some ASEAN members are racing to follow in the EU's footsteps in adopting more stringent environmental standards. Thus, the prospect of carbon-related trade barriers

motivates countries to strengthen their domestic clean energy industries to avoid potential economic disadvantages and ensure market access for their clean energy exports.

Together, these internal and external factors shape the drivers of clean energy nationalism in Southeast Asia, influencing policy decisions and actions taken by governments in the region. Understanding these drivers is essential for comprehending the motivations behind the increasing emphasis on clean energy and its implications for regional and global energy landscapes.

5.0 Case Studies on Clean Energy and Critical Mineral Nationalism in Southeast Asia

5.1 Indonesia's Strategy in the Downstream Industry

Indonesia introduced a nickel export ban in 2014 to develop downstream value-added nickel products for the stainless-steel supply chain and lifted the ban in 2017. Since then, a few major companies from China and Korea have invested or plan to invest in Indonesia to process nickel and turn it into stainless steel and batteries (Merwin, 2022). By 2021, Indonesia will become the 2nd largest stainless-steel producer in the world and the country is expected to surpass China to become the biggest stainless-steel producer in 2025 (Huber, 2021).

In 2019, Indonesia plans to re-impose the nickel export ban once again starting in January 2020. The EU filed a complaint at the World Trade Organization (WTO) in 2019 on the back of this decision as the EU considers this move has unfairly restricted limited EU producers' access to nickel ore (Huber, 2021). In 2022, WTO ruled in favour of the EU in a dispute over a ban on nickel ore exports. This has prompted Indonesia's president to say his country would appeal to WTO (Reuters, 2022). This case may take years to solve as the WTO Appellate Body has not in sitting for the past two years.

For the record, this is not the first time Indonesia has banned or retracted resource export. In 2020, the Indonesian government announced the country would stop exporting gas to Singapore in 2023 and redirect the gas production to domestic usage (Eloksari, 2020). In January 2022, Indonesia bans coal export, saying that its coal stock is running low for local usage (Guild, 2022).

5.2 Is the Philippines Following Indonesia's Footsteps?

The Indonesian success in courting investment from outside has had a ripple effect on the global critical mineral producers. In April 2023, Chile's president announced to nationalize partly the country's lithium production (Buenos Aires Times, 2023) while the Philippines seeks to emulate Indonesia's policy direction with a nickel export ban. The House of Representatives in the Philippines also proposed to impose an up to 10% tax on nickel ore exports. The suggestion however faced resistance from the Philippine Nickel Industry Association, saying that the tax "*will kill the industry*" (Reuters, 2023). The Department of Trade and Industry (DTI) in its recent announcement stated that the government is studying "*whether or not a tax or a ban on raw nickel exports should be imposed to support the government's effort to develop the local nickel industry*" (Cahiles-Magkilat, 2023).

Given that the Philippines holds quite a sizeable share in nickel production, holding nearly 5% of the global nickel reserves (USGS, 2022), it is clear why the country wants to follow in the Indonesian footsteps in having greater control of the natural resources as suggested by the Environment and Natural Resources Secretary of the Philippines (Jr & Calonzo, 2023).

5.3 Malaysia's Renewable Energy Export Ban

In October 2021, the Ministry of Energy and Natural Resources of Malaysia announced that the country would allow only non-renewable energy exports to Singapore, citing that the decision was made to boost the development of the local renewable energy (RE) industry (The Straits Times, 2021), as well as to meet Malaysia's climate change goal including the net zero by 2050 (The Sun Daily, 2022).

Another main factor that led Malaysia to ban RE export is the wariness of the infrastructure readiness to keep up with the influx of RE. Infrastructure readiness is crucial in making sure that RE can be exported. For example, the Malaysian government cited that the grid needs to be upgraded before more renewable energy can be injected into the grid. Tenaga Nasional Berhad (TNB), the biggest utility company in Malaysia has committed to invest around RM22 billion (USD 5 billion) for the 2022-2024 period to meet the 31% renewable energy target by 2025 (MIDA, 2021).

This low-key announcement received a mixed response from various parties. Some industry observers lauded the government decision as a good move given that there is a strong clean energy demand from investors and focusing RE utilization locally gives opportunities for the country to bring in more Foreign Direct Investment (FDIs), especially from RE100 companies (Abdullah, 2021).

On the other hand, the announcement was questioned by former Malaysian Prime Minister, Dr. Mahathir Mohamad, saying doing so may jeopardize local supply and carbon budget (Tan, 2021) while former minister, Yeo Bee Yin commented that the ban should be lifted as many multinationals companies, with regional headquarters in Singapore have committed to reducing their carbon footprint and are ready to buy renewable energy. Allowing renewable energy export will attract more investments and create more green jobs (FMT, 2022). Other economists agreed that lifting the ban would help the industry to flourish but warned that the land used for building solar panels will be locked for 20 to 30 years, of which the land could otherwise be conserved or used for alternative economic purposes for the benefit of locals (FMT, 2023). Moving forward, the Minister of Natural Resources, Environment and Climate Change announced that the Malaysian government had agreed to lift the export ban, but it comes with conditions that the electricity trade must be done through an electricity exchange system in Malaysia (Aziz, 2023).

There is a delicate balance that needs to be struck between domestic targets, as well as to capture the opportunity of exporting clean energy. Since the importing countries can claim carbon credit from projects that generate renewable energy, exporting countries might lose the opportunity to meet their commitment under the Paris Agreement. Carbon credit claims potentially become a flashpoint in climate change negotiation in the future and turn into a geopolitical issue if it is not managed wisely.

6.0 Policy Implications of Clean Energy Nationalism

The importance of clean energy is becoming intense in the ASEAN region due to its huge potential economic benefits and the international commitment under the Paris Agreement. Thus, countries that are blessed with resources have to strategize the optimal way to utilize the endowment for the benefit of the country and the region, which brings us to some sort of clean energy nationalism. The case studies show that in some countries, the policy of nationalising the resources is actively pursued, which eventually resulted in a contagion effect, while other

countries retracted from such policy. It also clearly shows that the policy implications of clean energy nationalism are multifaceted and encompass various aspects of energy governance, economic development, and international relations.

6.1 Domestic Industry Growth and Job Creation

Clean energy nationalism can spur the growth of domestic industries involved in the production, manufacturing, and deployment of clean energy technologies as demonstrated in Indonesia. Governments may adopt policies to support the development of a robust and competitive clean energy sector, including research and development funding, technology transfer programs, and capacity-building initiatives. The exporting country hopes that imposing an export ban will nurture domestic clean energy industries, countries can create employment opportunities, stimulate economic growth, and enhance technological capabilities.

However, by doing so, other countries will be denied from getting the raw material needed for their industry and this can potentially escalate to a trade conflict. Two contrasting approaches by China and the EU in dealing with Indonesia's policy on the nickel export ban showed how the globalization of trade is being played around the world. China circumvented the export ban by investing in nickel processing in Indonesia which makes a win-win situation for both countries while the EU chose to file a complaint at the WTO. It is important for exporting and importing countries to look at this issue objectively and find an amicable solution that will benefit everybody.

6.2 Energy Security and Diversification

Clean energy nationalism policies emphasize reducing dependency on fossil fuel imports and increasing domestic production of renewable energy. Governments prioritize enhancing energy security by diversifying their energy sources, promoting the development of clean energy technologies, and reducing reliance on volatile fossil fuel markets. Therefore, the regional integration plan such as ASEAN Power Grid (APG)[3] needs to be pursued rigorously to improve regional energy security and at the same time increase clean energy usage in ASEAN.

[3] APG is a long-term electricity interconnection plan that links all ASEAN members for energy security and trading purposes (ASEAN, 2021).

6.3 Environmental Sustainability and Climate Change Mitigation

Clean energy nationalism aligns with global efforts to combat climate change and reduce greenhouse gas emissions. Policies promoting the deployment of renewable energy sources contribute to the transition to a low-carbon economy and help achieve climate targets. Governments may set renewable energy targets, establish carbon pricing mechanisms, and implement regulations to reduce emissions from the energy sector. Clean energy nationalism can also foster international cooperation and collaboration in addressing climate change through knowledge sharing and technology transfer.

As clean energy demand is growing exponentially, governments are using clean energy as a tool to entice Foreign Direct Investment (FDI). On top of that, securing any carbon credit generated locally for Paris Agreement reporting is crucial for many countries. Therefore, countries need to find a balance for local needs to meet the Paris Agreement commitment and set a policy of how much carbon credit can be transferred outside of the country.

6.4 Trade and International Relations

Although CBAM and other potential climate-friendly trade restrictions encourage cleaner production output, they also may lead to unintended consequences of clean energy nationalism. Given that the EU is the third biggest trade partner for ASEAN, countries in the region do not have much choice except to push for more inward green policies to stay competitive. Governments may introduce measures to protect and support domestic clean energy industries, such as tariffs, subsidies, bans and local content requirements. This can potentially lead to trade disputes and tensions with trading partners who perceive such measures as protectionist. On the other hand, clean energy nationalism can also foster new avenues for international cooperation, such as joint research projects, investment partnerships, and clean energy technology exchanges.

7.0 Conclusion

Clean energy nationalism represents a growing trend in energy policy that is driven by various factors such as energy security, economic development, and environmental sustainability. Although it is not only happening in ASEAN, the intensity, and the inclination towards clean energy nationalism in the region is high. The policy implications of clean energy and critical mineral nationalism are wide-ranging and encompass areas such as economic

growth and job creation, energy security and self-sufficiency, climate change mitigation, meeting international commitment and trade protectionism. While the transition towards clean energy offers opportunities for countries to enhance energy security, stimulate economic growth and create jobs while meeting their climate goal, it needs to be managed properly and it is not immune from nationalism. Clean energy and critical mineral nationalism could not only ignite a trade war between exporting and importing countries but also increase the cost of critical minerals which could delay the clean energy transition in importing countries and result in a delay in achieving the global climate goal. As countries navigate the complexities of clean energy and critical minerals nationalism, it is important to adopt a balanced and holistic approach that promotes regional integration through collaboration, innovation, and inclusive development to achieve a sustainable and equitable clean energy future in an open society.

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