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DESIGNING THE COAL DOMESTIC MARKET OBLIGATION COMPETITIVENESS POLICY THROUGH SUSTAINABLE BALANCED SCORECARD AND SWOT ANALYSIS (INDUSTRY LEVEL ANALYSIS OF INDONESIA)

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ABSTRACT

Starting from the problem of government policy regarding DMO on coal, it is important to examine the implications of DMO on the level of competition of the national coal industry in the global market arena. Therefore, the research wants to examine the competitive sources of finance of the national coal industry, and develop strategies to improve sustainable and superior performance so that it can indeed compete in the global market. This approach is qualitative. The research location is the coal industry in Indonesia. The research time is one time, yes it is 2023. Data collection techniques are literature review and document study. Data analysis techniques use the Sustainable Balanced Scorecard (SBSC) model combined with competitive advantage sources, and equipped with SWOT analysis. The results found that the sources of Indonesia's coal competitive advantage are: (i) The.biggest in the industry. (ii) Distance-low transportation cost. (c) Size (large industry size), (d) Strong market share. Then six strategies were proposed to improve sustainable performance in order to compete in the global market. The six strategies are basically a combination of production strengths, coal quality weaknesses, environmental issues, and the development of environmentally friendly technology, as well as technology that can improve coal quality, and can make coal not only for the benefit of energy sources.

Keywords : *Competitive advantage; Sustainable Balanced Scorecard; Strategy; DMO*

INTRODUCTION

Coal is one of the fossil fuels which is the most important energy source for power generation and serves as a staple fuel for the production of steel, cement, to textiles (Yulia & Chandriyanti, 2021). Until now, Indonesia is still very dependent on fossil energy sources. About 88% of electricity is generated from fossil power plants, with 60% of it coming from coal, 20% from natural gas, 6% from petroleum, and only 12% from renewables. Therefore, since the late 1970s, coal has become a strategic commodity and a reference for national energy policy (Natalia et al., 2022).

However, at the same time, Indonesia's coal reserves are also used as a strategic export commodity which is the main priority. Indonesia plays an important role in the global coal market. ESDM data (2018) shows that Indonesia ranks fifth in coal producers, and coal exporters with the second largest rank in the world. The revenue obtained from coal exports is one of the definite sources for the state budget (Natalia et al., 2022).

Persaoal, only 21% of Indonesia's coal is used domestically. This often has an impact on coal shortages in the country. Even in the period 2009-2011 there was a scarcity of coal in the market. At that time, domestic industries using coal had difficulty getting coal supply, because coal producers were more interested in exporting coal than selling it domestically (Haryadi & Suciyanti, 2018). Even though domestic coal demand continues to increase, along with Indonesia's population that continues to increase, and has become 273 people in 2020 (Worldometer, 2022).

Therefore, it is not surprising that since 2018 the government has imposed a *Domestic Market Obligation* (DMO) policy. The DMO policy is motivated by the problem of not meeting the minimum percentage of coal sales for domestic users by holders of exploration and exploitation permits and coal production operations, and demands about the low utilization of coal for domestic coal users. Meanwhile, at the same time, coal export activity is relatively high. Therefore, DMO is considered as a form of coal management policy so that coal-rich Indonesia is not used as an exploration sunmber for foreign parties (Jazuli, 2015). The regulation on DMO regulates the fulfillment of national coal needs by 25% of the total production in the Annual Work Plan and Cost Budget (RKAB) with a percentage of 80% fulfillment for electricity (PLN and *Independent Power Producer* / IPP) and 20% for other domestic sectors (Alkanu et al., 2020).

The problem then does not stop only until the implementation of the DMO. There is still a lot of homework related to the national coal industry after the DMO is implemented. One of the problems that will be faced by the national coal industry is about the competitive advantage of national coal in the global market. The competitive *advantage* of the national coal industry is not light, because coal has also been projected as one of the energy sources in sustainable energy in 2030, which sets the energy composition of the emphasis not only on renewable energy (39.3%), petroleum (19.4%), gas (7.8%) and coal (33.5%) (Baskoro et al., 2021). This means that coal will increasingly become one of the mainstays of domestic energy sources, which means relatively reducing the portion of national coal exports.

After the DMO policy, the Indonesian government again made a policy of limiting imports. From January 1 to 31, 2022, the Indonesian government (c.q the Ministry of Energy and Mineral Resources) has adopted a policy of banning coal exports for holders of Mining Business Permits (IUP) or IUPK for the Production Operation stage until an indefinite period. The policy is stated in Press Release Number: 1.Pers/04/SJI/2022. The policy was carried out by the government in an effort to meet the national coal supply for domestic power plants, which affected 10 million customers of PT PLN (Persero). This covers the electricity needs of the general public to industries in Java, Madura, Bali (Jaqmali), and non-Jamali. If the coal export ban is not carried out, then 30 Steam Power Plants (PLTU) with a power of around 10,850 megawatts (MW) will be affected (Natalia et al., 2022).

The January 2022 policy is related to the commitment of coal entrepreneurs who supply coal to PLN. The realization of coal supply from coal businesses to PLN every bulkan is still under the obligation of a percentage of coal sales for DMO or domestic needs. As a result, at the end of 2021, it was accumulated that PLN's plants experienced a deficit in coal supply. As of January 1, 2022, the percentage of DMO fulfilled is only 35 thousand metric tons (MT) or less than 1% of the total 5.1 million MT of reassignment given by the government (Natalia et al., 2022).

In connection with this background, the focus of this study is to examine DMO from the aspect of *competitive advantage* at the level of the national coal industry (Indonesia). The main reference for the theoretical thinking of this research is Sigalas' (2015) article entitled "Competitive advantage: the known unknown concept". The article clearly distinguishes between *sources of competitive* advantage, *competitive advantage* (Ansoff, 1965; Porter, 1985; Sigalas et al, 2013), and the results of competitive advantage, in the form of superior performance (Sigalas, 2015).

As for the sources of competitive advantage, it is relatively numerous. Sigalas (2015) classifies sources of competitive advantage derived from three theories, namely sources of competitive advantage derived from: (1) Resource-Based Theory (Barney & Clark, 2007), (2) Market-led theory (Sachs & Yang, 2002), and Industrial organization theory (Tirole, 1988).

DMO issues, the development of the mining industry, and competitive advantage are dynamic and complex. Therefore, first of all, all elements of competitive advantage are analyzed first by SWOT analysis using the *magnitude, importance*, and *total rating* (M.I.R) method (Ferrel & Hartline, 2014), so that several strategic choices are obtained for the coal mining industry in Indonesia. Then an analysis is carried out using a source of competitive advantage analysis, sustainable balanced scorecard (SBSC), and SWOT analysis.

RESEARCH METHOD

1. Research approach

This research uses a qualitative approach. A qualitative approach is a series of interpretive techniques that attempt to describe, code, translate, and emphasize meaning rather than numerical or frequency of naturally occurring phenomena in the social world. Qualitative research aims to gain an in-depth understanding of a situation (Cooper & Schindler, 2014; Creswell & Creswell, 2017). Among five types of qualitative research methods (phenomenological, grounded theory, ethnography, narrative research, and case studies), this study chose the case study method (case studies (Creswell & Thompson, 2018).

Judging from the nature of the study, this study the purpose of descriptive studies is to obtain data describing the topic of interest. Descriptive studies are typically designed to collect data that describe the characteristics of objects (such as people, organizations, products, or brands), events, or situations (Sekaran & Bougie, 2016).

2. Location and time of study

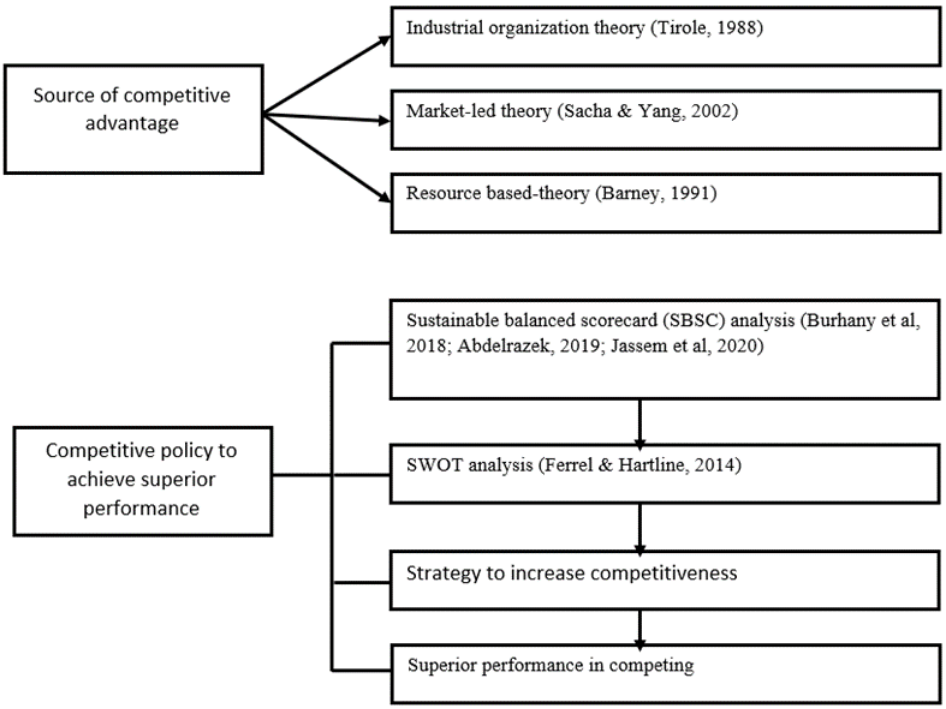
Judging from the research location, the implementation of this research was carried out in Jakarta. Meanwhile, the research time is a one-time study (cross-section), namely 2023.

3. Data collection techniques

The form of data in this study consists of qualitative data (data in the form of words / *words*), and quantitative data (data in the form of numbers / numeric) (Sekaran & Bougie, 2016). Based on the data source, this study used primary data secondary data. Secondary data is data that is already available and/or processed by other parties. Secondary data in this study are pre-existing ones that are processed and provided by other parties (Sekaran & Bougie, 2016). The data collection techniques include secondary data collection techniques using *library research* studies.

4. Data analysis techniques

Given that this research is qualitative research, the data analysis techniques in this study generally use data analysis techniques from Miles, Huberman, and Saldana (2014). Miles et al 2014: 33). suggests that there are four components in qualitative data analysis, namely data collection, data condentation, data display, and conclusion: drawing/verifying. Specifically, the data analysis technique in this study uses: (1) sources of competitive advantage theory", (2) sustainable balanced scorecard (SBSC), and (3) SWOT analysis. The schema of the stages of data analysis is as follows:



Graphs 1 Schematic of Analytical Techniques for Source of Competitive Advantage, SBSC and SWOT Analysis

RESULT AND DISCUSSION

National Competitive Strategy of Coal Industry on Global Competition in The Context of

DMO

SBSC analysis has only reached the stage of evaluating the performance of the coal industry. Furthermore, to obtain the results of the preparation of strategies to improve the sustainable performance of the coal industry in order to achieve superior performance so as to win global competition in the context of DMO, further analysis is needed, in this case using SWOT analysis with magnitude, importance, and total rating (MIR) methods from Ferrel and Hartline (2017).

Based on this SWOT analysis, alternative strategies will be obtained to improve the sustainable performance of the coal industry. Alternative strategies include the following alternatives: (i) S-O (Strengths-Opportunities) strategy, which is a strategy that uses the power of internal effort to obtain opportunities that exist outside the business. In other words, this strategy uses internal forces (signatories to PPPs) to take advantage of external opportunities. (ii) W-O (Weaknesses-Opportunities) *strategy*, is a strategy that aims to minimize internal business weaknesses by utilizing external opportunities. In other words, the goal of this strategy is to improve the internal weaknesses of PPPs signatories by exploiting external opportunities. (iii) S-T (*Strengths-Threats*) strategy, is a strategy pursued by a business to avoid or mitigate the impact of external threats. This strategy uses internal forces (signatories to PPPs) to avoid or mitigate the impact of external threats. (iv) W-T (weaknesses-threats) strategy, which is a strategy of defending by reducing internal weaknesses and avoiding threats. It is a strategy that is a defensive tactic directed at reducing internal weaknesses (PPPs signatories) and avoiding external threats (David, 2013).

Based on the description above, the order of analysis of chapter IV is as follows: (i) Integrating sources of competitive advantage (Ansoff, 1965; Porter, 1985; Sigalas et al, 2013) into four BSC perspectives with the addition of two dimensions of sustainability (social and environmental). The result of this integration is in the form of a sustainable balanced scored carad (SBSC) framework with content in the form of competitive advantages. Then a discussion was carried out one by one on the variables of the competitive advantage of the national coal industry (Indonesia) in the context of DMO. The results of this discussion are in the form of evaluations for each of these variables, so that the performance of each variable can be justified quantitatively in percentage of performance achievements. The end of this sub-chapter is the presence of an SBSC evaluation matrix in the competitive advantage of the national coal industry. The numbers in the matrix are based on the results of qualitative evaluation for each variable. Meanwhile, the weight for each perspective refers to Liang & Wang (2019), namely the financial perspective with a weight of 30%, the customer perspective with a weight of 15%, the perspective of internal business processes with a weight of 15%, the perspective of learning and growth with a weight of 13%, and the environmental perspective with a weight of 20%.

1. Integration of Competitive Financial Variables into the Sustainable Balanced Scorecard (SBSC) Framework

This subchapter integrates sources of competitive advantage (Ansoff, 1965; Porter, 1985; Sigalas et al, 2013) into four BSC perspectives with the addition of two dimensions of sustainability (social and environmental). The result of this integration is a framework *Sustainable Balanced Scored Carad* (SBSC) with content in the form of competitive advantage. Then a discussion was carried out one by one on the variables of the competitive advantage of the national coal industry (Indonesia) in the context of DMO. The results of this discussion are in the form of evaluations for each of these variables, so that the performance of each variable can be justified quantitatively in percentage of performance achievements. The end of this sub-chapter is the presence of an SBSC evaluation matrix in the competitive advantage of the national coal industry.

a. Financial Perspective

Together with China and Australia, Indonesia is listed as the largest coal producing country in the world. Indonesia is a country that has the largest coal reserves in Asia Pacific. Indonesia's total coal reserves against world coal are 3.7% In terms of production, Indonesia contributes to producing 9.0% of world coal production, while domestic coal consumption is only 2.2% of

world coal. The rendahanya level of domestic coal consumption shows that Indonesia still has the opportunity to utilize more coal domestically (ESDM, 2023a).

What is the position of coal in Indonesia's export structure. Indonesian Trade Data shows that Indonesia's export structure as of January 2023 is dominated by the processing industry sector, which reaches 70.15% of Indonesia's total exports. Then followed by the mining sector (21.54%), the oil and gas sector (6.67%), and the smallest is the agricultural sector (1.65%). Coal is one of the mines of the development sector. Coal is a contributor of 85% to total state revenue from the mining sector. If the mining sector is calculated for its contribution to Indonesia's exports, it means that coal contributes 18.30% (Kementerian ESDM, 2022b).

In the context of world coal trade, Indonesia is the largest coal exporter in the world. *The International Energy Agency* (IEA) estimates that world coal exports will reach 1.35 billion tons in 2022. There are seven countries that are the largest exporters of coal. In this case, Indonesia occupies the position as the world's largest exporter. IEA data states that in 2022, Indonesia exports coal of 473 million tons, followed by Australia (350 million tons), Russia (192 million tons), the United States (76 million tons), South Africa (70 million tons), Colombia (53 million tons), Canada (36 million tons), and other countries (101 million tons) (Sadya, 2023).

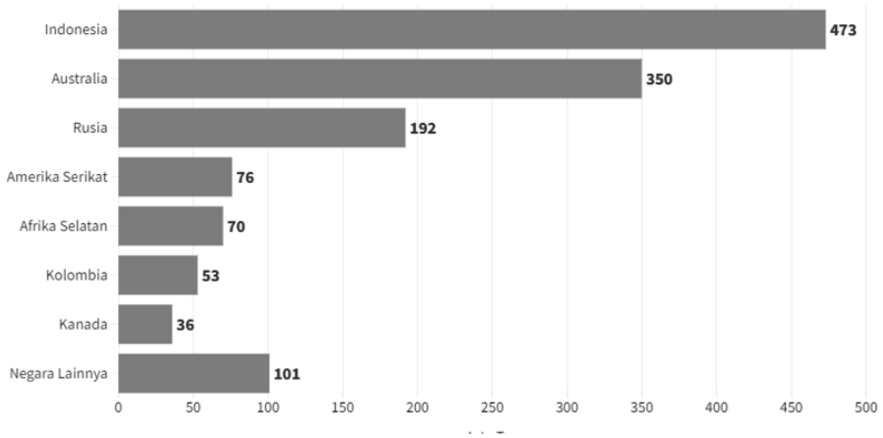


Figure 1 The World's Largest Coal Exporter (2022*)
Indonesia as the Largest Exporter of Coal

The volume and value of Indonesia's new stone exports from 2002 to 2022 showed an increasing trend. Meanwhile, if you only look at the trend between 2021 to 2022, it only increased slightly in terms of volume, but jumped sharply when viewed from the value of exports. Based on data from the Central Statistics Agency (BPS), coal exports in 2022 weighed 360.28 million tons, an increase of only 4.29% compared to the export weight in 2021. However, judging from the export value, exports in 2022 reached USD 46.74 billion, an increase of 76.16% compared to 2021. The value of coal exports in 2022 is the highest record in the last two decades (BPS, 2023).

Indonesia's benchmark coal price (HBA) throughout 2022 strengthened significantly, HBA in January was still at the level of USD 158.5 per ton. The HBA value continued to climb until it reached 330.97 per ton in October 2022. The HBA trend weakened in December 2022, to USD 281.48 per ton. Although it decreased slightly, the HBA in December 2022 (BPS, 2023).

Indonesia sells medium and low quality coal types. Indonesia is able to sell both types of coal in the international market at competitive prices. This is due to the low wages of Indonesian workers (Indonesia Investments Report, 2023). Given that Indonesian coal is of low and medium quality so that it has a lower economic value than high-calorie coal, a program to increase added value or downstream coal is needed. The program is expected to increase the economic value of the two types of coal (Kementerian ESDM, 2022a).

The Indonesian government itself has set national energy source and utilization targets until 2050, which are formulated by the National Energy Policy and the National Energy General

Plan (RUEN). In 2014 the government has established Government Regulation (PP) Number 79 of 2014 concerning the National Energy Policy (KEN) (Peraturan Pemerintah (PP) Nomor 79 Tahun 2014 Tentang Kebijakan Energi Nasional, 2014). This policy is a follow-up to the mandate of Law No. 30 of 2007 concerning Energy, especially Article 11 concerning KEN. This national energy policy is prepared based on the principles of justice, sustainability, and environmental insight in order to create energy independence and national energy security. Figure 4.2 shows the KEN Targets for the 2015-2050 Period, which includes 6 (six) KEN targets. The six targets include the role of energy, NRE mix, energy supply, power generation, energy elasticity, and electrification ratio (Kementerian ESDM, 2022a).

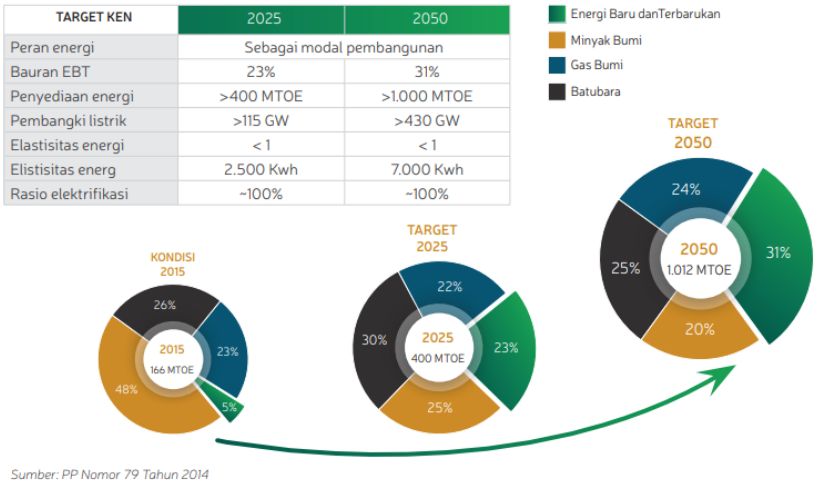


Figure *2* KEN Goals for the 2015-2050 Period

Source: ESDM (2022a)

Based on the scheme in figure 4.2 it appears that: (1) In 2025 the role of New and Renewable Energy will be at least 23%, and in 2050 at least 31% as long as the economy is fulfilled. (2) By 2025 the role of petroleum will be less than 25% and in 2050 it will be less than 20%. (3) In 2025 the role of coal will be at least 30%, and in 2050 at least 25%. (4) In 2025 the role of natural gas will be at least 22% and in 2050 at least 24% (ESDM, 20213a).

b. Customer Perspective

The largest country to which Indonesia's coal exports are exported as of 2022 is India (90.14 million tons). According to the Central Statistics Agency (BPS), Indonesia's coal exports to India reached USD 8.8 billion or equivalent to IDR 131 trillion (at an exchange rate of IDR 15 thousand / United States dollar) during January-September 2022. The value of this export soared 205.26% compared to the same period in 2021. The value of Indonesia's coal exports in India is almost equivalent to a quarter of the value of Indonesia's coal exports during the first nine of 2022 (Kusnandar, 2022).

The other nine countries ranked third to 10th are China (45.85 million tons), Japan (19.47 million tons), Philippines (23.02 million tons), Malaysia (19.33 million tons), Taiwan (14.29 million tons), South Korea (18.99 million tons), Thailand (11.30 million tons), Vietnam (8.51 million tons), and Hong Kong (3.90 million tons) (Kusnandar, 2022).

Coal is the dominant force in electricity generation. At least 27 percent of the world's total energy output and more than 39 percent of all electricity is generated by coal-fired power plants. Given the abundance amount, the extraction process is relatively easy, and infrastructure requirements are cheaper than other energy resources (Indonesia Investment Report, 2023).

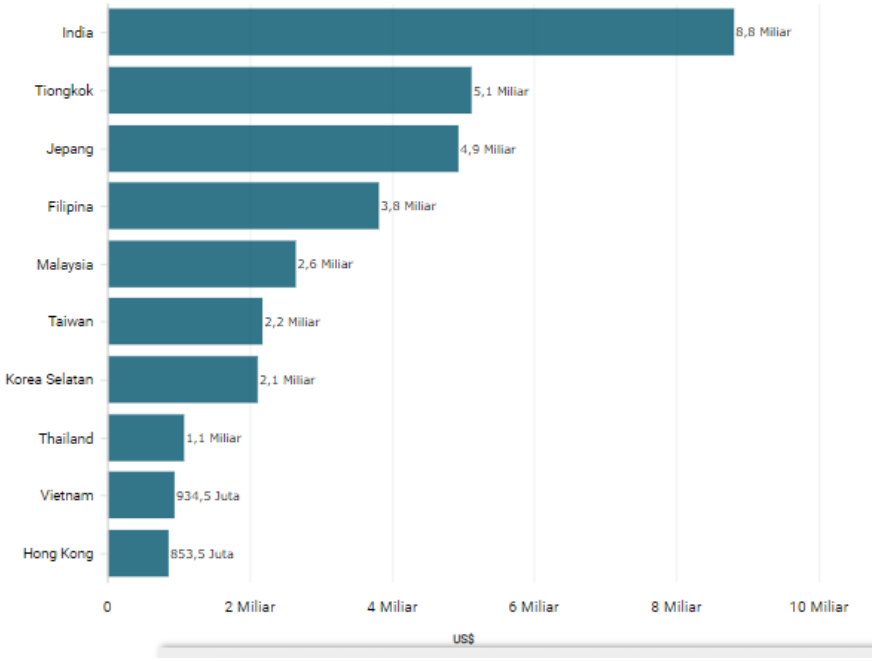


Figure 3 Ten Indonesian Coal Export Destination Countries

The challenge of coal export is not light, especially from the aspect of the issue of the negative impact of coal on the environment. This also has implications for the difficulty of obtaining support for funding coal projects. Both of these challenges have an impact on the difficulty of increasing Indonesia's coal export figures in the world market (ESDM, 2023a).

c. Internal Business Process Perspectives

Indonesia is a leading exporter of thermal coal. A significant portion of thermal coal exported includes medium quality type (between 5100 and 6100 cal/gram) and low quality coal (below 5100 cal/gram). BP Statistical Review of World Energy, around 60 percent of Indonesia's total coal reserves consist of low quality coal (sub-bituminous) containing less than 6100 cl/gram (Indonesia Investments Report, 2023).

As stated by the Indonesian Ministry of Energy and Mineral Resources, Indonesia's coal reserves are expected to run out in about 83 years if current production levels continue. If Indonesia's coal reserves are placed in a global context, then Indonesia's global coal reserves currently rank 9th which is 2.2 percent of total global coal reserves (Indonesia Investment Report, 2023).

There are many pockets of small coal reserves found on the islands of Sumatra, Java, Kalimantan, Sulawesi and Papua. But the three regions with the largest coal reserves in Indonesia are South Sumatra, South Kalimantan, and East Kalimantan (Indonesia Investments Report, 2023)

Figure 4 The largest coal reserves in Indonesia

National coal production continues to increase from year to year. Similarly, exports and domestic use of coal also continue to increase. It's just that most of Indonesia's coal (70-80%) is for export purposes. Table 1 shows this.

Table 1 Indonesia's Coal Production, Exports, Domestic

Year	Production	Export	Domestic
2007	217	163	61
2008	240	191	49
2009	254	198	56
2010	275	210	65
2011	353	287	66
2012	412	345	67
2013	474	402	72
2014	458	382	76
2015	461	375	86
2016	456	365	91
2017	461	364	97
2018	425	311	114
2019	400	160	240

Source: Indonesia Investment Report (2023)

Indonesia has developed a rk25-year *coal roadmap* until 2045. *The* national coal development and utilization road map is focused on developing 10 main programs. The ten programs were selected according to the characteristics of Indonesian coal, the majority of which is dominated by low and medium rank coal. The program in the Road Map was also chosen to answer global and national strategic issues, especially in the provision of more environmentally friendly energy, increasing the added value of coal through the development of various coal-based industries, the need to reduce CO2 emissions from coal-fired power plants.

The ten main programs are:

a) Coal potential development program to produce methanol and DME through coal gasification process, especially low-calorie coal. Methanol and DME products can be used as energy sources and industrial raw material sources. In addition, DME can be a substitute for LKPG, so that the use of DME can reduce dependence on imported LPG.
b) Coal development program to produce SNG, and hydrogen. The consideration of this program is that natural gas in the Sumatra and Kalimantan regions is declining and the area has large coal resource potential. Through this program, low-calorie coal in Sumatra and Kalimantan which has low economic value is planned to be converted into SNG, ammonia, and hydrogen which have higher economic value, especially to meet gas needs in the two regions above.
c) Coal development program to produce fuel through *coal liquefaction*. This program is to optimize Indonesia's coal potential through the provision of gasoline fuel from coal. Currently, most of Indonesia's gasoline needs are still met by imports. Bautabara liquefaction products into gasoline can reduce dependence on imported gasoline products.
d) Coal development program through coal-biomass briquettes for coal-fired power plants and carbonized coal briquettes for small industries/MSMEs. Minin program to support NRE plans in the energy mix through the implementation of co-firing bio-coal briquettes. Compared to the use of only coal, the use of bio-coal briquettes is more environmentally friendly, because biomass can be replanted and absorb CO2 from the atmosphere. The use of carbonized briquettes for small industries as a heat source is more efficient and CO2 emissions are lower than the use of electrical energy.

e) Metallurgical coal development program. Indonesia has the potential not only of thermal coal (so far for power generation), but also the potential of metlurgi coal. Metallurgical coal has a relatively higher price than thermal coal, and is needed in the steel industry and refining of non-ferrous metals. Indonesia's metallurgical coal potential has not been well inventoried, most of which are still sold as thermal coal, thus potentially reducing state revenue.
f) Coal development through upgrading (coal upgrading). Coal upgrading is one way to increase the added value of Indonesian coal.
g) Advanced matertial and earth metal (LTJ) product development program from coal. Advanced materials and LTJ are materials that are needed in various modern industries, including the health industry, transportation, communications, security defense, and also the EBT industry.
h) Coal development program for agro-industrial materials. Indonesia's low-calorie coal has the potential for humic acid and fulvic acid which based on research daopate is used as a fairly valuable fertilizer.
i) Utilization of coal for electricity through coal blending facility infrastructure, biomass cofiring at PLTU, and optimization of coal utilization with IGCC. Through the coal blending facility, low-grade coal that is not in accordance with the specifications of the PLTU can still be used for electricity. In an effort to reduce environmental impact, efforts need to be made to prepare IGCC technology in coal-fired power plants, so that low-ranking coal can still be utilized and at the same time reduce carbon emissions.
j) Application of CSS/CCUS in coal development and utilization facilities. To still be able to utilize coal, but by answering issues related to CO2 emissions, CCS-CCUS technology in certain periods must begin to be applied to the electricity industry and downstream industries that produce CO2 emissions.

2. Learning and Growth Perspectives

Indonesia now not only views coal as an energy source in power plants, but can also be used to support other industrial activities. Coal can be the standard price of various types of industries, including the advanced material industry, petrochemicals, and also the agricultural industry. The Indonesian government carries out a downstream strategy or increase the added value of coal (Kementerian ESDM, 2022a).

The coal downstream program in Indonesia is expected to create comparative and competitive advantages for coal, as well as various derivative products. Coal derivative products are expected to be economically competitive with oil and gas, so that they can be relied on for import substitution, so as to save state foreign exchange, and increase domestic competence in the coal sector (Kementerian ESDM, 2022a).

Coal industrialists should continue to learn and grow, at least in the form of coal development as intended by Article 102 Law Number 3 of 2020 concerning Amendments to Law Number 4 of 2009 concerning Mineral and Barubara Mining (Mineral and Coal Law) (Undang-Undang (UU) Nomor 3 Tahun 2020 Tentang Perubahan Atas Undang-Undang Nomor 4 Tahun 2009 Tentang Pertambangan Mineral Dan Batubara, 2020). The development of coal in question includes: (a) coal upgrading, (b) coal briquetting, (c) coking, (d) coal liquefaction, (e) cool gasification including underground coal gasification). (f) cool slurry/coal water mixture. The utilization of coal includes building its own Steam Power Plant (PLTU) at the mouth of the mine (Kementerian ESDM, 2022a).

That the learning and growth of coal industrialists, is also driven by legislation. In the Mining Law, coal mining and/or utilization activities are also one of the requirements for the granting of guarantees for the continuation of operating permits into Special Mining Business Permits (IUPK). Then Article 39 of Law Number 11 of 2020 concerning Job Creation mandates that business actors who increase the added value of coal can be given certain treatment to state investment obligations in the form of royalties of 0% (Kementerian ESDM, 2022a).

3. Social Perspective

The social perspective of the national coal industry is set out in the National Energy Policy and the National Energy General Plan (RUEN). In order to achieve energy independence and national energy security, there are 9 (nine) principles used to realize it. If the 9 points are taken only related to social perspectives, then there are 4 (four) items, namely:

a. Energy availability and fulfillment of domestic energy supply needs
b. Efficient use of energy in all sectors
c. People's access to energy in a fair and equitable manner
d. Job creation

The social aspect of the coal industry can be seen from the government's policy in providing electricity at reasonable prices to the community. This is done by reducing local electricity BPP through efficiency in primary energy costs which are the largest component in BPP. In an effort to realize this, the government issued several policies related to primary energy for power generation. One of them is the Regulation of the Minister of Energy and Mineral Resources Number 19 of 2017 concerning the Utilization of Bnatubara for Power Generation and the Purchase of Excess Power (Kementerian ESDM, 2022a).

The regulation aims to, among others, regulate the pattern of the highest benchmark price (HPT) in the procurement of coal-based power plants and excess power. This regulation also keeps the local BPP Power Plant more effective and efficient, so that electricity tariffs can be more competitive (Kementerian ESDM, 2022a).

4. Environmental Perspective

Coal is among the most polluting fuels due to its high carbon content. The social perspective of the national coal industry is set out in the National Energy Policy and the National Energy General Plan (RUEN). In order to achieve energy independence and national energy security, there are 9 (nine) principles used to realize it. If the 9 points are taken only related to social perspectives, then there are 2 (two) items, namely:

a. Optimal and sustainable management of energy resources
b. Preservation of environmental functions

As a country with considerable coal resources and reserves, Indonesia faces challenges that are not easy. Indonesia cannot ignore the global public's attention to the negative environmental impacts of CO2 emissions, as a result of burning coal. CO2 is the cause of climate change. On the other hand, Indonesia has committed to participate in the Net Zero Emission agenda. Therefore, Indonesia is developing programs related to environmentally friendly technology to reduce CO2 emissions from clean coal power plants (Kementerian ESDM, 2022a)

From an environmental perspective, the Indonesian government is implementing energy mix targets in Indonesia. Indonesia's energy mix includes petroleum, coal, natural gas, and renewable energy. When compared to the 2011 marketing mix which positioned the portion of coal to be 24% of Indonesia's total energy mix, then in 2025 there will be an increase in Indonesia's coal consumption to 30%.

The government realizes that burning coal produces relatively large greenhouse gas (GHG) emissions, so efforts are needed to reduce GHG emissions sourced from the coal-fired power plant itself. That is why the government encourages the coal power plant program by using low-carbon technology or high efficiency, low emission (HELE) technology. These technologies include supercritical, ultra-supercritical boilers and other more efficient technologies such as Circulating Fludized Bed (CFB). Another technology is the use of coal bed methane (CBM). The government wants to utilize this unconventional gas and it is available in sufficient quantities at economical prices. The government is also considering the use of Gasification Combined Cycle (IGCC) and Carbon-Capture and Storage (CCS) to significantly reduce GHG emissions. It's just that the implementation is waiting after the technology is commercially mature. The use of such technologies is expected to reduce the use of coal which can also directly reduce GHG emissions (Kementerian ESDM, 2022a).

In 2010 the Indonesian government set a target of reducing greenhouse gas (GHG) emissions by 26% by 2020, and up to 41% if there is international support compared to the business as usual scenario in 2020. Post 2020, Indonesia plans to increase the target beyond the current commitment. Referring to the latest study on GHG emission levels, Indonesia has set an unconditional target of 29% and a conditional target of up to 41% compared to the business as usual scenario in 2030 (Kementerian ESDM, 2022a).

Table 2 shows the energy composition in Indonesia's energy mix program in 2011 and 2025. The government expressed a desire to increase domestic consumption of coal, so that coal supplies around 30% of the energy mix by 2025 (Kementerian ESDM, 2022b).

Table 2 Energy Mix Targets

	Energy Mix 2011	Energy Mix 2025
Minyak Bumi	50%	23%
Batubara	24%	30%
Gas Alam	20%	20%
Energi Terbarukan	6%	26%

Sumber: Kementerian Energi dan Sumber Daya Mineral (ESDM)

1. Sustainable Balanced Scorecard (SBSC) Recapitulation

The description above is an elaboration of the four perspectives of the balanced scorecard (BSC) which has been expanded with sustainability aspects by adjusting the social and environmental dimensions so that it becomes a sustainable balanced scorecard (SBSC) framework which is then integrated with competitutive advantage variables. Competitive advantage variables consist of three theories, namely sources of competitive advantage derived from: (1) Resource-Based Theory (Barney & Clark, 2007), (2) Market-led theory (Sachs & Yang, 2002), and Industrial organization theory (Tirole, 1988).

Based on the description above regarding competitive advantage variables integrated into the *Sustainable Balanced Scorecard* (SBSC) framework, the results are recapitulated in Table 4.4. This table is a modification of Table 4.1 by adding the three rightmost columns. The number in the weight column, especially for the fourth number of the sustainable balanced scorecard perspective, refers to Liang and Wang (2019). The variable numbers in each perspective are the average for that perspective according to the number of variables/indicators. The actual performance column is an assessment of the Indonesian coal industry with a range between 0-100 with a value of tens of rounds. Meanwhile, Result is a multiplication between The Weight and Actual Performance. Furthermore, the results are summed vertically so that the value of the coal industry performance evaluation results based on the combination of SBSC with competitiveness is 68.92929 which is rounded to 69. Figures show that the performance of the coal industry based on the combination of SBSC with competitiveness is categorized as "sufficient" or "medium", which means that it has not reached the "good" category let alone "very good".

Strategy to Improve Sustainable Performance of the Coal Industry to Win Global Competition in the DMO Context

Based on the results of the Sustainable Balanced Scorecard (SBSC) matrix combined with competitiveness variables from the three theories, namely competitive advantage derived from: (1) Resource-Based Theory (Barney & Clark, 2007), (2) Market-led theory (Sachs & Yang, 2002), and Industrial organization theory (Tirole, 1988); then a SWOT matrix was created. The elements in the following SWOT matrix are taken from the results of the description of the *competitive*

advantage variables above which show strengths, weaknesses, opportunities, and threats to the national coal industry.

SWOT matrix to be analyzed in order to produce answers to the second research question, namely on strategies to improve the sustainable performance of the coal industry in order to achieve superior performance so as to win global competition in the context of DMO.

The variables incorporated into the SWOT framework include four groups of variables. The four groups of variables are (i) Variable strength (strengths) of the national coal industry. (ii) Variable weaknesses of the national coal industry. (iii) Variable opportunities of the national coal industry, and (iv) Variable threats of the national coal industry. The variables of strengths, weaknesses, opportunities, and threats, come from the source of competitive advantage, *competitive advantage,* and the result of competitive advantage, superior performance.

Table 3 is the variables that are assumed to be interrelated and relevant in the context of the coal industry's national competitive policies on global competition in the context of DMO

Table 3 SWOT Table of National Coal Industry in Improving Sustainable Performance and Competitiveness

Element of SWOT	Mag-nitude (M)	Import-tant (I)	Total Rating (R)	Conclusion
Strengths				
1. Indonesia has the largest coal reserves in Asia Pacific	**3**	3	9	**1**
2. Indonesia the world's largest coal exporter	3	**3**	**9**	**2**
3. Production costs are relatively low	**2**	**2**	**4**	
4. Potential human resources who can master modern processing technology for coal	**2**	**3**	**6**	
Weaknesses				
1. Low to medium quality Indonesian coal	**-3**	**3**	**9**	**3**
2. Mastery of the latest technology is still relatively weak	**-3**	**3**	**9**	**4**
3. Coal excavation techniques still leave environmental damage	**-2**	**2**	**-4**	
4. Maish coal product diversification in the early stages	**-3**	**3**	**9**	
Opportunities				
1. Downstream coal to improve the quality / added value of coal	**3**	**3**	**9**	**5**
2. Utilizing coal other than for energy sources (producing methanol and DME, SNG, hydrogen, coal liquefaction)	**3**	**3**	**9**	**6**
3. Increase the export value of non-thermal coal (metallurgical coal)	**3**	**2**	**6**	
4. The emergence of various new coal technologies that can improve the quality of coal products and environmentally friendly coal.	**3**	**3**	**9**	**7**
5. Policy and joint world programs to reduce CO2 emissions	**2**	**2**	**4**	
6. Opportunities to produce environmentally friendly coal (such as carbonized briquettes)	**2**	**2**	**4**	
Threats				
1. The potential reduction of coal imports by importing countries so far	**-2**	**2**	**-4**	
2. The increasingly massive renewable energy (including electrical energy) as an energy	**-2**	**2**	**-4**	

	substitute that can shift the role of coal			
3.	The issue of the negative impact of coal on the environment (CO2).	**-2**	**3**	**-6**
4.	It is increasingly difficult to obtain financing for coal projects.	**-2**	**3**	**6**

Based on the results of SWOT calculations as presented in Table 4.5, it is known that there are 7 (seven) indicators that have the highest total rating (R) value, namely number 9. The seven indicators that will be paired are alternative strategies for the national coal industry to improve the sustainable performance of the coal industry in order to win global competition in the context of DMO.

(1) S-O Strategy (Strengths- Opportunities),

An S-O strategy is one that uses the power of internal effort to gain opportunities that exist outside the business. In other words, this strategy uses internal forces (signatories to PPPs) to take advantage of external opportunities. Alternative S-O strategies can be formulated as follows:

a. By harnessing the strength of coal reserves and the latest technology, Indonesia can export environmentally friendly coal.
b. By utilizing the strength of coal reserves and the latest technology, Indonesia can export coal in a differentiated manner, namely between coal for energy purposes and coal for other industrial purposes.
c. By utilizing the strength of coal reserves and the latest technology, Indonesia can export non-thermal coal, namely metallurgical coal

(2) W-O (Weaknesses-Opportunities) strategy,

The W-O strategy is a strategy that aims to minimize internal business weaknesses by taking advantage of external opportunities. In other words, the goal of this strategy is to improve the internal weaknesses of PPPs signatories by exploiting external opportunities. Alternative S-O strategies can be formulated as follows:

"Utilizing various new technologies to optimize coal downstream so that the benefits of new stones will be increasingly widespread in many industries"

(3) S-T Strategy (Strengths-Threats)

The S-T strategy is a strategy pursued by businesses to avoid or reduce the impact of external threats. This strategy uses internal forces (signatories to PPPs) to avoid or mitigate the impact of external threats. Alternative S-T strategies can be formulated as follows:

"With lower production costs and environmentally friendly coal proposals, Indonesia can increase its bargaining position to obtain financing for coal projects"

(4) W-T strategy (weaknesses-threats)

The W-T strategy is a defensive strategy by reducing internal weaknesses and avoiding threats. It is a strategy that is a defensive tactic directed at reducing internal weaknesses (PPPs signatories) and avoiding external threats (David, 2013). Alternative WT strategies can be formulated as follows:

"Indonesia produces environmentally friendly coal, so that it can overcome environmental issues"

CONCLUSION

In conclusion, the study highlights key findings related to the competitiveness of Indonesia's national coal industry within the framework of DMO:

Export Dynamics: Indonesia, as the second-largest global coal exporter, dominates the thermal coal market with 10 major importing countries. Factors influencing coal export values include Indonesia's GDP, destination country populations, and exchange rates, while challenges arise from volatile coal prices and government export restrictions; Competitive Advantages: Sources of competitive advantage for Indonesia's coal industry include its industry dominance, low

transportation costs, size, and strong market share; Industry Challenges: Challenges include the need for environmentally friendly coal technologies, volatile coal prices, and government export restrictions; Sustainable Performance Strategy: The national coal industry's sustainable performance, assessed through the Sustainable Balanced Scorecard matrix, indicates a "sufficient" level. Strategies to enhance performance involve leveraging coal reserves and advanced technology, exporting environmentally friendly or differentiated coal, exploring non-thermal coal options, optimizing downstream processes, and focusing on environmentally friendly production to address environmental concerns.

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