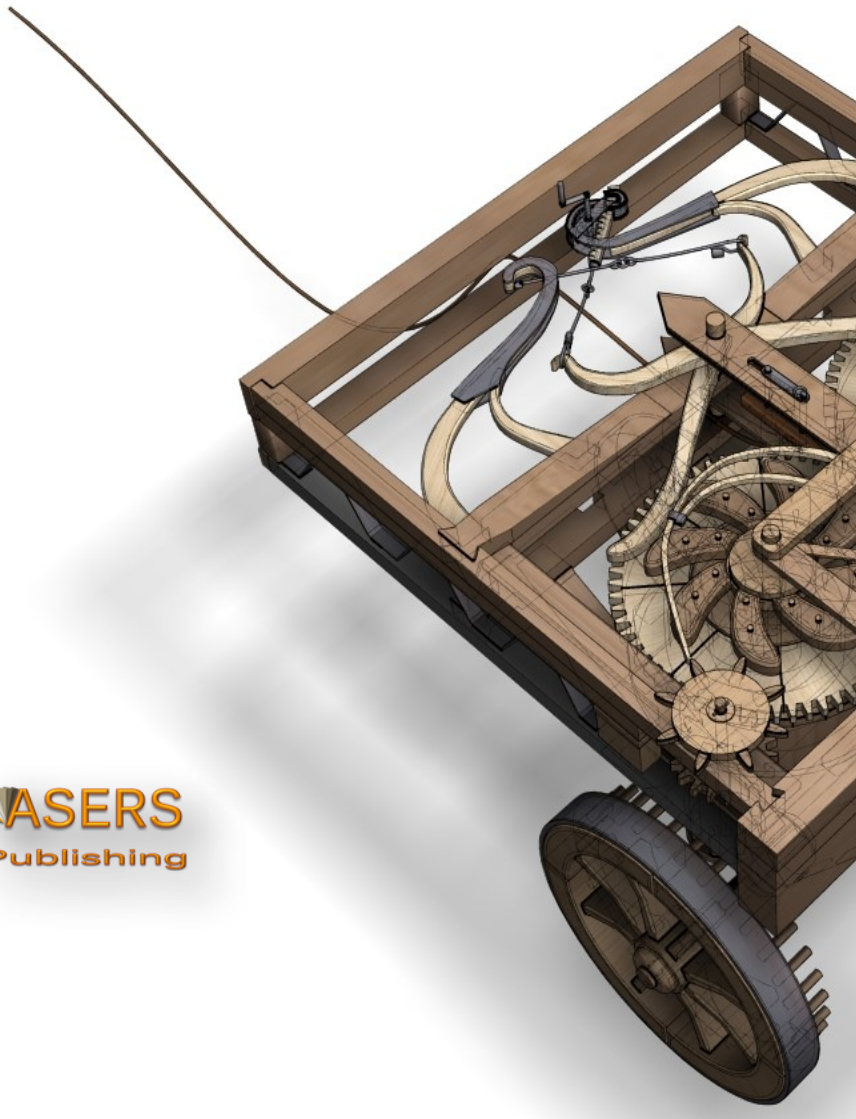
Theoretical and Practical Research in Economic Fields



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Volume XV, Issue 2(30), Summer 2024
Theoretical and Practical Research in Economic Fields

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Mapping the Country's Dependence on Indonesia's Coal Import Market

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Abstract: *Indonesia is one of the world's largest producers and exporters of coal. Its strategic geographical location facilitates coal export activities to consumer countries. In addition, the quality of Indonesian coal is also very suitable for steam power plants, especially sold at competitive prices on the international market. This research highlights how the world's largest coal-importing countries depend on the Indonesian coal import market. This means that Indonesian coal significantly influences the world's energy contribution. Based on this fact, the author states that the coal that Indonesia exports to importing countries dramatically affects the economic conditions of these countries. Driven by population increases, economic expansion, improved quality of life, and energy use, coal is an important energy source. Therefore, many countries import coal to meet domestic energy needs and reserve coal supplies long-term. To find out this, the author uses a qualitative research method, descriptive analysis with a dependency theory approach, that is analyzed in a world macro context using a world system perspective. In addition, the author also uses mean calculations to find the average result of the amount of coal imports for each country.*

Keywords: Indonesian coal; import; market dependence.

JEL Code: A11; F43; P33; R11.

Introduction

As one of the three primary energy resources, coal plays a crucial role in meeting national energy needs and driving economic growth (Wang *et al.* 2021). Many countries use coal as the primary raw material for electricity generation (Ahmad 2016). Despite numerous studies highlighting its environmental impacts, global trade in coal commodities continues to grow (Gosens *et al.* 2022). Not all countries have abundant coal resources, and Indonesia is only one of a small number. As climate change threatens human life, the demand for coal as a primary energy source continues to grow, especially in the Asian region. This creates a dependency between countries, both as coal suppliers and importers.

Since the 1970s, coal has been central to Indonesia's energy policies. According to Indonesia's balance of resources and reserves for minerals, coal, and geothermal, Indonesia has 35,05 billion tons of total coal reserves and 99,19 billion tons of resources in 2022 (Juarsa *et al.* 2023). Coal is a fossil fuel formed from the remains of plants and is considered a superior energy source to other sources due to its relatively substantial potential. Coal is used as an industrial material in various sectors, such as power generation, steel, cement, and paper

production (Irwandy Arief 2014). The industry is a productive sector that continuously strives to enhance economic growth. Due to the abundance of coal, the government is working towards cleaner coal technology to reduce greenhouse gas emissions, mainly from steam power generation.

Coal is a crucial resource for energy generation and a top-priority export commodity. Indonesia, the world's largest coal exporter, has significant linkages to the political system at regional and national levels due to coal money being one of the state budget sources (IEA 2022). The entire industrial procurement chain is a significant source of income that fosters economic growth. Coal mining is not only a commodity for trade but has also become a political commodity. According to data from the Ministry of Energy and Mineral Resources, Indonesia produced 775 million tons of coal in 2023, a 13.01% increase from the previous year (ESDM 2024).

Indonesia's coal production is relatively large. Most of this output is shipped to various countries that still rely on coal as a source of electrical energy. Based on the decision of the Minister of Energy and Mineral Resources of the Republic of Indonesia, Number 267 of 2022, it stipulates that the percentage of coal sales for domestic needs is set at 25%, and the remaining total production can be exported (ESDM 2022). The realisation of Indonesian coal exports in 2022 reached 687 million tons, making Indonesia the largest coal-exporting country in the world (Garside 2023). The country's destinations for Indonesian coal exports are those dominated by the Asian region, including China, India, Japan, Malaysia, South Korea, the Philippines, and others (BPS 2022). China is the primary market for Indonesian coal exports and has also invested in Indonesia's coal mining sector, followed by India, Japan, Korea, and other countries.

There has been limited research on Indonesia's coal exports and imports. Previous studies have analyzed and shown the influence of coal exports, consumption, and technology utilization. However, there is currently no research that specifically focuses on the dependence of importing countries on the Indonesian coal market. This makes the author want to analyze and map countries' dependence on Indonesian coal imports and see the importance of Indonesian coal to the world's energy contribution. Research written by Deni Aditya and Randy Admi discusses the determinants of coal import demand in destination countries and their influence on Indonesia (Susanto and Admi 2021). This study used six Asian countries importing Indonesian coal from 2008 to 2018 to reveal that exchange rates, foreign exchange variables, coal production, and country economic growth significantly affect Indonesian coal. Another study by Arif Setiawan, Aryo P, *et al.* discusses the reliability of coal production as a source of electrical energy (Setiawan Arif *et al.* 2020). This research shows that the Indonesian government has reduced the export of coal materials to fulfill domestic energy security. The results of this study show that export restrictions to prioritize domestic needs positively impact Indonesia's economic growth, where the export reduction is accompanied by increased domestic coal use. So, the efficiency of coal utilization has slowly become renewable energy. On the other hand, the policy of reducing and even banning coal exports harms Indonesian coal-importing countries. Research by Dessy Nathalia, Donny, and Filda Citra explained that the export ban policy issued by the government had an impact on more than 10 million PT PLN customers, including domestic industries and importing countries, which resulted in pressure from entrepreneurs and coal exporting countries to lift the ban (Natalia *et al.* 2022). Some of the world's largest coal-importing countries, such as Japan, South Korea, and the Philippines, also specifically sent official requests to the Ministry of Energy and Mineral Resources of the Republic of Indonesia to lift the ban because these countries have depended on coal for their electricity and Indonesia is their main exporter.

In the end, coal imports allow Indonesia to increase its international market share and become one of the factors boosting global coal prices. However, the challenge is how the country can optimize this opportunity. This is undoubtedly a consideration for the Indonesian government. Therefore, this study examines how important Indonesian coal is to the world's energy contribution by analyzing and mapping which of the world's largest importing countries depend on the Indonesian coal import market. Thus, this research can prove the importance of Indonesian coal to the national energy sector of importing countries.

1. Literature Review

In looking at countries' dependence on Indonesian coal imports, the author uses a dependency theory approach that is analyzed with a world macro context using a world system perspective. In 1970, Santos's writing entitled “The Structure of Dependence” explains that dependence is a situation in which the economies of certain countries are conditioned by the development and expansion of the economies of other countries, which are the first economic targets (Santos 1970). Dependency theory became very influential in Latin America in the 1960s and 1970s due to modernization theory and free trade policies, which originated in the West. After the end of formal colonialism, value transfers continued to flow from the South to the North. In this case, core countries in the North continued to benefit from extracting their wealth from peripheral countries in the South. Hence, this

interdependence relationship is assumed when the dominant country can expand and become self-sufficient, while the dependent country only reflects the expansion. Dependence here is a condition of asymmetrical relations between two countries, where countries that import Indonesian coal depend on Indonesian coal (Kartono and Nurcholis 2016). Initially, this theory was present due to criticism of the assumption that economic development at the beginning of the Cold War would benefit every country in the international system. However, in reality, economic prosperity in a country can create stratification between countries in the world. This causes underdevelopment in a country and makes these countries more dependent. At the same time, world systems theory or world-systems perspective is a macro-scale multidisciplinary approach to world history and social change (Christofis 2019). Immanuel Wallerstein developed it to emphasize the role of economic and political structures in shaping global inequality and the exploitation of peripheral and semi-peripheral regions by core countries. It examines the historical development of the modern world system and how it perpetuates global inequality.

These two theoretical approaches are intended to analyze and map the study of Indonesian coal exports by examining the underdevelopment of importing countries. Thus, the author collects information (qualitative data) that supports this research and uses it as supporting data for the concepts used. Dependency on coal imports here is not solely assessed based on the quantity of coal imported but also on the consistency of a country in importing Indonesian coal.

2. Research Methodology

In this article, the author used a qualitative research method characterized by descriptive analysis. Qualitative research involves several targeted actions, including identifying the data type, assessing its significance, and validating and verifying it accordingly (Denzin, Norman K 2018). The explanations the author will provide to the readers will result in a description based on the observed events. The subject of this research is the mapping of countries that are dependent on Indonesian coal, while the object is the coal export activities carried out by Indonesia. This research uses library research techniques, including collecting information, facts, and data from books, e-books, journals, e-journals, working papers, and relevant articles or news. Subsequently, the collected data is processed and analyzed for its validity.

This research also uses descriptive statistical analysis techniques, which help organize and summarize experimental data to make data-based decisions or form intuitive conjectures or hypotheses (Fisher 2009). Statistical analysis is a crucial instrument in research, involving exploring patterns, trends, and correlations using quantitative data (Indeed 2023). In qualitative research, statistical tools help researchers organize and present findings through descriptive statistics. This technique presents data through graphs, tables, and mean calculations. The average (mean) is commonly used in statistics using the symbol ($\overline{X}$) read “exbar.” Average or mean is a group explanation technique based on the average value of the group. The average result of a single data set can be found by adding all the data and dividing it by the available data. This study uses the mean calculation to find the average result of the number of coal imports for each country. The average formula (mean) for single data is:

$$\overline{X} = \frac{X1 + X2 + \cdots + Xn}{n}$$

Or

$$\overline{X} = \frac{\sum Xi}{n}$$

Description

$\overline{X}$ = average (mean)

X = data points

n = number of data points

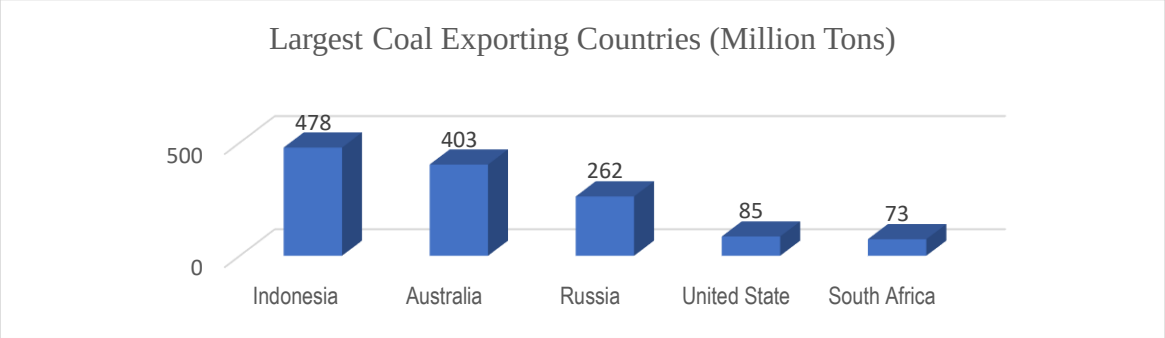
3. Research Result and Discussions

3.1 Indonesia’s Coal Exports

The mining sector, including coal mining, is one of the pillars of economic growth. Coal remains an essential source of affordable and cheap energy for the Asia-Pacific region (ESDM 2021a). Indonesia's coal production has grown steadily since independence despite occasional dips. The high level of coal production is mainly due to the growing demand for coal in export markets. Several regions in Indonesia produce coal, making Indonesia a significant player in the coal sector. This abundance of resources has positioned Indonesia as one of the world's largest coal exporters. While Indonesia is not the world's largest coal producer, it is the largest coal

exporter. According to the International Energy Agency (IEA), Indonesia will be the world's largest coal exporter in 2022 (see Figure 1), followed by Australia, Russia, the United States and South Africa (IEA 2022). This shows that not all coal-producing countries export their coal; much of the production is used for domestic energy consumption.

Figure 1. Worldwide Coal Exporting Countries in 2022



Source: International Energy Agency (IEA), 2022.

Indonesia is important in the global coal market because of its strategic location. Its proximity to consuming countries facilitates export activities and reduces logistics costs and shipping time. In addition to its geographical advantage, Indonesian coal is highly suitable for steam power generation due to its high energy, low sulfur, and low ash content (Nathanael 2020). Indonesia produces both medium-rank and low-rank coal in abundance when considering coal categories. Low-rank coal is mainly used to meet domestic demand, while medium-rank coal is exported at competitive prices internationally (Investment 2018). Indonesian coal also has a low sulfur content, considered environmentally beneficial. The export of coal products is regulated according to the minimum limit set by the Minister of Energy and Mineral Resources (ESDM), which is 75% of total production (ESDM 2022). These factors make Indonesia one of the major players in the global coal market, playing a crucial role in providing an energy source for countries worldwide.

Although Indonesia has a large production and export of coal, the government is gradually promoting renewable energy policies to reduce dependence on non-renewable resources and ensure environmental sustainability. While coal remains an economical energy source, it is crucial to consider its long-term environmental impact. This is to keep electricity prices affordable for the public and support economic growth and competitiveness of products in the global market. However, the next step is prioritizing renewable energy, aiming to reach a 23% share by 2025 (ESDM 2021c). In this case, the government is working to make coal mining more environmentally friendly and energy-efficient. As the adoption of renewable energy becomes more widespread, global demand for coal may decline as other countries switch to cleaner and more sustainable energy sources.

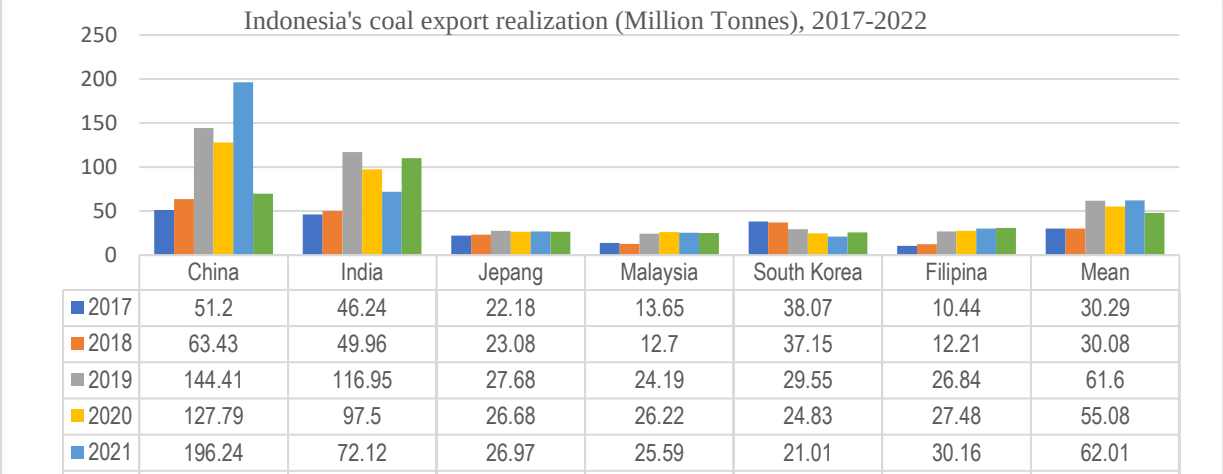
3.2 State Dependence on Indonesia's Coal Import Market

In the current era of globalization, economic improvement is focused on international trade driven by demand. This demand arises from the need for a product that a particular country cannot produce or supply. One of the requirements for any country to sustain its industries is the availability of fuel to power production machinery, such as coal. The commodity of coal has benefited the economy through exports, generating foreign exchange for the country (Dewi 2018). Despite Indonesia's significant coal production, much of this production is exported to countries worldwide that still rely on coal as a source of electrical energy. Indonesia's coal exports will reach 435 million tons in 2021, with China, India, Japan, Malaysia, South Korea, and other countries being the primary consumers (ESDM 2021b).

Figure 2 shows that from 2017 to 2022, the average share of Indonesia's coal exports was 47.84 million tons to the six largest importing countries. Coal exports will decline in 2020 due to the COVID-19 pandemic, which has reduced Indonesia's coal mining sector. Moreover, the largest importers of Indonesian coal are mainly Asian countries, including China, India, Japan, Malaysia, South Korea, and the Philippines. According to data from the Central Statistics Agency, India has overtaken China as the largest importer of Indonesian coal in the first nine months of 2022, with a total of 90.14 million tons (Direktorat Statistik Distribusi 2022). Looking at the percentage of Indonesian coal importers, China and India have become the most important competitors. Several countries, except for China and India, have one thing in common: the need for more natural resources. One of

the natural resource shortages is fossil fuels, which means that these countries cannot meet their energy needs in large quantities, leading to the import of raw materials from other countries.

Figure 2. Indonesia's Coal Export Realization, 2017-2021



	China	India	Jepang	Malaysia	South Korea	Filipina	Mean
2017	51.2	46.24	22.18	13.65	38.07	10.44	30.29
2018	63.43	49.96	23.08	12.7	37.15	12.21	30.08
2019	144.41	116.95	27.68	24.19	29.55	26.84	61.6
2020	127.79	97.5	26.68	26.22	24.83	27.48	55.08
2021	196.24	72.12	26.97	25.59	21.01	30.16	62.01

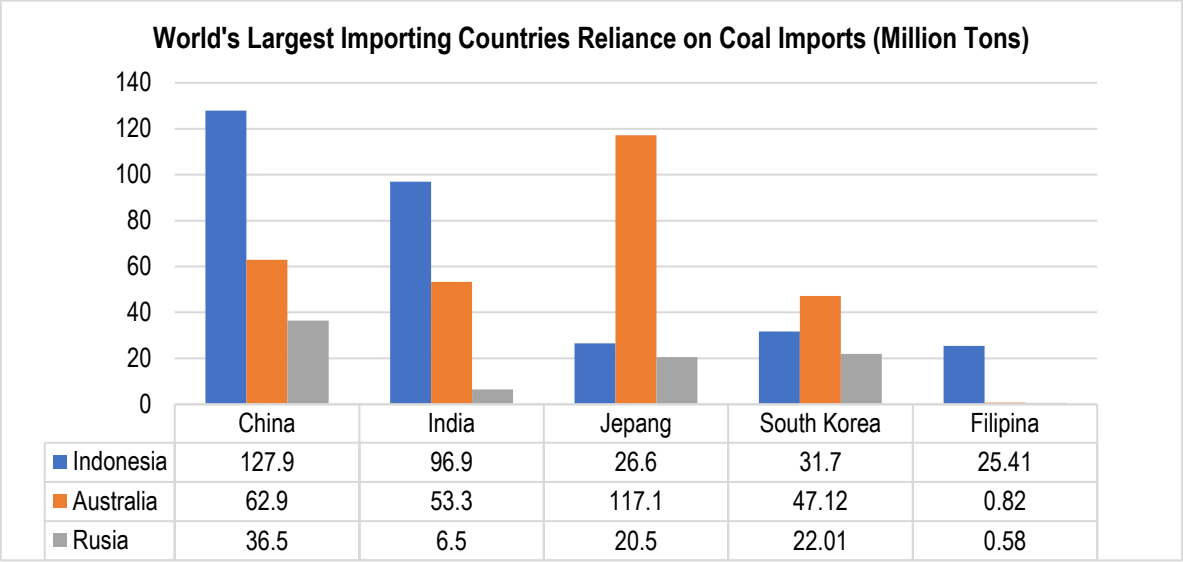
Source: Ministry of Energy and Mineral Resources of Indonesia, 2023.

Apart from countries in the Asian region, Indonesian coal is also in demand from several European Union (EU) member states. According to the Central Statistics Agency, several EU countries imported Indonesian coal in 2022, reaching 5.7 million tons, an increase of 1,373% compared to the previous year, when they imported only 862 thousand tons (BPS 2022). Meanwhile, Indonesian coal exports to Europe in 2019 amounted to 1.67 million tons (BP 2022). The largest importer of Indonesian coal in the EU is Poland, which imported 2.38 million tons of Indonesian coal, although it did not import any Indonesian coal the previous year. Italy is in second place with imports of 1.52 million tons and, like Poland, did not import any Indonesian coal last year. After Poland and Italy, the Netherlands is in third place with total coal imports of 1.37 million tons in 2022. In addition to these three countries, Spain, Croatia, and Slovenia also consume Indonesian coal. The high demand for Indonesian coal in several EU countries is mainly due to the energy crisis and the Russia-Ukraine conflict. The need for coal in countries that did not previously buy from Indonesia is due to their search for alternatives to reduce natural gas consumption in the face of tight supplies and rising prices. Sanctions imposed by the EU on Russia over its military actions in Ukraine have led to Russia halting coal exports to Europe in August 2022. In the longer term, the geopolitical risks posed by the invasion of Ukraine have strengthened the government's resolve to facilitate an energy transition away from fossil fuels. This means that global coal demand is expected to peak in 2023 and stabilize after that (Agnolucci, Paolo *et al.* 2023).

Coal is the world's most abundant source of electricity, currently providing more than 36% of the world's electricity (SME 2021). Coal-fired power plants provide affordable, reliable, and consistently available electricity on demand to meet energy consumption needs. With much of the world lacking access to modern and clean energy, coal remains critical to alleviating global energy poverty. The industry's challenges lie in developing technologies and pathways to zero emissions, particularly carbon dioxide, which scientists have identified as a factor in climate change. In addition, coal serves many industrial purposes, the most important of which are steel production, which uses metallurgical coal or coke, and cement production. According to the World Coal Association, coal produces 37% of the world's electricity and more than 70% of the world's steel (WCA 2020). This means that coal continues to play a critical role in addressing energy poverty by providing an affordable energy source for countries that still lack access to adequate energy. As a result, many countries import coal to meet their domestic energy needs.

Other countries globally have also responded to the high demand for less natural gas by burning more coal. Coal remains the dominant fuel for power generation. This suggests that Indonesia's coal-importing countries continue to need coal to meet domestic consumption, even though they also produce their coal. Indonesian coal remains a significant supply source for several countries, including some of the world's largest coal importers. Developed countries such as China, India, and the Philippines rely on Indonesia as a source of coal supply through coal exports. The other two largest coal importers, Japan and South Korea look to Indonesia as their second source of coal imports after Australia.

Figure 3. Mapping the Country's Dependence on Coal Imports (Million Tons)



Source: Author's calculations from various sources.

If coal exports were to cease, countries that rely on coal as an energy source or raw material would experience severe disruptions in production. A halt to coal exports by producers could lead to reduced production of goods and services and even the closure of some businesses. If importing countries have to switch to more expensive alternative energy sources or import coal from other sources at higher costs, energy costs for industry could increase significantly. With higher production costs and the potential for energy shortages, inflation could rise, impacting consumer price levels. As a result, Indonesia remains a crucial player in the global coal market, and significant importing countries continue to look to Indonesia to meet their energy needs.

3.1.1 China's Dependency Level

China, the primary market for Indonesian coal, is the world's largest producer, consumer, and importer of coal. According to the International Energy Agency, China's coal production will reach 3.9 billion tons in 2021 (IEA 2022). With a total consumption of 86,157 exajoules in 2021 (BP 2022). Coal accounts for over 56,2% of China's electricity generation (VOA 2023). These figures indicate that China will be the world's largest coal consumer in 2021. China's rapid economic growth and urbanization have increased its energy consumption, and coal remains one of the most affordable and reliable sources of large-scale electricity and heat. The Chinese government also plans to increase domestic coal production by 12 million tons daily (Tachev 2022a). Despite being the world's largest coal producer, China's coal development is relatively small and limited compared to other countries. Although coal is a primary energy source in China, the country still needs to import coal from other countries to meet its targets and policies. According to the IEA, China's total coal imports will reach 338 million tons in 2021, with Indonesia as the main supplier (IEA 2022). China's coal imports are divided into coking coal, bituminous coal, and lignite. These three types of coal are used for thermal power generation and are collectively referred to as steam coal in China (Newswire 2023). China's coal imports are dominated by steam coal, which has a relatively low average price.

Table 1. China's Coal Imports by Source

Source/Year	2017	2018	2019	2020	2021	Mean
Indonesia	108.9	63.43	144.41	127.79	193.7	127.86 mt
Australia	83.41	64.63	92.75	60.62	13.2	62.92 mt
Rusia	25.3	27.59	32.38	37.66	59.4	36.46 mt

Source: Author's calculations from various sources.

Indonesia has become the leading destination for China's coal imports to meet its declining domestic demand. More than 62% of China's coal imports come from Indonesia, with a further 17% coming from Russia. These two countries account for almost 80% of China's coal imports, the remainder coming from various countries, including Australia and the United States. Table 1 shows that Indonesia will remain China's top source of coal imports for the five years from 2017 to 2021, averaging 127.86 million tons per year, followed by Australia

at 62.92 million tons per year and Russia at 36.46 million tons per year. The use of coal in China has become a critical aspect of its economy and society. If Indonesia decided to stop exporting coal to China, it would have significant consequences for China and the global coal market. China's dependence on coal imports could increase coal prices if supplies from other sources cannot quickly replace those from Indonesia. This could also trigger fluctuation in the global market, affecting coal producers and consumers worldwide.

In 2021, 15% of U.S. coal exports were shipped to China (Tachev 2022a). This increase occurred after China banned coal imports from North Korea. However, Indonesia remained China's primary source of coal imports, with Russia continuing to serve as a secondary source. China has also established cooperative relations outlined in the Indonesia-China Energy Forum (ICEF) working agreements. Energy and mineral cooperation agreements and a Memorandum of Understanding (MoU) were discussed during the forum (ESDM 2023). In 2021, Indonesia had the opportunity to host the 7th ICEF. These mutually beneficial cooperation agreements provide China with the substantial energy resources it needs to meet and compete in its industrial sector while offering Indonesian coal industry stakeholders the opportunity to increase coal export volumes to China.

3.1.2 India's Dependency Level

India is the world's third-largest energy consumer, with electricity demand growing at 4.7% annually (Ministry of Coal 2022). India has now become one of the leading destinations for Indonesian coal exports. Coal exports from Indonesia to India have surged significantly since 2019, driven by a power crisis caused by heat waves, with temperatures reaching 45 degrees Celsius (Asmarini 2022). With a growing population, expanding economy, and improving quality of life, energy consumption in India is expected to increase. Coal is expected to play a prominent role in India's energy scenario, given the limited potential reserves of oil and natural gas, environmental restrictions on hydropower projects, and geopolitical perceptions of nuclear power (Ministry of Coal 2021). The primary objective of India's coal policy is to improve the industry's financial performance by creating a competitive coal sector. A financially viable power industry will be essential to support coal sector reforms (IEA 2002).

Table 2. India's Coal Imports by Source

Source/Year	2017	2018	2019	2020	2021	Mean
Indonesia	91.63	112.88	116.66	92.53	71.04	96.94 mt
Australia	45.81	48.17	46.78	54.95	71.04	53.34 mt
Russia	6.25	4.92	8.26	6.75	6.27	6.5 mt

Source: Ministry of Coal Lok Saba.

India continues to meet its coal supply needs with imports of Indonesian coal. Table 2 shows that Indonesia will remain India's leading source of coal imports from 2017-2021, consistently competing with coal imports from Australia. During 2017-2021, India imported an average of 96.94 million tons of coal annually from Indonesia, followed by Australia at 53.34 million tons per year and Russia at 6.5 million tons per year. According to the Ministry of Energy and Mineral Resources, in 2021, India was the second largest destination for coal exports after China, while in the previous year, India was the top destination for coal exports (ESDM 2021b). In 2022, India again became the largest destination for coal exports. This means India and China have become competitors in the Indonesian coal market. Indonesia consolidates its position as the largest coal supplier to India, increasing its market share from over half in 2021 to two-thirds in 2022. India's share has increased at the expense of Australia and South Africa, while Russia has overtaken the United States to become the fourth-largest supplier to India (Varadhan 2023).

Coal is the most essential and abundant fossil fuel in India. According to the International Energy Agency, India's coal production will reach 805 million tons in 2021 (IEA 2022). With a total consumption of 20.09 exajoules in 2021 (BP 2022). Total imports were 207 million tons (IEA 2022). As India's coal production grows, so does its energy demand. With coal accounting for more than 55% of India's total power generation, it is clear that India needs a long-term supply of coal. Indonesia, like China, is India's primary coal import market. Cooperation between Indonesia and India began with a meeting in 2009 to discuss the establishment of a Joint Working Group (JWG) in the coal sector. This meeting considered mutual interests in promoting bilateral cooperation, particularly in the coal sector (Amaliya 2021).

3.1.3 Japan's Dependency Level

Coal is the second largest primary energy source in Japan after oil. According to BP PLC, coal production in Japan in 2020 will be 0.77 million tons (BP 2020). Japan's coal production has been relatively low, with a peak of 17.69 million tons in 1981. Meanwhile, coal consumption is relatively high, reaching 4.8 exajoules in 2021, an increase of 0.23 exajoules from the previous year (BP 2022). Looking at this data, it is clear that the use of coal to meet Japan's industrial needs is significant. However, Japan's natural resources must be improved to meet this demand. Japan imports almost all (99%) of its coal, mainly from Australia, followed by Indonesia and Russia. More than 60% of Japan's coal is imported from Australia, and Japan's coal demand is critical to developing Australia's coal export industry (The Australia Institute, 2021). The situation is similar for other fossil fuels. Japan needs to import coal to meet 96% of its energy needs (Tachev 2022b). However, in 2020, Japan's coal imports declined from the previous year, mainly due to reduced demand from coal-fired power plants during the COVID-19 pandemic. According to the Australian Department of Industry, Science, Energy, and Resources, more than half of total imports are thermal coal, with the remainder being metallurgical coal (Global Data 2021).

Table 3. Japan's Coal Imports by Source

Source/Year	2017	2018	2019	2020	2021	Mean
Indonesia	32	29	22.4	27.62	21.91	26.6 mt
Australia	119.13	115.3	127.16	103.54	120.51	117.1 mt
Russia	21	18.9	22.4	21.71	20.08	20.5 mt

Source: Author's calculations from various sources.

Table 3 shows that for five years, from 2017 to 2021, Australia was Japan's leading source of coal supply, with an average import of 117.1 million tons per year. In addition, Indonesia is the second largest coal supplier to Japan, with an average import of 26.6 million tons per year, followed by Russia with an average of 20.5 million tons per year. Initially, China was the leading supplier of coal to Japan. However, due to instability and export regulations offered by China that were considered detrimental to Japan, it became an opportunity for Indonesia to enter the coal export market to Japan. Indonesia offers quality and benefits that do not harm Japan or Indonesia by reducing import duties (Salsabila *et al.* 2022). This is undoubtedly an opportunity for Japan to get coal at a reasonable price and quality, considering that Japan does not obtain this import duty reduction policy when importing coal from China and Australia. At the beginning of 2022, the Indonesian government banned Indonesian coal exports to fulfill domestic needs in a crisis. Due to the ban, many countries, including Japan, urged Indonesia to lift its ban immediately. The Japanese Embassy in Jakarta requested the Ministry of Energy and Mineral Resources (ESDM) to end the coal export ban as it has seriously impacted the Japanese economy. In addition, the Embassy requested that high-calorific coal not used by local power plants be excluded from the export ban (Christina, Bernadette, 2022). The embassy also requested that five ships loaded with coal be allowed to depart for Japan. Japan has invested in coal mining projects in Indonesia and established partnerships in the energy sector (Darmastuti, Juned et.al., 2021). In addition, Indonesia and Japan also have a cooperation agreement known as the Indonesia-Japan Economic Partnership Agreement (IJEPA). IJEPA has benefited both countries. This agreement makes it easier for Indonesia to enter the Japanese industrial market and offers policies that benefit both. The IJEPA has also facilitated import and export activities due to reduced import duties. Indonesia is now a significant supplier of coal to Japan.

3.1.4 South Korea's Dependency Level

Although coal is a significant source of greenhouse gas emissions, it remains an essential energy source in South Korea. South Korea relies heavily on imports to meet most of its energy needs. The country has been the world's fourth-largest coal importer since 2010 (World Energy Statistics 2022). 2021 South Korea will import 126 million tons of coal (Coal Researches Network 2022). In contrast, South Korea's domestic coal production is only 1.2 million tons annually. In 2021, total coal consumption in South Korea will reach 117 million tons (Ener Data 2022). Coal energy-dependent industries such as manufacturing and metallurgy have contributed to the increase in coal consumption in South Korea. With rising coal consumption and limited domestic production, South Korea has become highly dependent on coal imports in recent decades.

Table 4 shows that for five years, from 2017 to 2021, Australia was the largest source of coal imports in South Korea, with an average of 47.12 million tons per year. In addition, Indonesia and Russia are the primary sources of South Korea's coal supply, averaging 31.7 million tons and 22.01 million tons per year, respectively.

South Korea must import coal to fulfill 28.5% of its energy needs as the second energy source after oil (Bang 2021).

Table 4. South Korea's Coal Imports by Source

Source/Year	2017	2018	2019	2020	2021	Mean
Indonesia	36.80	37.15	29.61	24.83	30.16	31.7 mt
Australia	43.38	43.4	49.35	37.2	62.3	47.12 mt
Russia	3.66	29.18	28.2	26.66	22.33	22.01 mt

Source: Author's calculations from various sources

Currently, 30% of the country's power generation relies on coal. This means that Indonesia is also an essential source of coal supply for South Korea. The stability of the coal supply from Indonesia is one of the critical factors in meeting the country's energy needs. In early 2022, Indonesia announced a ban on coal exports. In response, the South Korean government urged the Indonesian government to lift the coal export ban. Despite these actions, the South Korean government officially stated that Indonesia's ban on coal exports would have minimal impact on the Korean economy. As a country that allocates much investment in the manufacturing sector and digital economy, some concerns that continued threats to energy supply could hamper the country's growth prospects, so Indonesia's coal export ban shows that South Korea is still highly dependent on coal (Korea View 2022).

3.1.5 Philippines's Dependency Level

The Philippines generates around 60% of its electricity from coal, making it one of the largest sources of carbon dioxide emissions (Shiga 2022). In 2020, the country declared a moratorium on proposals to build new coal-fired power plants, instead aiming to make significant gains from renewable energy. However, concerns about the cost and reliability of renewable energy have troubled the government. During the rainy season, there are concerns that the country's solar power supply may not be sufficient throughout the year. The government has provided policy incentives for developing new mines, but most permits are for small-scale mining. This is unlikely to increase coal production to the required scale, potentially leading to future coal shortages and increased coal imports. As a result, coal remains a primary energy source, and the Philippines continues to rely on coal-fired power plants.

Table 5. Philippines Coal Imports by Source

Source/Year	2017	2018	2019	2020	2021	Mean
Indonesia	19.663 mt	23.285 mt	24.979 mt	28.603 mt	30.513 mt	25.41mt
Australia	1.401 mt	1.245 mt	710.607 tt	538.212 tt	242.197 tt	0.82 mt
Russia	<984 thousand	1.317 mt	160.990 tt	278.005 tt	186.000 tt	0.58 mt

Source: Department of Energy, Philippines.

Table 5 shows that Indonesia remained the primary source of coal imports for the Philippines over the five years from 2017 to 2021. Annual coal imports from Indonesia increased, averaging 25.41 million tons per year. Nearly 98% of the Philippines' coal demand of 31.23 million tons in 2021 was supplied by Indonesia. Apart from Indonesia, Australia also supplied coal to the Philippines with an average of 0.82 million tons and 827,400 tons per year. The rest came from various countries, including Russia, with an average of 0.58 million tons or 585,200 tons per year. The Philippines is also a regular buyer in the international seaborne market. Total coal imports for this country reached 31.23 million tons in 2021 and 29.52 million tons in the previous year (CNMD 2022b). In 2021, total coal consumption in the Philippines reached 25.48 million tons, while the country produced only 14.37 million tons of coal (CNMD 2022a). This means the Philippines heavily depends on coal imports, as total consumption exceeds domestic production. The Philippines purchases 2.3 million tons of Indonesian coal monthly to meet its power generation fuel needs.

In 2019 and early 2022, Indonesia briefly banned coal exports to ensure sufficient domestic supply. Philippine Energy Secretary Alfonso Cusi has appealed to Indonesia to lift its coal export ban, saying that the policy would hurt an economy that relies heavily on fuel for power generation (Kurniawan 2022). Mr. Cusi requested in an official letter sent to Indonesia's Minister of Energy and Mineral Resources through the Ministry of Foreign Affairs. Based on data from the Philippines' Department of Energy, Indonesia has been the largest source of coal imports since 1988 (CNMD 2022b). Apart from Indonesia, Australia, Vietnam, and Russia also exports coal to the Philippines. In 2021, more than 0.7% of the Philippines' coal imports came from Australia,

0.9% from Vietnam, and 0.6% from Russia (CNMD 2022a). The rest comes from various countries, including Korea, India, and China.

Conclusions and Further Research

This research confirms that many countries heavily rely on coal production from Indonesia. The coal output from Indonesia impacts various economic activities of importing countries, especially as an energy source for the global community. Using dependency theory further solidifies Indonesia's position as one of the world's largest coal exporters. Several countries, including China, India, Japan, South Korea, and the Philippines, heavily rely on Indonesian coal production. Therefore, any changes in Indonesia's government policies regarding coal commodities will significantly impact these countries. If Indonesia were to halt its exports, it would disrupt the industrialization process in those countries. However, coal producers and users face the challenge of climate change and environmental damage from coal industry development.

Coal remains the only viable option for critical industries with affordable energy options in many markets. Coal is considered essential as a stable supply of electricity and is vital in developing renewable energy infrastructure. The world's top five coal-importing countries continue fulfilling their domestic coal supply by sourcing Indonesian imports. The Philippines relies on 98% of its total coal demand from Indonesian coal imports, averaging 25.41 million tons per year. Furthermore, India is now one of the leading export destinations for Indonesian coal, with average exports of 96.94 million tons per year. China also relies on the Indonesian coal import market and Indonesia is the leading market for Chinese coal imports. More than 62% of China's coal imports come from Indonesia, with an average of 127.86 million tons per year. Meanwhile, Japan relies on 60% of its coal imports from Australia. Similarly, South Korea has Australia as its leading supplier of coal imports, averaging 44.2% of Seoul's total coal, followed by Russia and Indonesia. It can be seen that of the five largest coal importers in the world, three of them depend on Indonesian coal exports for their coal supply. Without Indonesia's coal supply, the country's industrialization process would be disrupted. This means that the role of Indonesian coal is significant in the national energy sectors of importing countries and plays a vital role in global energy contribution.

The research suggests that the Indonesian government should be involved in the political economy of countries dependent on coal from Indonesia. Furthermore, the government should promote domestic coal downstream to meet society's increasing energy needs and address the threat of global resource and energy competition.

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Credit Authorship Contribution Statement

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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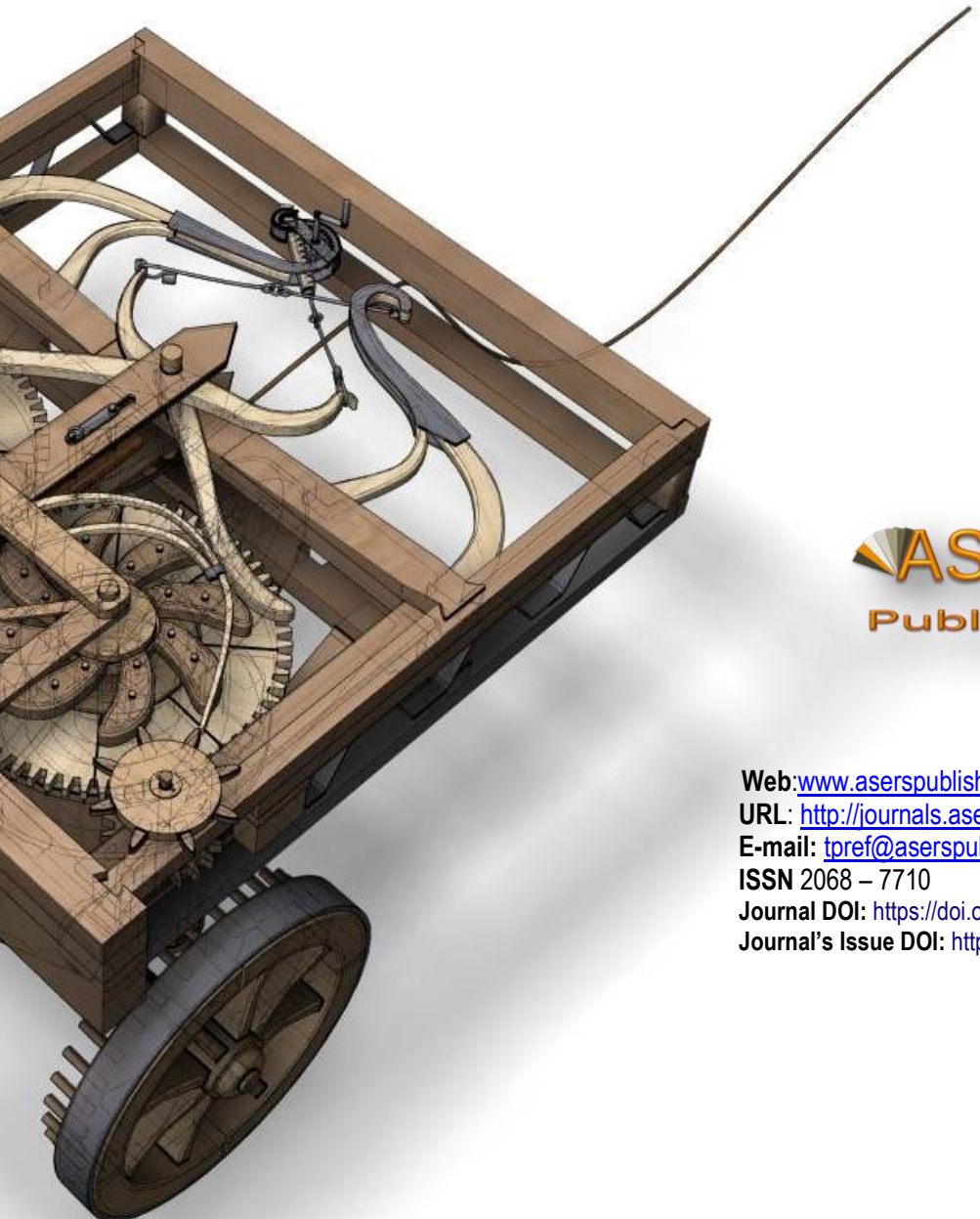

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