JURNAL MINERAL, ENERGI DAN LINGKUNGAN
ISSN : 2549 - 7197 (cetak)
ISSN : 2549 - 564X (online)
Vol 5, No.2 2021 p. 60 - 65
Available online at :
http://jurnal.upnyk.ac.id/index.php/JMEL

Covid-19 and Coal Industry in Indonesia: A Preliminary Analysis

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ABSTRAK

Pandemi *Corona Virus Disease* (COVID-19) berdampak pada sektor energi. Sekitar 4,5% konsumsi energi primer global turun pada tahun 2020, di mana permintaan batubara turun sebesar 220 juta ton. Penurunan tersebut didorong oleh turunnya permintaan suplai listrik akibat kebijakan penanganan Covid-19 (pembatasan perjalanan, *lockdown*, dan *new normal*). Secara khusus, krisis COVID-19 telah menciptakan ketidakpastian bagi industri pertambangan batubara Indonesia sebagai salah satu produsen dan eksportir batubara terbesar dunia. Batubara merupakan sumber energi utama bagi kelistrikan di Indonesia yang juga berkontribusi terhadap pendapatan nasional. Perdebatan tentang tindakan yang harus diambil, apakah akan fokus menangani kesehatan Covid-19 atau menjaga pertumbuhan ekonomi, tidak bisa dihindari. Dengan jumlah kasus yang masih meningkat, artikel ini bertujuan untuk menganalisis implikasi COVID-19 pada industri pertambangan batubara di Indonesia. Dalam penelitian ini digunakan *rapid desk assessment* dan pendekatan statistik deskriptif dengan mengevaluasi data sekunder pada masa pandemi, dibandingkan dengan tahun-tahun sebelum pandemi COVID-19. Hasilnya mengungkapkan transformasi nyata pada permintaan, produksi, dan harga batubara. Meskipun konsumsi batubara domestik untuk pembangkit listrik menurun, harga batubara meningkat pada pertengahan tahun 2021 karena meningkatnya permintaan batubara di China.

Kata Kunci: industri batubara; covid-19; permintaan; energi; penilaian cepat

ABSTRACT

Corona Virus Disease (COVID-19) pandemic dramatically impacted the energy sector. About 4.5% of global primary energy consumption dropped in 2020, where coal demand decreased by 220 million tons of coal equivalent. The drop was driven by lower electricity demand due to policies against Covid-19 (i.e., travel restriction, lockdown, and new standard). In particular, the COVID-19 crisis has already created profound uncertainties for the Indonesian coal mining industry as one of the world's largest coal producers and exporters. Coal is the primary energy source for Indonesian electricity, contributing to the national revenues. A debate about action to take, whether to focus on dealing with Covid-19 health or maintaining economic growth, is unavoidable. With the number of cases continuing to rise, we set out to investigate the impact of COVID-19 on Indonesia's coal mining industry. Rapid desk assessment and descriptive statistical approach were used in this study by evaluating secondary data during the pandemic, comparing with previous years before the COVID-19 pandemic. The results revealed a tangible transformation in coal demand, production, and price. Despite domestic coal consumption for power generation decreased, the coal price increased in mid of 2021 due to rising coal demand in China.

Keywords: *coal industry; covid 19; demand; energy; rapid assessment*

I. INTRODUCTION

The COVID-19 pandemic policies to limit the virus spreading (i.e., lockdown, closed border, social distancing, travel restriction, etc.) could trigger a sharp decline in energy and power industries (Edomah & Ndulue, 2020; Szczygielski et al., 2021). Shortage of human resources, inability to work from home, and supply chain disruptions are some factors affecting caused by the pandemic. This unprecedented change in the human life system notably has implications on many industrial sectors. Furthermore, the pandemic influenced the global commodity market, which was marked by a drop in oil, natural gas, and coal (Azarova & Mier, 2021). This dramatic demand reduction caused substantial falls in the prices of metals and minerals. For example, the share prices of BHP Billiton and Rio Tinto decreased at the beginning of the COVID-19 pandemic. Both of those largest mining companies in the world had lost more than 40% of their share value before recovering slowly (Laing, 2020). Some mining companies in Mongolia (Progressive Digital Media Ltd., 2020) and South Africa (Reuters, 2020) reported production slowdowns and even shut-down due to coronavirus-related restrictions from governments. Meanwhile, in some European countries, mining companies maintained their operation.

They were still productive with less employment and additional operating cost for health protocols. Despite this, they may shut down at any time, unable to deal with the long period impact of the pandemic (Gala et al., 2021).

Indonesia, a country in the global mining industry with significant production of coal, copper, gold, tin, bauxite, and nickel, reported the first case of COVID on March 2, 2020. Since discovering the first positive case, the number of Indonesians infected with COVID-19 has continued to grow and spread exponentially until now. Under intense tension of the Covid-19 pandemic, the Indonesian economy in 2020 grew minus 2.1 percent, the lowest since the economic crisis in 1997 – 1998. In particular, the mining sector is one of the key sectors contributing to Indonesia's economic growth over many decades. The industry contributes to the Indonesian Gross Domestic Product, state revenue, and employment. A review study of Indonesian policy during pandemic stated that artisanal and small-scale mining is more vulnerable than modern mining (Nugroho, 2020). This is due to a lack of suitable mining practice and inattentive health protocols. Small-scale mining and the pandemic impact also affected larger-scale mining and the surrounding socio-economics activities (Garinas, 2020). Nevertheless, publications regarding COVID-19 on the general mining industry in Indonesia were still few, especially coal mining.

Not only an essential contributor to revenue, but coal is also recognized as the primary energy resource for electricity in Indonesia as about 80% of domestic coal is used for power generation. Around 80% of Non-Tax State Revenue of the Indonesian mining sub-sector comes from the coal industry. Indonesian coal is specific with low ash and sulfur, causing it to become a favorite in China and India as the dominant export target of the Indonesian coal industry. This factor is positive, leading to constant global market demand for Indonesian coal despite its volatile price. But, Paris Agreement in 2016 declared to gradually limit and erase the use of coal as fossil fuel starting from 2030, triggering a dilemma for coal stakeholders. In addition, the International Energy Agency (IEA) published an assessment of the global coal demand, including the impact of the COVID-19 pandemic. The evaluation finds coal will be severely impacted by the decrease in electricity demand during a lockdown and predicts an unprecedented 8% decline in global coal demand by the end of 2020, with coal-fired power plants would be reduced by 10% (International Energy Agency, 2020; Yanguas Parra et al., 2021). However, the specific and scientific impacts of the pandemic on the Indonesian coal mining industry have not been elaborated. Scientific studies of this pandemic on coal mining production, market, and investment remained uncertain. Therefore, the objectives of this preliminary study were to analyze the implication of COVID-19 on the coal mining industry in Indonesia through rapid descriptive and statistical approaches. Understanding these impacts is vital and may fulfill the knowledge gap of effective responses in prolonging the Covid-19 crisis. In addition, who also presented the future scenario of coal mining related to carbon emission and energy transition in Indonesia in this study by considering the COVID-19 pandemic.

II. METHODS

Data identifying issues in the coal mining industry in many aspects were required to explore and analyze the impacts of the COVID-19 pandemic. This study conducted a preliminary desk assessment combined with a descriptive statistical approach. We initially focused on the risk and opportunity in coal mining at a national level.

The secondary data were collected from published research, online news and reports, and updated data from the Indonesian government (Ministry of Health, and Ministry of Finance). Coal price, production, and sales between 2015 and mid-2021 were obtained from Ministry of Energy and Minerals Resources websites (https://modi.esdm.go.id), while what accessed coal mine permit location from the online application (https://geoportal.esdm.go.id). Data on coal mining investment and national revenues for 2018 to 2020 were obtained from the Ministry of Finance (https://www.kemenkeu.go.id). COVID-19 data in Indonesia were obtained in real-time from the Indonesian COVID-19 Handling Task Force (https://covid19.go.id). Meanwhile, primary data such as a questionnaire or online interview to validate the impact on company scale were still in progress and not included in this study.

These collected data were then evaluated and compared with previous years before the COVID-19 pandemic. Direct impact showed changes during the epidemic, such as coal mining operations and their effects on output and demand. The indirect implications hinted at the pandemic's indirect effects on coal prices and economic income.

III. RESULTS AND DISCUSSION

3.1. Indonesian Coal Mining Industry before COVID-19

Indonesia is one of the largest coal producers and exporters globally and has become a leading exporter of thermal coal. A significant portion of the exported thermal coal consists of low and medium quality types with calorific values < 5,100 and 5,100 – 6,100 calorie/gram, respectively. The Geological Agency of the Ministry of Energy and Mineral Resources (ESDM) stated that the total coal resources in Indonesia reached 143.73 billion tons with reserves of 38.81 billion tons. In terms of global coal reserves, Indonesia is currently ranked 6th after the USA (248 billion tons), Russia (162 billion

tons), Australia (150 billion tons), China (143 billion tons), and India (111 billion tons) (BP, 2020). Nevertheless, Indonesian coal reserves are estimated to be depleted in approximately the next 63 years with current production levels (600 million tons per year). Most of the demand comes from China and India. More than 30% of Indonesian export coal goes to China, while more than 25% to India as of 2020.

3.2. COVID-19 Cases on Coal Mine Area

After being acknowledged in 2019, the novel Corona Virus Disease (COVID-19) has a massive socio-economic impact on global industrial sectors. In short history, the World Health Organization (WHO) in China reported a case of pneumonia with unknown etiology in Wuhan City, Hubei Province, on December 31, 2019. It was an infectious disease caused by Severe Acute Respiratory Syndrome Corona Virus 2 (SARS-CoV-2), a new type of coronavirus that has never been previously identified in humans. The Chinese government recognized the case as a new type of coronavirus. Subsequently, COVID-19 was declared a global pandemic on March 11, 2020 (Al-Rohaimi & Al Otaibi, 2020). The number of COVID-19 cases increases rapidly, and the virus spread to various countries in a short time, including Indonesia.

Indonesian Ministry of Health reported more than 2,877,000 confirmed cases of COVID-19 with at least 73,000 deaths (2.6%) as of 19 July 2021. These COVID-19 cases in Indonesia are still increasing exponentially. Most cases were dominated in Java Island with over 727,000 (26%) in Jakarta, 499,000 (18%) in West Java, 311,000 (11%) in Central Java, and 226,000 (8.1%) in East Java. Kalimantan Island confirmed the second-most cases with more than 93,000 in East Kalimantan, 39,000 in South Kalimantan, and 29,000 in Central Kalimantan. Covid-19 cases are also highly found in Sumatra and Sulawesi Islands. Approximately 80,000 (2.9%) was attested in Riau, followed with 71,000 (2.6%) in South Sulawesi, 60,000 (2.2%) in West Sumatra, 42,000 (1.5%) in North Sumatra, and 35,000 (1.3%) in South Sumatra. Fig. 1 shows a regional pandemic risk zoning map in Indonesia published from COVID-19 Handling Task Force (https://covid19.go.id/peta-risiko) based on public health indicators. The calculation results of epidemiological indicators, public health surveillance, and health services using scoring and weighting are categorized into four risk zones, specifically, (i) high-risk zone covering 35.02% area in Indonesia with 180 regencies, (ii) moderate risk zone dominating 54.67% area with 281 regencies, (iii) low-risk zone spreading across 9.92% area with 51 regencies, and (iv) shallow risk zone with no positive COVID-19 cases recorded or no new cases have been added in the last four weeks and cure rate 95%.

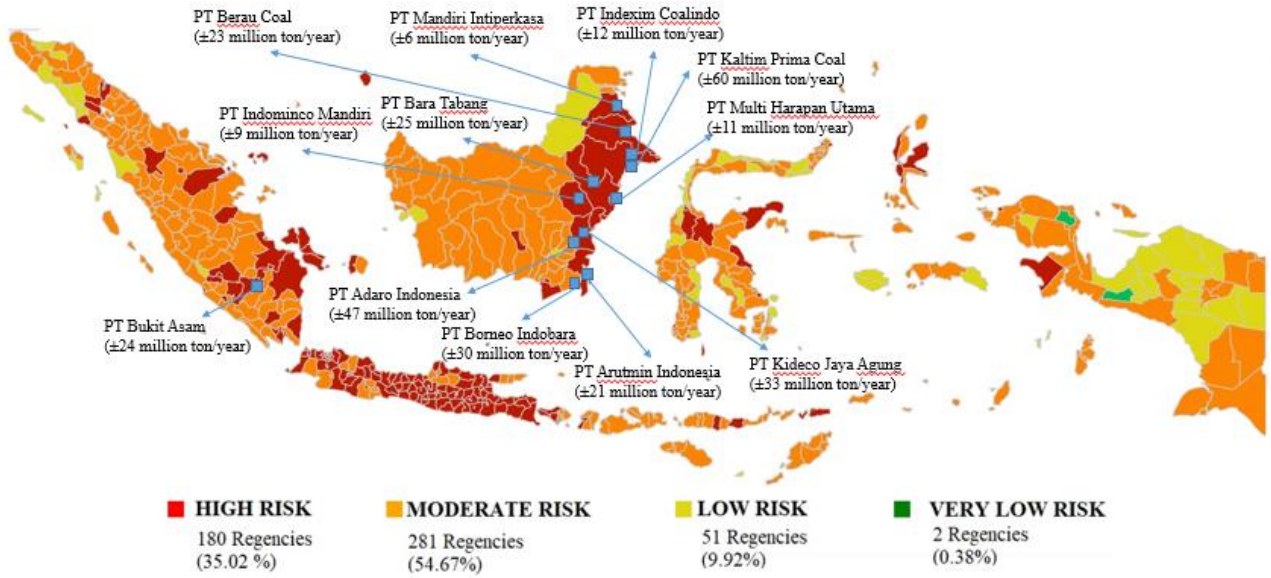

Figure 1. COVID-19 Risk Zone in Modification. Positive Cases and Laboratory Tests Are Based on Surveillance Data from The Ministry of Health. Hospital Service Capacity Data Was Obtained Based on Online Hospital Data Under the Coordination of The Director General of Health Services at The Ministry of Health

Most coal mining companies are operated in Kalimantan and Sumatra Island, where coal-bearing formations have existed geologically. Based on the Directorate General of Mineral and Coal (Ministry of Energy and Mineral Resources, 2020), there were 62 companies holding production permits (Coal Mining Concession Work Agreement). PT Kaltim Prima Coal (KPC) maintained as the top coal producer throughout 2020 with a total production of approximately 60 million tons. PT Adaro Indonesia was ranked second with about 47 million tons total production. The third position is occupied by PT Kideco Jaya Agung, producing 33 million tons. It followed with PT Borneo Indobara (30 million tons), PT Bukit Asam

(24 million tons), PT Berau Coal (23 million tons), PT Arutmin Indonesia (21 million tons), PT Bara Tabang (20 million tons), PT Indexim Coalindo (12 million tons), PT Multi Harapan Utama (11 million tons), PT Indominco Mandiri (9 million tons), and PT Mandiri Inti Perkasa (6 million tons).

The total coal production from those permit holders was about 296 million tons, which is more than 50% of Indonesia's total coal production during 2020. Resumed of the 12 biggest coal producers in Indonesia is presented in Table 1 detailed with their location. Those coal companies operated in East Kalimantan, South Kalimantan, North Kalimantan, and South Sumatra Province.

Table 1. The 12 Highest Indonesian Coal Producers, Detailed with Their Location and COVID-19 Risk Area

Company	Estimated Production (ton per year)	Location***	Area (ha)**	Covid-19 Risk*
PT Kaltim Prima Coal	± 60 million	East Kutai Regency, East Kalimantan Province	84,938.00	High
PT Adaro Indonesia	± 47 million	Tabalong - Hulu Sungai Utara - Balangan Regency, South Kalimantan Province	31,379.80	High
PT Kideco Jaya Agung	± 33 million	Pasir Regency, East Kalimantan Province	47,500.00	High
PT Borneo Indobara	± 30 million	Tanah Bumbu Regency, South Kalimantan Province	24,100.00	Moderate
PT Bukit Asam	± 24 million	Lahat, Muara Enim Regency, South Sumatra Province - Indragiri Regency, Riau Province - Sawahlunto City, West Sumatra	61,500.00	High
PT Berau Coal	± 23 million	Berau Regency, East Kalimantan	108,009.00	High
PT Arutmin Indonesia	± 21 million	Tanah Bumbu - Kotabaru Regency, South Kalimantan Province	34,207.00	High
PT Bara Tabang	± 20 million	Kutai Kartanegara Regency, East Kalimantan Province	3,015.56	High
PT Indexim Coalindo	± 12 million	East Kutai Regency, East Kalimantan Province	24,050.00	High
PT Multi Harapan Utama	± 11 million	Kutai Kartanegara Regency, East Kalimantan Province	39,972.00	High
PT Indominco Mandiri	± 9 million	East Kutai - Kutai Kartanegara Regency, East Kalimantan Province	24,121.00	High
PT Mandiri Inti Perkasa	± 6 million	Nunukan - Tanatidung, North Kalimantan Regency	9,240.00	High

Source:
*** https://modi.esdm.go.id
**https://geoportal.esdm.go.id
* https://covid19.go.id/peta-risiko

3.3. Impacts on Coal Demand and Energy Consumption

Indonesia was the world's fourth-largest coal producer in 2020, with 535 million tons produced. Production declined by 13% in 2020 compared to 2019, mainly due to the impact of COVID-19, which dampened coal demand on both local and export markets. Domestic coal consumption is primarily driven by demand from the power industry, accounting for 91% of the total consumption. The consumption from the power industry fell by an estimated 21.7% to 68 million tons in 2020, over the previous year. In terms of exports, the country is benefited from its strategic location and price advantage for its low-quality thermal coal to the significant importing hubs, primarily India, China, and South Korea.

The energy consumption load in this study refers to electricity generated from a coal power plant. It can be classified as residential, commercial or business, and industrial demand. These energy demands have a typical pattern, and utility operators manage the generation. Lifestyle change in Indonesian due to Covid-19 has dramatically increased the residential electricity demand and reduced electricity demand in business and industry, affecting the national energy demand profile (Madurai Elavarasan et al., 2020). This may also adversely affect the network equipment such as a substation, distribution transformers, and protection equipment. However, transportation and agriculture have also become a significant load for the power grid. During the COVID-19 outbreak, the percentage demand for electricity for these sectors has been changed, and therefore, the new load mix in different countries has observed.

Last 2019 has been a tough year for the coal mining industry. The trade war between America and China indirectly impacts the decline in economic growth, which also affects the decline in coal demand. China, the country with the largest coal producer and consumer, has implemented a coal import policy by its government so that the need for coal is also affected. Coal prices are strongly influenced by global supply and demand.

3.4. Impacts on Coal Price and Investment

Looking at the current situation in Indonesia, investments in the mineral and coal sectors may have also been affected by the Covid-19 pandemic. The investment target based on the 2020 mining work plan and budget of US$ 7.75 billion, but the realization until December only reached US$ 4.29 billion, about 54.7% of last year's target. However, coal prices have unexpectedly risen to their highest level in a decade, making the fuel a hot commodity in a year when governments are promising to reduce carbon emissions. Thermal coal demand has risen in China due to a natural gas shortage, recovering power usage, and a lack of rain. A Colombian mine closure has hampered supplies, resulting in flooding in Indonesia and Australia and a skewed trade flow induced by a Chinese coal prohibition. Thermal coal prices have more than doubled in the last year due to this. Thermal coal is used to boil water into steam, spin turbines, and generate electricity. Coal shipped to northwest Europe reached its highest price since November 2011, with a 64 percent increase in 2021. Argus claims that costs for coal exported from Newcastle in Australia, most of which heads to Asia, have risen 56%.

IV. CONCLUSION

The spread of the coronavirus in 2019 occurred in various countries quickly, including Indonesia. Based on Indonesia's regional pandemic risk zoning published by the COVID-19 Task Force, several production sites of mining companies in Indonesia include in the high-risk zone category. The spread of COVID-19 resulted in a decrease in coal demand both from the domestic and export markets. This is caused by domestic coal consumption mainly driven by demand from the power industry. Order from the power industry changes where the residential electricity demand increased and decreased the need in business and industry. Under these conditions, the spread of COVID-19 may also impact investments in the mineral and coal sectors, which was only 54.7% of the last year's target. However, coal prices unpredictably have climbed to their highest level in a decade due to rising coal demand in China.

ACKNOWLEDGEMENTS

This study was directed by PT Studio Mineral Batubara (mining consultant). The authors would like to thank LPPM Universitas Pembangunan “Veteran” Yogyakarta for funding and support the research.

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