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Beyond environmentalism: The geopolitical chess game behind Indonesia's mineral export bans and renewable energy transition

Melampaui perlindungan lingkungan: Permainan catur geopolitik di balik larangan ekspor mineral dan transisi energi terbarukan di Indonesia

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Abstract

The increase in human energy consumption and the serious effects of the dominance of fossil energy, especially limited supply and climate change, have an impact on changes in the global geopolitical order. As such, the adaptation carried out by Indonesia became an important step in ensuring national energy security amidst global challenges. This research highlights the urgency of accelerating the energy transition to renewable sources in Indonesia as part of the national strategy. Efforts to accelerate the energy transition are not only a response to global demands, but also as an effort to maintain energy security, environmental sustainability, and are an important geopolitical factor. This study uses mixed research methods, where the author carries out quantitative data processing and then juxtaposes it with qualitative processing and analysis. The analysis was carried out using the concept of resource geopolitics. This study found that abundant renewable resource capacity, downstream efforts by the government, reduced dependence on other countries, and increasingly mature energy transition readiness make Indonesia better prepared to face global geopolitical competition. This study concludes that accelerating the energy transition in Indonesia is not just a response to global demands, but is also a strategic step to increase energy security, disaster resilience and environmental resilience.

Keywords: climate change; geopolitics; renewable energy; resource war

Abstrak

Peningkatan konsumsi energi manusia serta efek serius dari dominasi energi fosil utamanya keterbatasan pasokan dan perubahan iklim berdampak pada terjadinya perubahan tatanan geopolitik global. Adaptasi yang dilakukan Indonesia kemudian menjadi langkah penting dalam menjamin ketahanan energi nasional di tengah tantangan global. Penelitian ini menyoroti urgensi percepatan transisi energi ke sumber terbarukan di Indonesia sebagai bagian dari strategi nasional. Upaya percepatan transisi energi bukan hanya sebagai tanggapan terhadap tuntutan global, namun juga sebagai upaya menjaga ketahanan energi, keberlanjutan lingkungan, serta menjadi faktor geopolitik yang penting. Studi ini menggunakan metode penelitian campuran, di mana penulis melakukan pengolahan data kuantitatif kemudian disandingkan dengan pengolahan dan analisis kualitatif. Analisis dilakukan dengan menggunakan konsep geopolitik sumber daya. Studi ini menemukan bahwa kapasitas sumber daya terbarukan yang melimpah, upaya hilirisasi oleh pemerintah, berkurangnya ketergantungan pada negara lain, dan kesiapan transisi energi yang semakin matang membuat Indonesia lebih siap menghadapi situasi persaingan geopolitik global. Studi ini menyimpulkan bahwa percepatan transisi energi di Indonesia bukan hanya sekedar menjadi respon terhadap tuntutan global, namun juga sebagai langkah strategis untuk meningkatkan ketahanan energi, ketahanan bencana, dan ketahanan lingkungan.

***Kata Kunci**: energi terbarukan; geopolitik; perang sumber daya; perubahan iklim*

Introduction

The enormous role of energy sources in human livelihoods and the productive activities of nations, such as agricultural production, animal husbandry, and transportation, is evidence of an increasing trend in energy consumption each year. The ever-increasing demand for energy sources around the world has

so far been filled through the use of fossil energies and hydrocarbons such as coal and oil. According to World Energy Data & Statistics 2022, the use of hydrocarbon energy remains very dominant. However, relying on the use of hydrocarbon energy to meet energy demand leads to carbon emissions that adversely affect environmental quality and human health (Panwar et al. 2011, Owusu & Sarkodie 2016, Olabi & Abdelkareem 2022).

Recognizing the negative impacts of using hydrocarbon energy and its limited availability, the international community began to implement energy transition programs. The energy transition aims to replace the use of hydrocarbon energy with new renewable energies (NRE) such as hydropower, geothermal, biogas, and wind power. The use of NRE, with its eco-friendly and renewable characteristics, is thought to be the solution to the problem of rising energy demand without causing environmental damage. As a country with abundant natural resources, Indonesia must also adapt to the development of renewable energies in order to ensure future national energy security.

As seen in Table 1, the current growth of NRE utilization in Indonesia is relatively slow compared to other Southeast Asian countries. According to the calculations based on open statistical data from the International Renewables Energy Agency (IRENA), Indonesia's EBT capacity increased 1.93 times between 2000 and 2020. This places Indonesia in 8th place out of 9 Southeast Asian countries. When compared to other countries, Indonesia appears to be far behind and needs to catch up to improve its performance.

Table 1.
NRE capacity development rate in Southeast Asia

Countries	NRE Capacity (2000)	NRE Capacity (2020)	NRE Capacity Development	Rank
Cambodia	10 MW	1589 MW	157.4	1
Indonesia	5475 MW	10554 MW	1.93	8
Laos	642 MW	7437 MW	11.59	2
Malaysia	2761 MW	8699 MW	3.15	7
Myanmar	344 MW	3448 MW	10.02	4
Philippines	3785 MW	6837 MW	1.81	9
Singapore	153 MW	548 MW	3.58	5
Thailand	3574 MW	11991 MW	3.36	6
Vietnam	3399 MW	35649 MW	10.49	3

Source: IRENA (2022)

In conducting this research, the authors gathered a number of previous findings on the evolution of NRE and how these components affect global geopolitics, as well as Indonesia's strategies for addressing it. The research findings are divided into three categories: (1) National Defense & Security, (2) Political Economy, and (3) Public Policy.

The first article category is about defense and security, and it discusses NRE as resources that have more benefits than fossil fuels. One of the significant advantages is abundant resources, which eliminates the need for each country to rely on superpowers and creates the potential for peace as a result of reduced dependence (Caramento et al. 2023). The term "dependence" refers to the state mitigating the geopolitical and logistical vulnerabilities associated with fossil fuel supply chains, as the shift eliminates the need for continuous fuel shipments, reducing risks from technical failures, human interventions, and natural disasters, while concurrently safeguarding against political disruptions such as embargoes and interdictions (Krane & Idel 2021). The energy sector plays a crucial role in the progress of a nation and constitutes a significant factor that profoundly impacts the social, economic, political, as well as defense and security dimensions of a country (Kuntjoro et al. 2021). However, the concept of NRE is not fully developed or matured, signifying a need for further advancement and establishment, indicating a weakness as not all countries have fully established the necessary technologies capabilities and infrastructure for effectively managing renewable resources (Vakulchuk et al. 2020).

The second category of political economy writing discusses Southeast Asia, which has a high intensity in the movement of geopolitical activity, resulting in high economic growth (Abdel-Latif et al. 2020, Jammes & Mottet 2020). Indonesia, as one of its constituent countries, has abundant sources of NRE and, if properly managed, it has the potential to become a political and economic force competing with other countries (Iskandar et al. 2022). In comparison to other ASEAN nations, Indonesia holds immense potential in terms of energy mix, boasting abundant resources such as nickel for batteries, geothermal, bioenergy, and more, positioning itself as a formidable player in regional and global political and economic arenas (Rishanty et al. 2022).

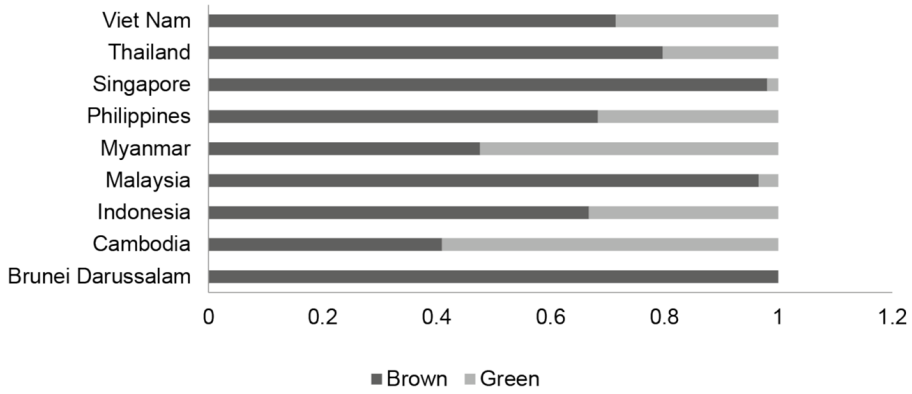

Figure 1.
Indonesia and ASEAN countries' energy import proportion
Source: Diaz-Rainey et al. (2021)

The third category of writing discusses the process of energy transition as a public policy, recognizing that achieving NRE by all countries and reducing dependence will create a balance of power, resulting in energy democratization (Szulecki & Overland 2020). In the ASEAN region, there is a concerted plan to significantly reduce dependence on coal by replacing it with renewable energy sources, as outlined in the ASEAN Plan of Action for Energy Cooperation (APAEC) 2016-2025 (Rahman 2021, Veng et al. 2020). Myanmar stands out as an example in ASEAN that has effectively accelerated the development of renewable energy, as evidenced in Figure 1 (Diaz-Rainey et al. 2021). Singapore, although still heavily reliant on natural gas, is actively implementing renewable energy policies, such as the Clean Energy Programme Office (CEPO) initiative and research to enhance solar power generation efficiency (Yang et al. 2022).

Indonesia, in its development, introduced a number of guidelines to support the NRE optimization, such as Government Regulation Number 79 of 2014 concerning Energy Policy (Adjikri et al. 2017). Despite differences, the commonality among these countries lies in their efforts to diversify energy resources, improve efficiency, and reduce dependence on fossil fuels. Indonesia, amidst these disparities, must compete by either adopting similar measures or enhancing public support. Building on this, the study addresses Indonesia's urgency to accelerate the transition to Non-Renewable Energy (NRE). The research gap in this study can be identified through two aspects. Firstly, a notable emphasis on the geopolitical aspect, particularly within geopolitics IV, to explore the dimensions surrounding Indonesia's policies on renewable energy and mineral export bans. Secondly, a lack of prior research comprehensively employing cross-tabulation of quantitative and qualitative data on this topic. This research aims to offer a comprehensive understanding by integrating both analyses for a complete and accurate representation of these policies (Vakulchuk 2020, Aslam et al. 2022).

Research Method

In conducting this research, the author employs a mixed research method. To analyze the investigated cases, the author collects relevant data. In addition to referencing scholarly sources published in the form of books or journals, the author also utilizes information or reports from reputable mainstream media. Raw statistical data or processed statistics from credible institutions are also gathered. The collected data are subsequently processed by the author to present the necessary analysis and insights to address the research questions. The data are processed to demonstrate the coefficient of determination

in linear regression, indicating the strength of the correlation between variables. Additionally, the author performs cross-tabulation on the gathered statistical data. This is intended to ensure that the article delivers fresh analysis and reinforces the author's argumentative foundation.

Geopolitical approach: The geopolitics of natural resources

In presenting the arguments in this paper, the authors use a geopolitical approach. The term "geopolitics" refers to the geographical impact of political power on international relations. Geopolitics has a long and complex history beyond its original meaning. Because the term geopolitics is so difficult to define concretely, the definition of the term itself tends to change as the observed shape of the world order changes. Many dynamics have emerged in that change, from the time when the ancient Greek polis system was introduced to the modern era when the influence of globalization and the New World Order was strong.

Currently, the concept of geopolitics extends beyond the struggle for hegemony between countries over controlled areas, and includes regional functions such as resource ownership. This emphasis on environmental and resource protection began in the 1990s, during the Post-Cold War era. After the critical period caused by war, scientists began to realize that environmental degradation and resource insecurity were major causes of global problems. This is due to the fact that natural resources can influence the dynamics of armed conflict. Natural resources are a source of ongoing activity for combat groups (Lessmann & Steinkraus 2019). Government ownership of resources, whether in situations of abundance or scarcity, can now be identified as a factor that can create potential competition and social instability, so governments inevitably resources must be protected in a timely manner (Homer-Dixon 1999).

In Klare's analysis, future geopolitical conflicts will be characterized by high demand and scarcity of commodities, which in particular will lead to conflicts over energy sources. Klare's findings have led to three main factors contributing to increased competition. First, there is an increase in global demand resulting from a growing world population. Moreover, the countries with the most competition for resources are also the fastest growing ones. Second, another factor driving resource competition is the scarcity of critical commodities such as oil and natural gas. In the next few years, it will become difficult to extract additional resources from known reserves.

A third factor driving competition for resources is the increasing tendency for countries to compete for ownership of resources to ensure their own needs. The existence of this competition will create a new geopolitical polarization where countries compete for resources. It is undeniable that such conflicts can easily break out, as countries must take responsibility for ensuring the safety of their own citizens and take many measures to secure the energy necessary for survival (Klare 2002).

Results and Discussion

Building upon the previously background, this research explores the urgency of accelerating Indonesia's transition toward renewable energy as an integral part of the national strategy. The focus is not only on aspects of energy security and environmental sustainability, but also involves national management of mineral resources. The acceleration of the energy transition in Indonesia is not merely a response to global demands, but is also articulated as a strategic step to maintain energy security which has an impact on other aspects, including food security and disaster preparedness. This paper will also explain how Indonesia is changing its role in global politics through concrete steps, such as implementing a ban on nickel and bauxite exports. This action not only reflects a progressive national policy, but is also a real step in realizing resource nationalism (Poncian 2021, Tritto 2023). The implementation of this policy is also a concrete example that is relevant to global and national geopolitical dynamics.

The urgency of accelerating the renewable energy transition

Almost seven years after the Paris Agreement was signed in 2015, greenhouse gas emissions, especially from fossil fuels, have not statistically declined at the global or national level. In fact, this figure continues to rise each year, with fossil fuels being the primary source of approximately three-quarters of

total global greenhouse gas emissions. As illustrated in Figure 2, sourced from the International Energy Agency's Greenhouse Gas Emissions Data, there has been a consistent increase in the total emissions from fossil fuel combustion, encompassing coal, oil, natural gas, and biofuel, over the years. To provide a more detailed breakdown, in 2010, the combined emissions from coal, peat, and oil shale amounted to 13,959.2 MtCO2eq. By 2015, this figure had risen to 14,729.7 MtCO2eq.

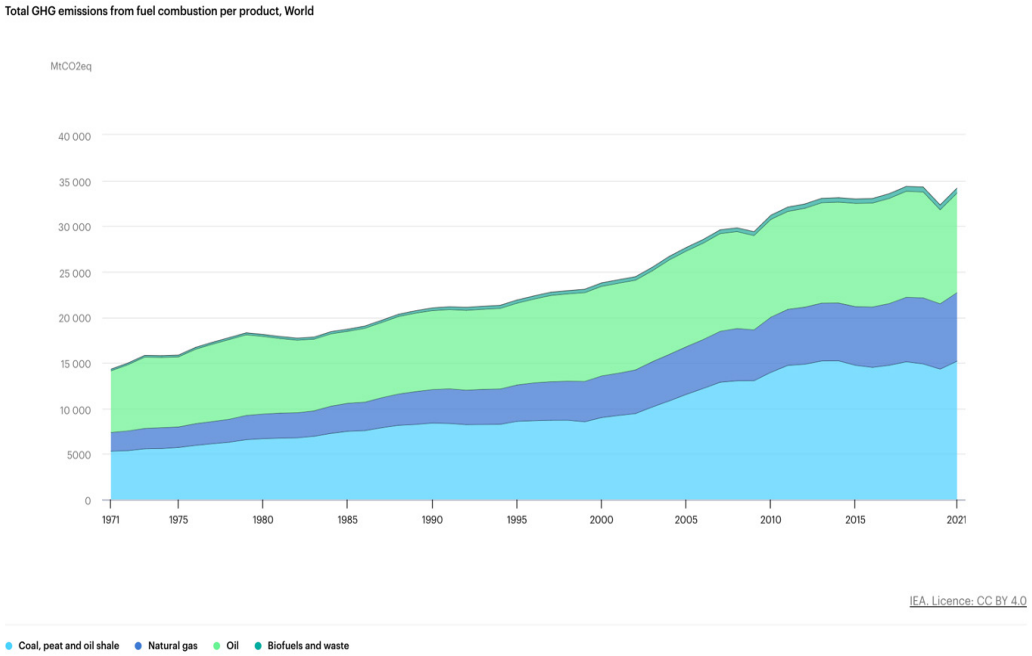

Figure 2.
Total greenhouse gas emissions
Source: International Energy Agency (2022)

Notably, six years after the ratification of the Paris Agreement, in 2021, instead of witnessing a decline, the emissions continued to escalate, reaching 15,186.2 MtCO2eq. In that year, fossil fuels sustained their significant contribution, constituting 80% of the total global energy supply (TES). Specifically, oil accounted for almost 30%, followed by coal at 27%, and natural gas at 24%. The global emissions resulting from fuel combustion were predominantly associated with coal, representing 44%, followed by oil at 32%, and natural gas at 22%. The data underscore the ongoing challenges in curbing fossil fuel-related emissions despite international climate agreements and emphasizes the pressing need for more effective strategies to mitigate the impact on global climate change (Halden 2018).

In recent years, Indonesia's oil production has been on a downward trend. Indonesian oil production in 2009 reached 346 million barrels, dropping to 283 million barrels in 2018. This is because the oil resources produced from wells are generally old and depleted, making them difficult to manage. On the other hand, fuel demand continues to increase year by year, and is expected to grow at an annual rate of about 4.2%. For this reason, Indonesia will overcome this shortage by importing more oil, increasing its dependence on suppliers to 35% if its needs. Coal fuel consumption was recorded at 539 million BOE in 2019, an annual increase of 7.11% since 2010 (Secretariat General National Energy Council 2019). This consumption is expected to continue increasing over time due to power generation and industrial needs, as well as very high export demand.

The figure above illustrates the "Proportion of Indonesia and ASEAN Countries' Energy Imports." The brown color indicates the utilization of energy supplies from non-renewable sources such as fossil fuels. In contrast, the green color signifies a greater reliance on renewable sources. In the data presented, it can be observed that a few countries, such as Cambodia and Myanmar, lean more toward renewable sources (Diaz-Rainey et al. 2021). Meanwhile, Indonesia still heavily depends on fossil fuels for energy production. Indonesia's situation, which lags behind other ASEAN countries in terms of achieving

renewable energy, is also worsening in terms of non-renewable energy imports. This is illustrated by the chart above, which shows a fairly high share of Indonesia's non-renewable energy imports. This condition implies that if Indonesia does not immediately switch to renewable energy, it will remain dependent. Import dependence is one of the major challenges for Indonesia to become energy independent.

According to the Minister of Energy and Mineral Resources (ESDM), Arifin Tasrif's inauguration speech for members of the National Energy Council (DEN) for the 2020-2025 period said this high reliance on imports arose because the country's oil production capacity continued to decline. As a result, the development of renewable energy is expected to reduce Indonesia's reliance on imported energy. Indonesia, being a country with significant potential, boasts an extensive array of renewable energy sources, notably 75 GW of hydro energy, 23.7 GW of geothermal, 32.6 GW of bioenergy, 60.6 GW of wind, and 19.3 GW of micro-hydro, in addition to the abundant 207.8 GW of solar energy (Pambudi et al. 2023). This diverse portfolio positions Indonesia strategically to harness its vast renewable resources, making them a pivotal component of the nation's substantial renewable energy potential.

Compared to Indonesia's consumption and production which continues to rise, in a press release dated February 8, 2022, the Director General of the Ministry of Energy and Natural Resources stated that Indonesia's NRE implementation had only reached around 11.5% of the target of 23% (Kementerian ESDM RI 2022). The use of NRE in the electricity sector has only reached 14%, with the majority still relying on coal fossil energy. Hydropower and geothermal power continue to dominate renewable energy generation (Wei et al. 2020). As the largest electricity consumer, the household sector generates energy demand, which is expected to reach 70.6 million in 2025. In the electric transport sector, biodiesel and bioethanol are used as NRE sources in Indonesia. However, the number of electric vehicles is still relatively small, so the NRE has not had a significant impact on reducing fuel consumption in the transport sector. Due to population growth and people's needs, electricity demand is expected to reach 2,214 TWh in 2050, almost nine times higher than its 254.6 TWh in 2018. If coal continues to be the dominant source of power generation, CO2 emissions, mainly from burning power plant energy, will have an increasing impact on global warming. There is an urgent need to optimize the use of low-carbon technologies. Otherwise, natural disasters will also affect the standard of living of Indonesians as shown in Figure 3.

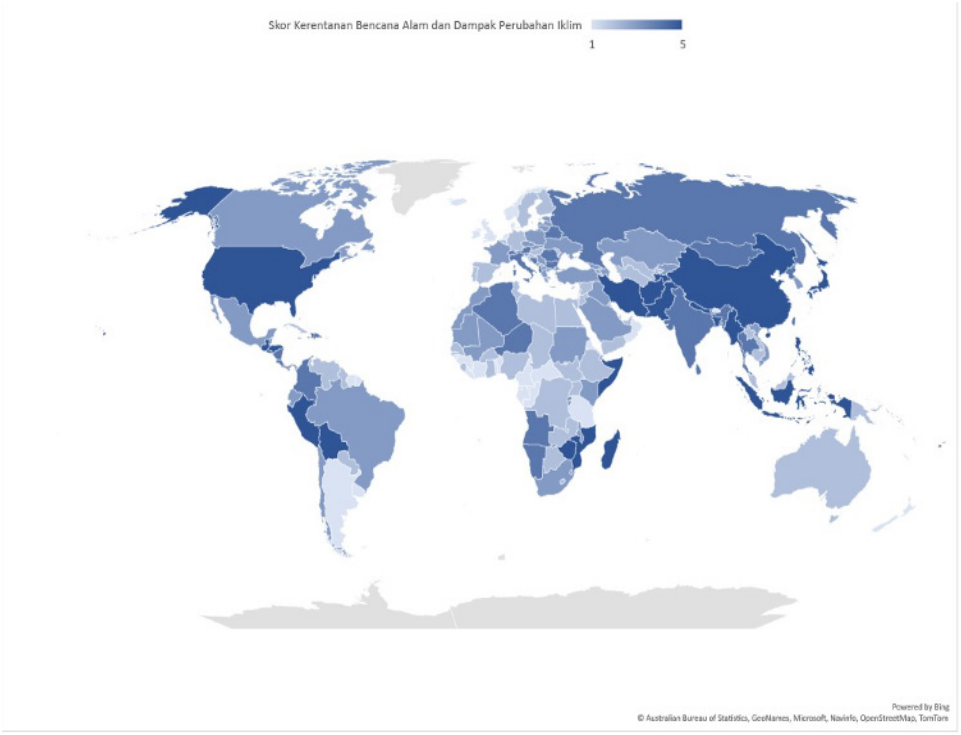

Figure 3.
Natural disaster and climate change vulnerability score
Source: International Energy Agency (2023)

The core of geopolitical thinking is the existence of living space, which encompasses the interaction between people and space. This interaction raises awareness of maintaining community security to protect the well-being of the people. Therefore, in the previous geopolitical conception, a country focused on expanding its territory and did not hesitate to expand into other regions, believing that the larger its territory, the stronger its dominant position. Geopolitical concepts are now not only competing in the realm of territorial control, but also permeate regional functions such as resource resilience (Widjajanto 2022). NRE is now a facet of geopolitical change, as most countries in the world are undeniably large consumers of fossil fuels (Blondeel et al. 2021). It is now vulnerable to reduced production capacity and has many implications for nature.

Climate change caused by greenhouse gas emissions poses serious threats to humans and the environment and requires effective cooperation among countries (Mikhaylov & Moiseev 2020). In an effort to control it, the Indonesian government is working with the international community under the Paris Agreement. The Paris Agreement sets out a framework within which countries around the world must work together to limit global warming to below 2°C and ensure that each development is driven by something sustainable for safeguarding the well-being of people (The United Nations 2015). Indonesia's commitment to this agreement was subsequently strengthened by the issuance of Law No. 16 of 2016 authorizing the Paris Agreement (Pemerintah Indonesia 2016).

Other guidelines have also been developed, such as Decree No. 79 of 2014 on National Energy Policy, which stipulates that NRE will reach at least 23% in 2025 and increase to 31% in 2050 (Pemerintah Indonesia 2014). The policy directions are to optimize resources that can be classified as green energy, improve technology and transport systems for energy supply, and reduce exports. Despite the fact that a number of policies have been implemented, the author would like to highlight Indonesia's steps that are considered far behind in dealing with them because this lag will pose a greater threat to the country.

NRE is not a new issue for Indonesia because fossil energy, which has previously dominated, has had a significant impact on the country. As the population grows, energy consumption will continue to increase. Crude oil, coal and other fossil fuels continue to emit greenhouse gasses that can contribute to global warming. Based on IPCC (Intergovernmental Panel on Climate Change) methodology, emissions are estimated to rise to 912 million tons CO2eq in 2030 (IPCC 2006). Rapidly increasing rates of these emissions can cause increased air pollution, respiratory disease, eye irritation, acid rain, ozone layer destruction, crop and land damage, and impact people's living standards.

Geographically, Indonesia is highly vulnerable to climate change. The average annual temperature in Indonesia increases by about 0.3°C each year, with an estimated range of 0.5-3.92°C from 1981 to 2010 (Pemerintah Indonesia, 2016). Most of Indonesia's islands are also experiencing increased rainfall and flood risk. In early 2020, massive flooding hit Jakarta and surrounding areas, killing more than 50 people, displacing thousands, and causing power outages in hundreds of areas. The Meteorological, Climate and Geophysical Agency (BMKG) said the flood was caused by the largest and most extreme rainfall in 154 years, reaching 377 millimeters (mm) (Adiyoso 2020). Sea-level rise along the Asian coast is currently increasing at about 1-3 mm per year and is projected to reach 35-40 cm in 2050 (Pemerintah Indonesia 2016). Because of Indonesia's geographical vulnerability to climate change and frequent inundation by floods or rising sea levels, ecosystems and people's livelihoods are frequently disrupted.

Figure 4 shows that Indonesia has a very high vulnerability to natural disasters and the effects of climate change. Notably, as the numerical scale progresses from left to right, and the color gradient transitions from light blue to dark blue, indicating an escalating vulnerability. Consequently, Indonesia has the lowest score of five for vulnerability to natural disasters and the impact of climate change. On this score, Indonesia is the worst country in Southeast Asia and is less resilient to disasters than most countries on the African continent.

Figure 4 represents a cross-tabulation of a Country's Carbon Emission Level and Natural Disaster Vulnerability Level. This reveals significant positive correlations between a country's per capita CO2 emissions levels and its vulnerability to natural disasters and impacts of climate change. The correlation found is not significant because the value of R2 does not reach 0.95. However, an R2 value of 0.55

is in the middle or moderate category. This is enough to show that Indonesia needs to accelerate its transition to renewable energy to make it more resilient to natural disasters. Utilization of renewable energy has a strategic role in increasing Indonesia's resilience to natural disasters due to climate change. For example, by reducing greenhouse gas emissions, renewable energy can help inhibit global warming and reduce the intensity of climate change. This emission reduction can significantly reduce the risk of extreme natural disasters. Furthermore, the use of renewable energy also supports the management of natural resources by reducing dependence on limited resources such as coal and petroleum. This positive contribution not only maintains environmental balance, but also reduces the impact of climate change that can trigger disasters such as floods and drought.

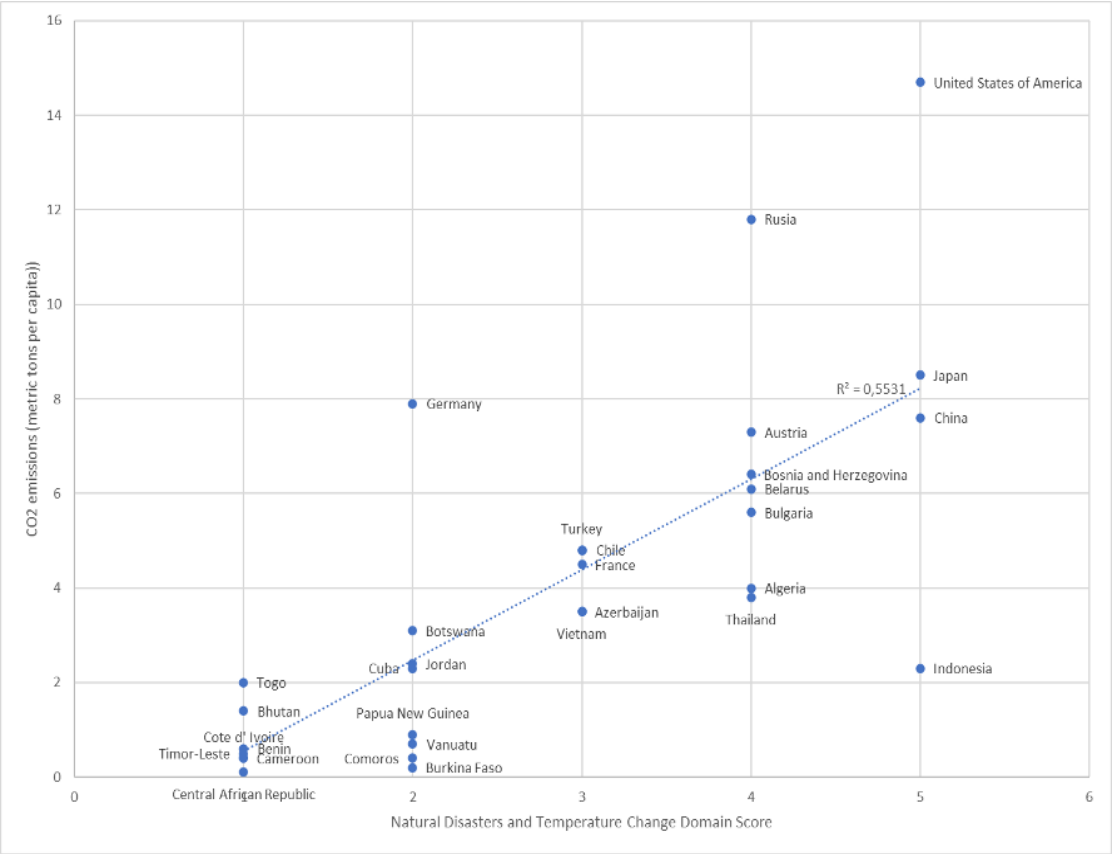

Figure 4.
Cross-tabulation of country's carbon emission level and natural disaster vulnerability level
Source: World Bank (2020) & IEP (2020)

The real implementation of the use of renewable energy can be seen in the context of Bangladesh, a country that is very vulnerable to natural disasters due to climate change. For example, the use of solar home systems (SHS) is identified as an effective solution in mitigating the impact of natural disasters. Bangladesh, despite having a global greenhouse gas emission contribution, often experiences severe impacts from natural disasters such as floods and cyclones. In this framework, building community resilience to natural disasters is very important. According to Amin et al. (2021), SHS has a key role in the disaster management mechanism by providing stable electricity supply during and after natural disasters. SHS can provide better lighting, support productive activities, improve health facilities, and increase the level of community security (Amin et al. 2021). Therefore, the use of renewable energy, especially through SHS, can be considered an effective step in strengthening the resilience of the electricity supply system and supports the post-disaster recovery process.

In addition to having a negative impact on potential disasters, the use of nonrenewable energy has other negative consequences. The existence of a gap between demand and production of non-renewable energy can also destabilize food system security. Energy is used in every process in the food industry, including production, harvesting, processing, storing, and distribution. Without sustainable energy sources, people

struggle to achieve food security due to a lack of opportunities to secure stable livelihoods (Gorjian et al. 2022). However, as the population grows, so does energy demand, and with limited production capacity, access to electricity for the people of Indonesia becomes increasingly difficult. Obviously, this is due to the price that's growing increasingly difficult to achieve (Poncian & Pedersen 2023). The extraction of fossil fuels also has an impact on Indonesian food sources. Recently, FERN reported that 9% of all forests in Indonesia are threatened by the expansion of coal previously used for plantation development (Olden & Neumann 2015). Indonesia needs to address the growing vulnerability of food security within the country without delay. Based on the 2021 Global Food Security Index, Indonesia's food security score is just 59.2, ranking 69th out of 113 countries and declining every year (Global Food Security Index 2021).

In Indonesia, oil production from oil well refineries is generally old and depleted, making it unmanageable. On the other hand, demand for fuel is increasing year by year, and Indonesia compensates by increasing petroleum imports. Because of dependence, fossil energy began to have an impact on the country's economy (Poncian 2023). Indeed, for several decades, oil and gas have been the primary focus of energy geopolitics because they are central to almost all human activities. It is not surprising that the world economy is heavily reliant on oil supply. Compared to Malaysia, which can supply 982 watts of electricity, and Thailand, which can supply 802 watts per person, Indonesia lags far behind because it can only supply 210 watts of electricity (Hidayat 2016). This is significantly less than the standard of 500 watts per individual. This issue may affect investor interest in investing in Indonesia.

Indonesian resource nationalism: Nickel and bauxite export ban

On the agenda of the 22nd April 2021 Summit of Heads of State on Climate, Indonesia made a declaration of national commitments for the period 2021-2050. Three commitments were conveyed: a moratorium on forest and peatland conversion and implementation of concrete measures to combat climate change, in hopes of reducing wildfires by up to 82%; promote green development through the development of a 12,500 HA green industrial zone in North Kalimantan; and investments in the energy transition due to the development of biofuels, the lithium battery industry and the rise of electric vehicles. With previous commitments, Indonesia is expected to accelerate its contribution to net zero emissions globally more quickly.

In addition to the third point on the development of the lithium battery industry and the rise of electric vehicles, Indonesia currently bans the export of raw nickel ore and bauxite. The US Geological Survey estimates that Indonesia has 21 million tons of nickel reserves, accounting for nearly 20% of global nickel exports (Guoping & Jia 2023). This export ban was implemented because Indonesia had hitherto only exported raw materials. President Joko Widodo stated that it would be preferable if the nickel ore, which has a current export value of around $30 tons, was processed and produced through downstream or domestic industries. With domestic production, Indonesia is on a mission to raise nickel derivatives to grade 1 so that it can be used as lithium battery material in electric vehicles.

Following the nickel export ban, the Indonesian government intends to prohibit bauxite ore exports in June 2023 (Alim et al. 2023). Bauxite is the best metallic material and is widely used in aircraft construction, building materials, electronic conductors, and equipment in the chemical and food industries. Indonesia is the world's sixth largest bauxite producer and boasts the fifth largest reserves. The Ministry of Energy and Natural Resources has announced that, in 2021, Indonesia's bauxite reserves would be around 1.2 billion tons, or 3.75% of the world's reserves, making it the sixth largest in the world after Guinea, Vietnam, Australia, Brazil and Jamaica (CNN Indonesia 2022). The purpose of the export ban is that bauxite mined in Indonesia will be used as an input to domestic industrial activities rather than for export or value creation to other countries.

Indonesia hopes that, by enacting this ban, it will strengthen domestic refineries, increase industrial profits from the value of nickel processed products, and reduce carbon emissions (Pandyaswargo et al. 2021). In the context of reducing CO2 emissions to targets of 23% by 2025 and 31% by 2050, a nickel and bauxite ban could be an important step for Indonesia to build an electric vehicle ecosystem This is due to the fact that these two materials are essential in the production of electric vehicles: nickel is

used to make lithium batteries, and aluminum made from bauxite is used to make light and powerful electric vehicles. In addition to electric vehicles, the batteries produced are important in many ways for optimizing renewable energy (Shi et al. 2020).

Geopolitics of the transition to new and renewable energy

Following Le Billon, Klare (2002) also described resources as elements that can encourage conflict. The title of strength and troops in the future, according to Klare, cannot be separated from the resource factor. According to the analytical framework, three factors that can contribute to resource conflicts are: (1) Increased demand (2) Commodity scarcity (3) Resource management competition (Klare 2002).

The views of Klare and Le Billon were then followed by various reports and opinions of other figures. The International Renewable Energy Agency (IRENA), known as the Global Commission on the Geopolitics of the Energy Transformation, examines current trends in the global energy transition and how they relate to geopolitical dimensions. A special committee was formed to discuss. The special committee then issued a report entitled "A New World: The Geopolitics of Energy Transformation." The report concludes that the energy transition will change the global geopolitical order. Changes in the geopolitical world order cannot be separated from the possible emergence of new superpowers. because they are able to maximize the potential of new renewable energy sources (Global Commission on the Geopolitics of Energy Transformation 2019). Furthermore, the report found that while oil exporters, including Indonesia, have benefited from this position, they will be adversely affected by the energy transition if they do not adapt quickly (Global Commission on the Geopolitics of Energy Transformation 2019). The impact of the energy transition can be seen in Figure 5.

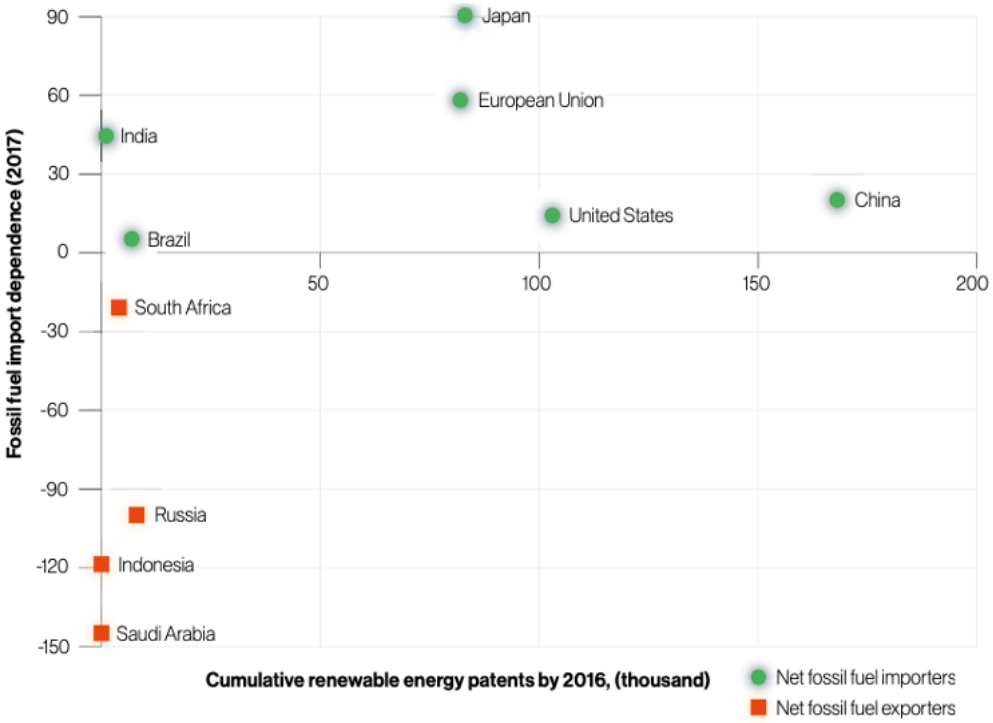

Figure 5.
The impact of the NRE transition
Source: Global Commission on the Geopolitics of Energy Transformation (2019)

According to various perspectives on the relationship between resource ownership and global geopolitical order, the energy transition must be accelerated. Indonesia cannot and should not be left behind in the energy transition. According to a press release from the Ministry of Energy and Mineral Resources (ESDM), the NRE potential in Indonesia is classified as very large. Indonesia has an estimated NRE potential of about 3,000 gigawatts (GW). If this enormous potential is realized, it will have a wide range of positive consequences for Indonesia in both economic and geopolitical terms.

Firstly, Indonesia can reallocate the burden of import budgets and oil subsidies to other budgetary items. As depicted in Figure 6, there has been a reduction in the value of energy subsidies since 2014. The budget previously allocated for unsustainable fossil energy subsidies is redirected toward infrastructure development (Yudha 2014, BBC Indonesia 2016, Kementerian Keuangan 2016). President Joko Widodo and the Ministers of the Indonesia Maju Cabinet have emphasized that infrastructure development is a priority agenda to propel Indonesia toward becoming an advanced nation. Through high-quality infrastructure, President Joko Widodo believes it will ease the activities of the public, enhance Indonesia's competitiveness, and spur economic growth (Kementerian Investasi 2018, Kementerian Keuangan 2018, Hutapea 2019). Positive impacts from this policy include logistical efficiency, improved inter-regional connectivity, and promoting balanced development in eastern Indonesia, which has historically received less attention (BBC Indonesia 2016, Yati 2021, Widhoroso 2022). Additionally, the direct positive effects felt by the public include job creation and increased access to electricity and clean water (Kementerian Investasi 2018, Martaon 2018, Media Indonesia 2022).

Apart from being utilized for much-needed infrastructure development in Indonesia, the reallocation of fossil energy subsidy funds can also be used to enhance defense budgets. Indonesia's defense posture remains far from ideal and the Minimum Essential Forces (MEF) program initiated since 2009 has yet to meet its targets. This is attributed to the insufficient budgetary support for defense, particularly in acquiring weapon technology. Indonesia's defense budget is expected to be a minimum of >1% of Indonesia's Gross Domestic Product (GDP) (Kementerian Pertahanan Republik Indonesia 2015). In fact, a defense budget of 1.5% of GDP is part of the nine priority programs of President Joko Widodo's "Nawacita" since the beginning of his presidency (Ministry of Communication and Information 2015).

Despite the clear target for the required defense budget, it was not achieved until 2019. Until 2019, the proportion of defense spending never reached 1% of GDP. Based on the author's data processed from IHS Jane's, Indonesia's defense budget from 2009 to 2019 fluctuated between 0.6% and 0.8% of GDP. It reached its highest point (0.89% of GDP) in 2015 but tended to decrease until 2019. In 2016, Indonesia's defense budget was 0.79% of GDP, slightly increasing to 0.8% of GDP in 2017. The ratio of defense budget allocation decreased again in 2018 (0.73% of GDP) and 2019 (0.68% of GDP) (Gindarsah et al. 2021, Triantama & Abdul 2023).

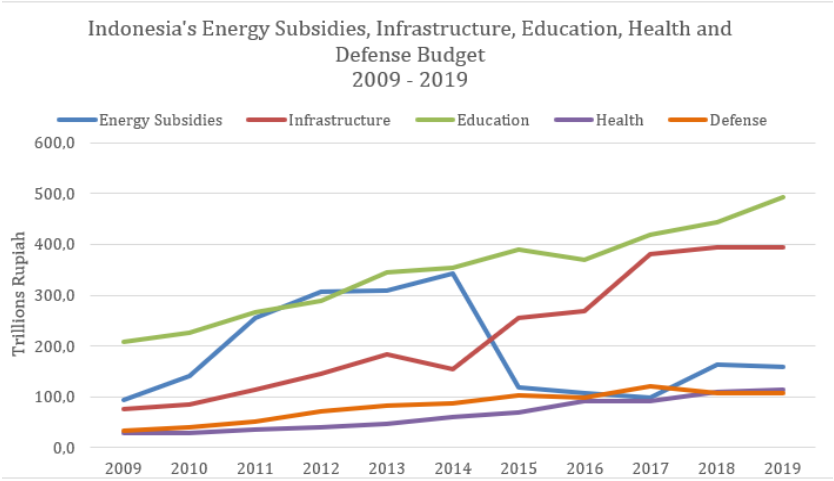

Figure 6.
Indonesia's budget allocation for energy subsidies, infrastructure, education, health and defense
Source: Triantama & Abdul (2023)

Secondly, Indonesia can wield influence as a key player in the future global energy market. Referring to the logical framework employed in this research, when Indonesia becomes a major player in the world energy market, other countries will become dependent on Indonesia (Suetsugu & Kambara 1998, Dhaka 2009). The dependency of other countries on Indonesia's energy supply can create room for Indonesia to implement various foreign policies to achieve national interests. This is analogous to Russia's influence

over European countries dependent on natural gas supplies. European nations like Germany cannot adopt overly confrontational policies toward Russia, even after Russia's annexation of Crimea in 2014. This is because Germany relies on Russian natural gas supplies for industrial activities and public needs (Siddi 2018, Wintour 2022, Sorge et al. 2023). This dynamic places Russia—and potentially Indonesia, if it can follow suit—in a strategic position in global geopolitics.

Conclusion

The impact of using fossil-based energy, which endangers natural disasters and food security, is undeniable. However, as the understanding of geopolitics has expanded to the country's natural resources potential, it has become clear that the phenomenon of energy competition must be highlighted. From a national security perspective, energy security plays an important role as it is closely related to climate change threats related to food security and human well-being. For Indonesia which has a relatively high rate of fossil energy consumption, the fact that fossil energy sources do not exist forever while the demand grows year after year forces the country to increase the intensity of imports, resulting in dependence. The resulting dependence can have an impact on the country's economic sustainability, threatening Indonesia's resilience to threats from other countries.

Renewable energy, which has proven to be a game changer, aims to free Indonesia from its reliance on fossil energy supply chains. With its own renewable resource capacity and government's efforts to carry out downstream domestically, Indonesia is expected to be able to accelerate the energy transition more quickly before falling further behind other countries in the energy competition. Furthermore, less dependence on other countries and readiness for an increasingly mature energy transition mean that Indonesia is well-prepared to deal with the situations where global geopolitical competition heats up. Without resorting to military force, Indonesia can show its sovereignty through energy security.

Based on the analysis presented, this study only outlines arguments as to why Indonesia should immediately implement an energy transition in terms of geopolitical security. In this regard, there are recommendations to future researchers regarding the need for further in-depth analysis of Indonesia's strategy for accelerating the achievement of renewable energy mix targets in the national energy mix in accordance with the national energy policy. Analysis was conducted to find out whether the strategy implemented by Indonesia was the optimal scheme to accelerate the achievement of the goals or whether further refinement is required. The following recommendations focus on the potential economic benefits that Indonesia will reap as a result of the NRE transition. This analysis is carried out to consider domestic opportunities after maximizing the use of renewable resources and reducing economic activity dependent on other countries.

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