

## **DOES CLIMATE POLICY AFFECT THE PRICE AND VOLUME OF INDONESIAN COAL EXPORTS?**

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### **Abstract**

This study aims to investigate the impact of climate policies, such as the Paris Agreement and its derivatives, the Gasglow climate pact, on the reference coal price and its effect on the volume of Indonesian coal exports. A qualitative approach, utilizing secondary data from various international level journals, data from the Ministry of Energy and Mineral Resources, the World Bank, and other relevant sources, was employed. The research method utilized literature study. The results of this study indicate Climate policies the Paris Agreement, the Glasgow Climate Pact, and benchmark coal price on Indonesia's coal export volume is limited do not have a notable effect the volume of coal exports do not significantly impact the reference. Recommendation for Policy makers should conduct a comprehensive assessment of coal export policies, with a particular focus on their alignment with the commitments outlined in the Paris Agreement and the Glasgow Climate Pact. This assessment should include an examination of emissions targets and whether or not coal exports are at odds with them.

**Keyword:** Coal Export; Exchange Rate; Coal Price; Paris Agreement; Gasglow Climate Pact

## 1. Introduction

The economic development of a country, including Indonesia, is currently closely related to the global economic situation.(Cheng et al., 2021;) (Wang & Zhang, 2021a) As a result, economic relations with other countries have a major impact on the economy of each country (Khan et al., 2019) This is closely associated with globalization, which necessitates a mechanism of economic transparency in each nation.. The present period of economic openness is characterised by the escalating participation of countries in international trade and cross-border economic ventures.

International trade serves the purpose of fulfilling requirements that are not locally accessible (Jafari Sadeghi et al., 2019) (Sharma et al., 2020). This global trade undertaking is inextricably linked with the exports and imports of international trade (Hayakawa & Mukunoki, 2021; Muhammad et al., 2020). Exports are one of the most important factors in the development of the economic growth of a country (Rahman M & Nepal., 2021). , This is essential for a country's sustainable economic development.

Indonesia classifies its exported goods into two categories: oil and gas exports, and non-oil and gas exports (Karamelikli et al., 2017).

Table1.1

<i>Exports Component</i>	<i>Export Value of Oil and Gas - Non-Oil and Gas (Million US\$)</i>	
	2022	2021
<i>Oil and Gas</i>	15998,2	12247,4
<i>Non Oil and Gas</i>	275906,1	219362,1
<i>Total</i>	291904,3	231609,5

Source : the Central Bureau of Statistics

According to table 1.1, the non-oil and gas sector stands as Indonesia's primary export. Coal serves as one of the primary export goods within non-oil and gas mining. Indonesia holds a substantial history as a producer of coal.. Coal mining first began on the island of Sumatra in the early 19th century under Dutch colonial rule (Van Leeuwen, 2014). However, commercial coal production only reached its peak in the mid-20th century. Indonesia has vast coal reserves, particularly on the island of Kalimantan (Borneo) and Sumatra (Friederich et al., 2016). Abundant coal reserves in Indonesia have enabled the country to satisfy its domestic demand and become a prominent exporter in the international market. There is still considerable global demand for coal, particularly from countries such as China, India, and nations within Southeast Asia. As a result, Indonesia has the possibility to become a significant coal supplier.

The Indonesian government has enacted measures facilitating the expansion of the coal sector by unlocking mining sites, streamlining permit issuance, and authorising coal exports (Aleluia et al., 2022) ; (Setyowati & Quist, 2022). However, coal mining often has negative impacts on the environment, such as deforestation, land degradation, and water pollution (Dontala et al., 2015). Efforts to manage these impacts are becoming increasingly important. In addition,

the expansion of the coal sector has resulted in the emergence of social concerns, including the displacement of nearby inhabitants, disputes over land, and matters of community well-being (Phelan et al., 2017). To address this issue, the government must adhere to international regulations regarding sustainable coal management. Therefore, it is imperative to implement conservation and sustainable management practices to reduce the environmental impact of coal mining (Aristizabal-H et al., 2023). As the largest coal producer and exporter on the planet, Indonesia bears significant responsibility within the global industry. Nevertheless, the environmental and social challenges that exist require dedicated efforts to guarantee that coal mining brings positive contributions to both Indonesia's economy and society, as well as to the wider world.

This study examines the volume of coal exports from Indonesia, which is the world's largest exporter of coal. Climate policies, such as the Paris Agreement and its derivative, the Glasgow Climate Pact, are considered as factors influencing international coal prices and hence, affect Indonesia's coal exports.

Climate policy such as the Paris Agreement is an international treaty agreed at the 21st United Nations Climate Change Conference (UNFCCC), held in Paris, France, in 2015. The agreement has the primary objective of addressing global climate change by reducing greenhouse gas emissions and limiting the increase in global average temperature to below 2 degrees Celsius above pre-industrial levels, with efforts to limit it to 1.5 degrees Celsius (Falkner, 2016); (Urpelainen & Van de Graaf, 2018) These policies bear the potential to significantly impact a nation's coal export quantities, with varying effects depending on several factors such as the climate policies enacted by coal exporting nations (Finkelman et al., 2021; Yanguas-Parra et al., 2023).

The Glasgow Climate Pact (COP26) is derived from the Paris Agreement, a significant gathering called by the United Nations in 2021 to deliberate on climate change and the worldwide initiatives to limit greenhouse gas emissions (Depledge et al., 2022). One of the main objectives of the climate agreement is to diminish the use of fossil fuels, such as coal, which is a significant contributor to carbon emissions. The COP26 Glasgow Climate Pact intends to guide participating countries towards reducing greenhouse gas emissions and keeping global temperature increases below 2 degrees Celsius. (Jaiswal, 2021; Lyster, 2023) Efforts are being made to achieve a rise of approximately 1.5 degrees Celsius. To realise this objective, numerous countries are pledging to decrease their reliance on fossil fuels, such as coal.

The Benchmark Coal Price represents the mean value of distinct coal species traded on the worldwide market. Its purpose is to set a benchmark for deciding the export or sale prices of coal in the international market. (Saputra & Ridhawati, 2023). The Ministry of Energy and Mineral Resources establish the benchmark coal price in Indonesia.

Benchmark coal prices are typically quoted in US dollars (USD) per metric ton. They serve as a reference for coal producers and exporters to establish their selling prices in the global market. When the benchmark coal price increases, Indonesian coal producers can raise their selling price, which can boost export revenue (Cornot-Gandolphe & Oxford Institute for Energy Studies, 2017). Benchmark coal prices can also impact the competitiveness of coal from Indonesia in the global market. It is important to note that the benchmark coal price is one of the factors that can influence the global coal market (Jakob & Steckel, 2022). Therefore, it is

crucial for Indonesia to maintain a competitive benchmark coal price to remain competitive in the market.

Based on the aforementioned background, this study endeavours to examine whether climate policies, specifically the Paris Agreement and the Glasgow Climate Pact, have an impact on the benchmark coal price and the quantity of Indonesian coal exports. The significance of Indonesia's position as one of the biggest coal producers across the globe underlines the need to identify and comprehend the influence of climate policies on the benchmark coal price and the volume of Indonesian coal exports. Thus this study takes the title "*Does Climate Policy Affect the Price and Volume of Coal Exports in Indonesia?*"

## **2. Literature Review**

### **2.1 Coal Export**

The expansion of overseas trade is intricately linked with the economy of Indonesia (Alam & Murad, 2020) (Dat et al., 2020). Following the declaration of independence, Indonesia endeavoured to attain global recognition in order to prevent the resurgence of colonial rule and establish trade ties to replenish the national treasury (Nadjamuddin et al., 2022). To overcome this exports can be a solution to this problem.

Exporting refers to the act of shipping goods or commodities from one country to another (Lin & Zhang, 2020). Individuals or groups responsible for shipping goods overseas are known as exporters. This transaction entails the transportation of products or services from the exporter's country to the importer's country. The significance of exports in a country's economy is paramount as they generate revenue, produce job opportunities and pave the way to sustainable economic advancement (Mania & Rieber, 2019).

This statement is reinforced by the fact that many nations depend heavily on exports as a primary source of revenue. By reducing trade imbalances and boosting a nation's competitiveness in the global marketplace, exports can also enhance the value of a currency. In the context of Indonesia's coal exports, it is crucial to acknowledge that coal exports are not isolated in the global economy. Many countries, including Indonesia, depend on exports as a crucial source of revenue. By exporting their natural resources, countries can optimise their returns and generate significant income (Erdoğan et al., 2020). In this particular case, coal exports are essential in contributing to Indonesia's revenue.

However, it is worth noting that the (Salman et al., 2019) demonstrated that exports can have adverse effects (Barichello, 2020), resulting from exporting these commodities. One crucial effect is the heightened strain on natural resources attributed to coal mining. Highly intense mining practices can lead to environmental degradation, which includes deforestation, damage to ecosystems and water contamination (Worlanyo & Jiangfeng, 2021). These consequences have far-reaching ecological implications that affect the sustainability of ecosystems, which may require years to heal (Saint-Amand et al., 2022).

Another environmental impact is the greenhouse gas emissions generated by coal combustion (Cabernard et al., 2022). Coal's contribution to global climate change has become the focus of international attention, and countries are working to reduce these emissions through various policies and regulations (Yoro & Daramola, 2020). Indonesia as one of the

world's largest coal exporters has a responsibility to mitigate these environmental impacts by promoting sustainable practices in the coal industry..

Relying on certain export markets poses a substantial economic risk. Variations in coal prices on the worldwide stage could have a considerable effect on Indonesia's economy. Thus, it is crucial to sustain a balanced and diverse economic sector which would make the country less susceptible to fluctuations in commodity prices.

Managing natural resources wisely and developing policies that support sustainable practices in the coal industry are essential for the government to address the negative impacts of coal exports (Kurniawan et al., 2020). Critical components in mitigating these impacts include transparency, accountability and the equitable distribution of coal export revenues, ensuring that society benefits economically. Therefore, it is imperative to implement prudent and sustainable strategies in order to ensure that coal exports bolster the nation's long-term interests and the global environment, amidst the challenges they present (Olujobi et al., 2023).

In this context, it can be concluded that exporting plays a crucial role in a nation's economy as it comes with substantial economic advantages. However, it is equally vital to handle it carefully to avert any adverse effects. The diversification of export markets and continuous monitoring can assist nations in optimising the benefits of exports while managing the associated risks

## **2.2 Paris Agreement**

The Paris Agreement is a global treaty that was agreed upon during the 21st United Nations Climate Change Conference (UNFCCC) with the aim of limiting the rise in temperature to below 2 degrees Celsius above pre-industrial levels by reducing greenhouse gas emissions. Participating countries are required by the agreement to create and carry out National (Doelman et al., 2019; Michaelowa et al., 2019) Action Plans (Nationally Determined Contributions/NDCs) to meet their emissions reduction objectives. Thus, the Paris Agreement is an international accord that aims to decrease greenhouse gas emissions and alleviate the repercussions of climate change.

Van Soest et al (2021) has affirmed the Paris Agreement's significant role in establishing a worldwide framework to tackle climate change. Supported by other research, the Paris Accord stands as a notable accomplishment in collaborative efforts to address this pressing issue.

The Paris Agreement represents a global effort to reduce greenhouse gas emissions and mitigate the effects of climate change. It is crucial to establish metrics for assessing progress in meeting this goal, including the evaluation of Nationally Determined Contributions (NDCs) (King & Van Den Bergh, 2019) as well as the monitoring of emissions, global temperature fluctuations, and the impacts of climate change on sectors such as agriculture, water resources, and the environment.

An alternate evaluation highlighted that the Paris Agreement is guided by inter-country cooperation, sustainable lowering of emissions, forest regeneration, and the adoption of more renewable energy sources (Zhou et al., 2021). The measurement of progress towards each country's National Determined Contributions (NDCs) incorporated diverse indicators, encompassing adaptation initiatives, deforestation abatement, and forestation enhancement.

The study concludes that the Paris Agreement framework could advance and gauge through international collaboration, curbing emissions, adaptation and climate change surveillance.

The Paris Agreement concept is a crucial factor in the drive to reduce greenhouse gas emissions and combat the impacts of climate change worldwide. These findings demonstrate the fundamental importance of the Paris Agreement for protecting the environment and our planet (Tolliver et al., 2020). Previous research has indicated that this agreement also has significant implications for sectors including renewable energy, sustainable transport and agriculture that play a crucial role in reducing greenhouse gas emissions (Lima et al., 2020; Zhang et al., 2020).

Additionally, similar results have been found regarding the significance of the Paris Agreement in preserving the environment and encouraging sustainable progress. Consequently, it can be inferred that the Paris Agreement is essential in mitigating and adapting to global climate change through emissions reduction, adaption measures, monitoring and international cooperation. (Zhang et al., 2020)

### **2.3 Glasgow Climate Pact**

The concept of the Glasgow Climate Pact is significant for the fundamental development and study to provide solutions to global climate change challenges. The Glasgow Climate Pact is an international agreement, which was agreed upon at the 26th United Nations Climate Change Conference (UNFCCC) (Surendra et al., 2022). It aims to fortify the implementation of the Paris Agreement and intensify endeavours to decrease greenhouse gas emissions worldwide.

The main objective of the Glasgow Climate Pact is to accelerate actions for climate change mitigation and adaptation, (Alexander et al., 2022) as stated. Hence, the concept of the Glasgow Climate Pact is a global agreement targeting concrete actions for tackling climate change

The 2022 review asserts that the concept of the Glasgow Climate Pact represents a substantial advancement in the drive to mobilise global resources and commitments towards accomplishing increasingly ambitious targets for reducing emissions. The Glasgow Climate Pact is anticipated to serve as a catalyst for participating nations to undertake tangible measures to curb emissions (Singh et al., 2023).

Developing measurements for the Glasgow Climate Pact is a crucial step in the fight against climate change. This involves evaluating targets for reducing emissions, monitoring the implementation of Nationally Determined Contributions (NDCs), tracking global temperature changes, and assessing the impact of climate change on vital sectors such as energy, transport and industry. It is essential for policymakers to take these factors into account when striving towards a more sustainable future.

An alternate analysis highlights that the idea of the Glasgow Climate Pact is determined by the commitments made by the participating countries (Mwanzu et al., 2023), attempts to reduce emissions in crucial sectors, establishing sustainable finance, and adapting to the impacts of climate change. Various measures were utilized to gauge the advancement of each country in reaching their emission reduction goals, increasing funding sources, and lessening disparities in coping with the aftermath of climate change.

Based on the analysis, it may be inferred that the concept of the Glasgow Climate Pact can be advanced and evaluated through global cooperation, heightened aspiration for cutting emissions, adaptation, and the monitoring of climatic influences.

The Glasgow Climate Pact influences worldwide efforts to reduce greenhouse gas emissions and address the impacts of climate change (Boubaker & Omri, 2022). This highlights the paramount

importance of the Glasgow Climate Pact for protecting the environment and planet Earth. Prior research has demonstrated the impact of the Glasgow Climate Pact across various sectors, including renewable energy, sustainable transport, and industry, which contribute to minimising greenhouse gas emissions.

Further research presents comparable findings on the significance of the Glasgow Climate Pact blueprint in safeguarding the planet and encouraging more sustainable practices. It can be inferred that the Glasgow Climate Pact (Sun et al., 2022) blueprint is essential in tackling global climate change challenges, particularly in the areas of mitigating emissions, adjusting to new conditions, observing environmental changes, and international collaboration. It can be inferred that the Glasgow Climate Pact is a worldwide endeavour to enhance the commitment to curtailing greenhouse gas emissions and tackling the consequences of climate change.

## **2.4 Coal Price**

The Indonesian Reference Coal Price serves as the benchmark for calculating the value of Indonesia's coal exports. It indicates the average price of different coal types that are extracted within Indonesia over a specific period (Chandrarini et al., 2022). Coal Price has been identified as a crucial price reference point in the country's coal trading endeavors in global markets, as attested by relevant authoritative bodies. This cost impacts governmental income and coal manufacturers, and may also impact the competitiveness of Indonesian coal commodities in the worldwide market (X. Wang et al., 2020).

As such, Coal Price serves as a crucial gauge, providing an overview of the pricing of Indonesian coal on the worldwide platform. However, The (Endri et al., 2021) indicates that Indonesia's coal price is subject to changes over time and is influenced by various factors, including global demand, coal supply, and world energy policy. Furthermore, the study reveals that fluctuations in global coal prices can significantly affect coal price. These findings align with the viewpoint that changes in coal prices can have a considerable impact on Indonesia's economy, given that coal is one of the country's primary export commodities. It is evident that the Indonesian coal price serves as a benchmark price in the coal trade of Indonesia and significantly influences its economy. Variations in global coal prices can impact the HBA, and any modifications to the coal price can have a consequential economic effect at the national level. It is, therefore, imperative to monitor and regulate the coal price as part of Indonesia's economic policy.

## **3. Material and Method**

### **3.1 Design Study**

This research uses a qualitative method that aims to provide a propositional research proposal on the factors that influence the volume of Indonesian coal exports. This research conceptualises climate policies such as the Paris Agreement and the Glasgow Climate Pact on the volume of Indonesian coal exports. The data collection technique in this research is through a literature review collected from the research library. The techniques used in this research followed (Moriarty, 2011) who pointed out that

### **3.2 Data Analysis**

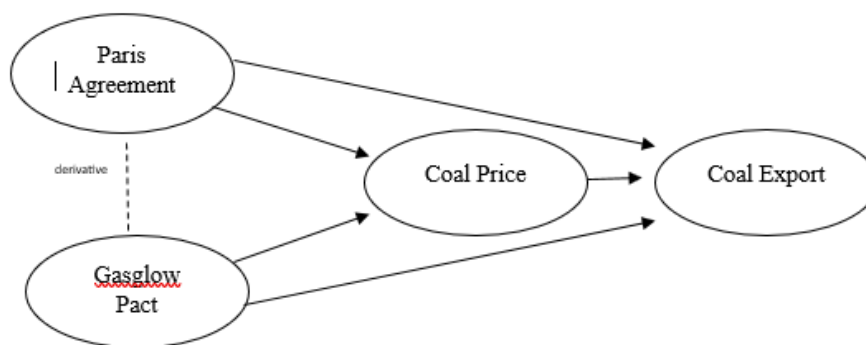
Literature review is the process of locating, obtaining, reading and evaluating research literature. However, studies on the factors affecting the volume of coal exports are limited to exchange rates, production and the price of coal itself. This paper expands on some of the

findings from previous researchers' reference works and uses grounded theory to explore the climate policies that affect the volume of Indonesian coal exports.

**Figure 1.** Research Model

#### 4. Result

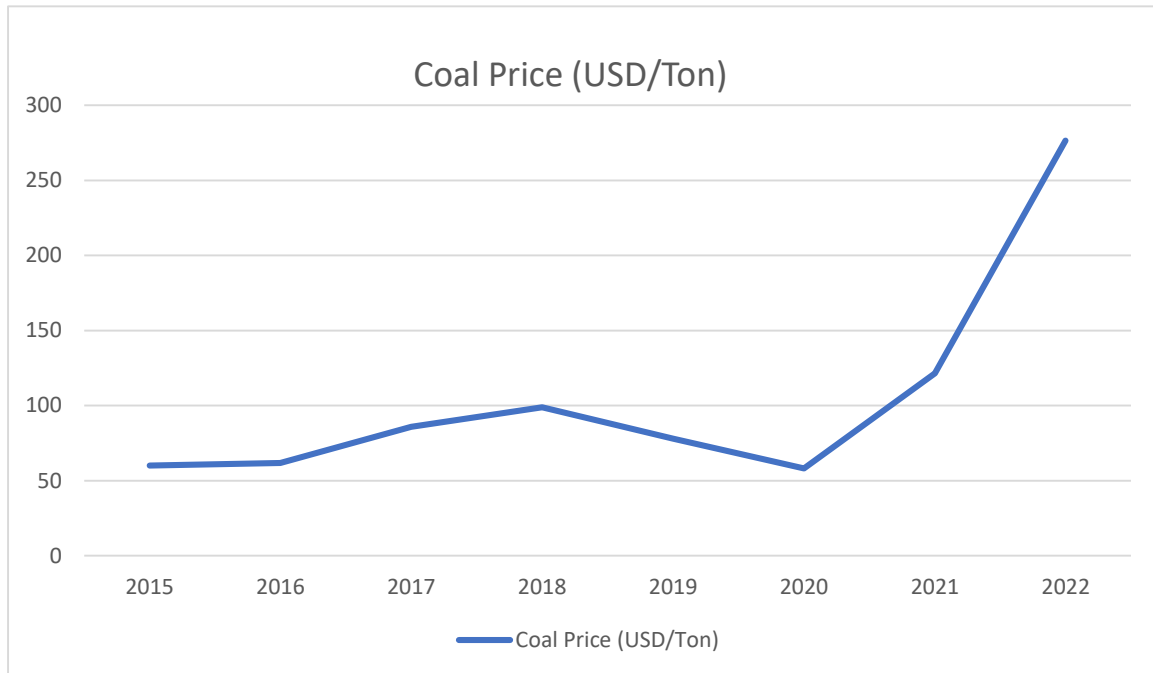
The impact of the Paris Agreement on coal export volumes is particularly relevant as coal is one of the main sources of greenhouse gas emissions, particularly carbon dioxide (CO<sub>2</sub>). The agreement has some impact on coal export volumes. The Paris Agreement requires countries to take concrete steps to reduce greenhouse gas emissions. As one of the largest emitters from coal burning, Indonesia is expected to reduce emissions from this sector. The Glasgow Climate Pact, an offshoot of the Paris Agreement, focuses on reducing global greenhouse gas emissions. This means that countries around the world, including Indonesia, will be under greater pressure to reduce their emissions.



Coal is one of the main sources of emissions, and stricter domestic emission reduction efforts may affect coal export volumes as there may be a need to reduce coal production and consumption (Kartal et al., 2023). These emission reduction efforts will ideally affect domestic coal use, which in turn may affect coal export volumes as there is pressure to reduce reliance on coal. Some countries and international markets are increasingly taking environmental considerations into account in their trade policies. This may lead to tighter restrictions or regulations on coal-based products. With increased awareness of environmental issues, companies and consumers may be more inclined to seek out products that have a lower environmental impact. Indonesia may also see opportunities to diversify its economy and seek alternatives to coal, such as renewable energy. Diversifying the economy can help the country

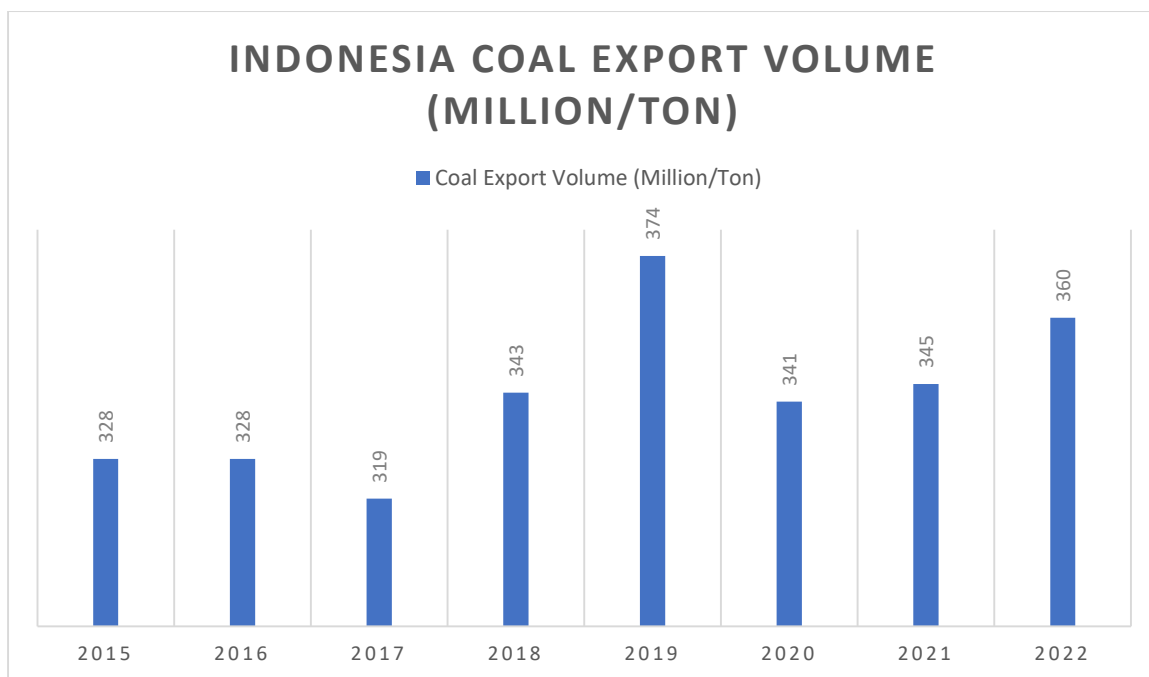


become more resilient to changes in global demand for coal



After the Paris Agreement in 2015, coal prices exhibited a moderately consistent rise over subsequent years. Coal prices stood at 60.13 USD per metric tonne in 2015, and increased to 61.84 USD per metric tonne in the following year, 2016. Nevertheless, a bold transformation was observed in 2017, when coal prices surged dramatically to 85.92 USD per metric tonne. Examining the data suggests that the Paris Agreement may not exert a substantial influence on coal prices. Although the agreement aims to diminish greenhouse gas emissions, foster the adoption of renewable energy sources, coal prices have persisted in their upward trend. The effect of the Paris Agreement on Indonesia's coal export volume not only impacts the economy, but also the environment and the safety of the planet (A. Rahman et al., 2023). This shows that climate change issues have a significant impact on export sectors such as coal, and countries like Indonesia. The agreement may also affect global demand for coal.

Following the implementation of the Glasgow Climate Pact in 2021, coal prices witnessed a more severe surge. In 2021, coal prices stood at 121,7 USD per tonne, but in the following year, they escalated sharply to 277,6 USD per tonne. This upsurge surpasses 100% from the previous year. Hence, this data reveals that despite the intensified global efforts to combat climate change with the Glasgow Climate Pact, coal prices are still increasing. This may prompt questions about the impact of climate agreements and energy policies on the coal market, as well as potential influence from other factors like global supply and demand uncertainty. The issue of reducing global dependence on coal and transitioning to cleaner energy sources remains complex and pressing.



The situation regarding Indonesia's coal export volume remains unchanged. Despite minor fluctuations that could stem from various factors, Indonesia's coal export volume displays steady growth. This suggests that climate agreements have yet to exert a significant influence on the international demand for Indonesian coal. Instead, other factors like global energy requirements, energy policies in receiving nations and economic dynamics appear to dominate the coal market. Indonesia, being one of the largest coal producers globally, exports the commodity despite certain fluctuations.

In fact after the Paris agreement and Glasgow climate pact, Indonesia became the world's largest coal exporter. Indonesia remains one of the largest coal exporters in the world, despite global agreements such as the Paris Agreement and the Glasgow Climate Pact. This is possible because Indonesia has long relied on the coal sector for income and employment. The government is committed to supporting the sector, and many regions in Indonesia are heavily dependent on the coal industry. Relatively stable and competitive coal prices on the international market still make it an attractive option for Indonesia to remain the world's largest coal exporter.

The benchmark coal price significantly impacts the volume of Indonesia's coal exports (Susanto & Admi, 2021). This price is a crucial factor in deciding the economic situation of the coal industry and export determinations (Steckel & Jakob, 2021). Changes in the benchmark coal price can affect several aspects of coal exports. When the benchmark coal price increases, revenue from Indonesian coal exports tends to rise. The price of Indonesian coal in the international market has a significant effect on mining companies' production and exports.

Higher coal prices may lead to an increase in production and exports (Oei & Mendelevitch, 2019), while a drop in the benchmark coal price could cause a decline in export revenues. Moreover, the benchmark coal price plays a critical role in determining the competitiveness of Indonesian coal in the global market. If Indonesian coal prices are lower than those of rivals, it becomes more appealing to international buyers (Hia et al., 2023).

Therefore, variations in global coal prices can impact the competitiveness of Indonesian coal on the global market.

The impact of climate policy, the Paris Agreement, Glasgow Climate Pact, and Glasgow's benchmark coal price on the Indonesian coal price is not considerable. This is illustrated by the rise in Indonesian coal prices and export figures following the implementation of these agreements. This outcome can be attributed to both the continuous requirement for domestic coal and the robust demand from foreign markets.

Furthermore, the coal market is a worldwide arena influenced by various factors, including global economic development, global supply and demand, and fluctuations in other energy prices. Although the Paris Agreement and the Glasgow climate pact can impact market sentiment and investment, their direct impact appears to be limited on Indonesia's benchmark coal prices and coal export volumes.

## **5. Discussion**

This study demonstrates The Paris Agreement and Glasgow Climate Pact, aimed at curbing greenhouse gas emissions, has cast a shadow over Indonesia's coal industry, given coal's significant contribution to emissions. As countries like Indonesia face pressure to slash emissions, they may be compelled to scale back coal production and consumption, potentially dampening coal export volumes. Moreover, global shifts towards cleaner energy alternatives and stricter regulations on coal products may further squeeze demand for Indonesian coal. However, amidst these challenges lie opportunities for Indonesia to pivot towards renewable energy sources, diversifying its economy and mitigating the impact of reduced coal exports. Thus, the Paris Agreement presents both hurdles and avenues for Indonesia's coal industry, underscoring the need for strategic adaptation towards cleaner energy solutions.

## **6. Conclusion, Implication, and Recommendation**

The impact of the literature review on the Paris Agreement, the Glasgow Climate Pact, and benchmark coal price on Indonesia's coal export volume is limited. The demand for coal is under pressure due to global climate agreements that aim to reduce carbon emissions, with countries endeavouring to lessen their dependence on this energy source.

To ensure the long-term sustainability of Indonesia's coal industry, industry stakeholders need to adapt to evolving global circumstances. This entails formulating strategies that are adaptable to changes in climate agreements. By doing so, Indonesia can optimise the export potential of coal, tackle impending challenges, and actively contribute to the worldwide shift towards more environmentally friendly and sustainable energy sources.

For future research, it is necessary to develop alternative methods for creating predictive models that enable the forecasting of forthcoming coal export volumes by evaluating the impact of varying factors. Additional studies could broaden their impact by examining the consequences of coal exports on the environment and social welfare in the related regions of coal production. It is important to note that the factors influencing coal exports may differ across diverse regions in Indonesia, thereby requiring future researchers to conduct extensive regional analyses.

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