International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 06 Issue 12 December 2023
DOI: 10.47191/ijcsrr/V6-i12-55, Impact Factor: 6.789
IJCSRR @ 2023

Revitalizing PT. Sindo Energy (SE): A Forward-Thinking Proposed Scenario Planning to Navigate Coal-Regulatory Changes and Ensure Sustainability

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ABSTRACT: Coal is a valuable natural resource that belongs to the Indonesian state and serves as a crucial raw material for fulfilling the country's primary energy requirements. Starting from 2022, the Government has made a formal declaration to attain Net Zero Emissions (NZE) by the year 2060. Presidential Decree no. 112 of 2022 has been issued to expedite the development of renewable energy for electricity supply. One of the consequences of this decree is the discontinuation of coal-based power plants, reflecting the government's dedication to transitioning to alternative energy sources in the future. Sindo Energy (SE) is a mining contractor services company that operates under the Indonesia Mining Alliances (IMA). It specializes in the coal industry and has a significant market share, contributing to a Gross Profit Margin of 93.43%. Naturally, projects that collaborate with SE are firms that own coal and so have the power to influence the overall business operations. This study aims to offer a comprehensive and enduring perspective on the potential future occurrences of scenario planning. The fundamental basis for creating the four scenarios, namely Believing Spirit (BS), Pioneer of Changes (PC), Truly Fighter (TF), and Chameleon Specialist (CS), involves identifying the major focal issues, driving reasons, and sources of uncertainty. This research outlines four scenarios that depict the projected industrial conditions in 2040. Each scenario presents different ramifications and possibilities, as outlined in the study. This research also generates pre-emptive indicators for SE business, which will subsequently prove valuable for corporations in formulating strategic measures that the company can adopt to confront potential situations in the face of future uncertainty, via implementation plans spanning a minimum of 15 years, in the upcoming year.

KEYWORDS: Coal, Presidential Decree, Renewable Energy Development, Scenario Planning.

INTRODUCTION

Indonesia as a country that is rich in natural resources and human resources, should be able to become a country that has an advanced and independent economy by not relying on and depending on other countries to meet consumption and investment needs. Indonesia as a developing country focuses on development, infrastructure, and the effective and widespread use of natural energy resources. This makes a lot of industrial facilities indirectly affected by this development. Regarding International Agency Special Report (2022), the country's coal and natural gas exports have played a significant role in this growth and contributed to a positive trade balance. Notably, Indonesia achieved nearly universal household electrification by 2021 and has successfully reduced its poverty rate from 60% in 1970 to less than 10% today [1]. As the fourth most populous country, seventh-largest economy, twelfthlargest energy consumer, and largest coal exporter, Indonesia holds a prominent position in the world.

BUSINESS ISSUE

Based on the preceding discussion, it is imperative for the management of SE to promptly formulate a strategic response to the recent policy developments outlined in Article 3 of Presidential Decree No. 112/2022, which imposes restrictions on the construction of coal-based power plants. This policy has direct implications for the sustainability of SE's business operations, particularly in terms of performance, diversification, and overall business strategies. Considering the significant contribution of the coal industry sector, exceeding 90% in 2022 [2] , compared to other business segments, it becomes crucial to address this issue proactively. This comprehensive analysis aims to provide valuable insights into the strategic initiatives required by SE to navigate this challenging landscape. Furthermore, it emphasizes the importance of collaborative efforts within extensive business networks and offers recommendations to strengthen SE's position as a preferred mining service provider in the market.

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CONCEPTUAL FRAMEWORK

The thing that triggers this problem, in this context, is the existence of articles 3 of presidential decree no. 112 which discusses accelerating the development of renewable energy and stopping the construction of coal-based power plants, which is in line with the 2050 net-zero emission development goals proclaimed by the Indonesian government. The environmental regulation can affect the industrial transformation of a company and refers to the process of examining and assessing the effects or consequences of a particular action, event, or situation. It involves evaluating how a given factor or influence affects various aspects, such as individuals, organizations, systems, or the overall environment. A thorough analysis reveals that creating a successful business strategy requires a clear understanding and plan to maintain and capitalize on competitive advantages. This includes short-term actions and long-term initiatives for sustainability and future growth.

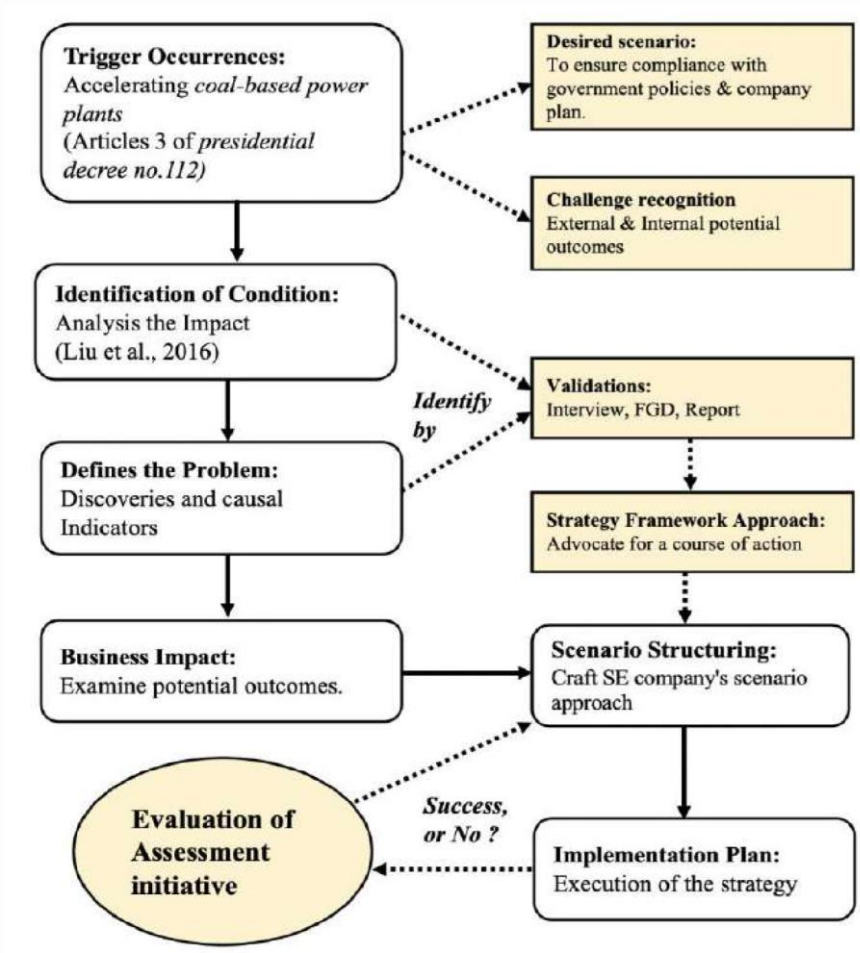

Figure 1. Conceptual Framework (Author Analysis, 2023)

RESEARCH METHODOLOGY

A. Research Design

As outlined by Creswell in the 2014 article *"Research Design: Qualitative, Quantitative, and Mixed Methods Approaches,"* research design serves as a comprehensive blueprint connecting conceptual research issues to achievable empirical research. Functioning as a detailed guide, it delineates the specific procedures for a research endeavour, ensuring validity in the attainment of research objectives. The essence of research design lies in transforming a research problem into analyzable data, providing relevant answers to research questions cost-effectively. In this case, the chosen approach involves employing qualitative methodology, reflecting the increasing diversity and availability of qualitative research approaches in recent decades. The research design method to be utilized

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in this study is depicted in Figure 2. below. This diagram illustrates the planned sequence of steps and procedures that will guide the investigation to achieve the research objectives.

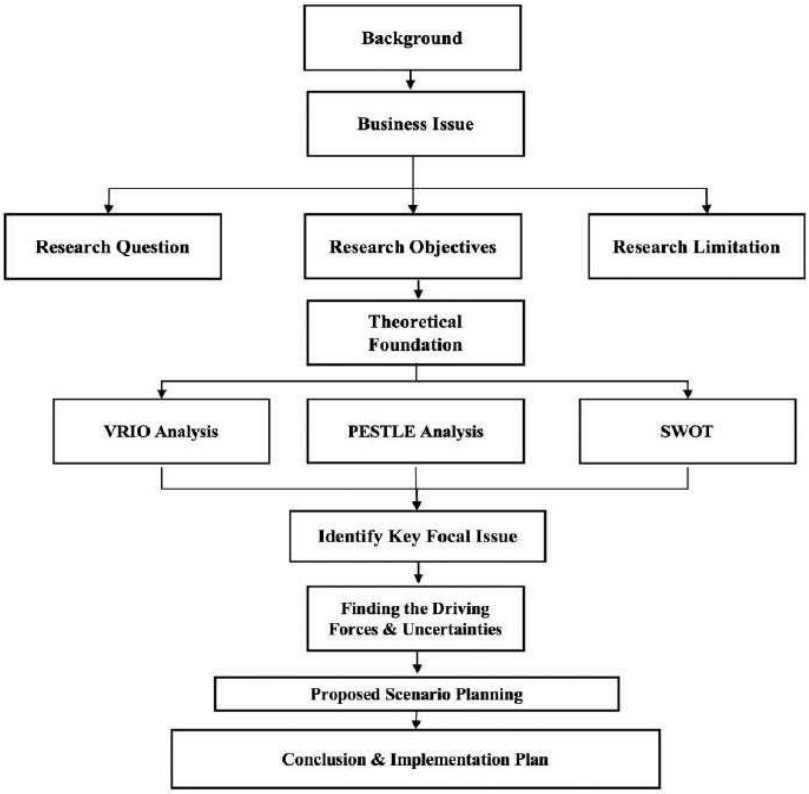

Figure 2. Proposed Research Design

B. Data Collection Method

Primer Data: Primary data, also known as unprocessed data, is information that originates directly from initial observations, experiments, or surveys. It is collected first-hand, offering a direct and immediate viewpoint on the subject under investigation. This data is acquired through techniques like controlled experiments conducted in controlled environments, surveys administered to specific participants, or direct observations made in real-life scenarios [3]. Adopting this more expansive perspective enables a more thorough comprehension of the intricate network of elements that impact business growth and the overall long-term viability of a company. The chosen representatives for this research are the parties from the SE's company can be seen from table 1:

Table 1. Key Representative Person of Company

Respondent	Position	Level	Experience (Years)	
			Industry	Company
R1	President Director - Chief Executive Officer (CEO) of SE	Director/Executive	26	11
R2	Director - Chief Operating Officer (COO) of IMA	Director/Executive	11	9
R3	President Director of KM - Head of Business Development & Strategy SE	Director/Executive	27	4
R4	Group Head Strategic Initiative Management Office MVC of IMA	Top Management	12	6
R5	Group Head Engineering & Operations Technology of SE	Top Management	13	5

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The inclusion of these companies as data sources has been conducted by mutual consent and agreement from all parties concerned, guaranteeing a cooperative and morally sound approach to the data collection process [4].

Secondary Data: Secondary analysis involves utilising research data to address inquiries that are not directly relevant to the initial study. This involves utilising data obtained from particular research endeavours [5]. While the dissemination of comprehensive survey findings is widely accepted, the reuse of such data is not universally supported.. The research helps mining service companies solve problems. This study will analyse secondary data from IMA business reports and the listed corporation that owns SE Energy. Researchers can extract quantitative indicators including revenue, expenses, and operational data from these reports to analyse trends, compare industry benchmarks, and identify performance issues.

RESULT & DISCUSSION

A. Analysis

The results of research conducted using in-depth interviews, obtained several analyzes related to external and internal analysis methods to inform strategic decisions that are in line with research objectives and the current environment of the subject under study, enabling maximization of strengths, mitigation of weaknesses, exploitation. opportunities, and mitigating threats [6].

1. PESTLE Analysis

PESTLE analysis, a well-established framework widely employed in business and management, functions as an invaluable tool for evaluating the operational landscape and strategizing new ventures. It empowers organizations to vigilantly monitor the macro-environmental factors that shape their operations [7]. comprehensive PESTLE analysis encompasses crucial components including political, economic, social, technological, legal, and environmental aspects. *a) Political*

Indonesia is moving towards Net-Zero Emissions (NZE) by 2060, according the April 2016 Paris Agreement. The Intended National Determined Contribution (INDC) is followed by 2021 government ministry strategic planning. Presidential Regulation No. 112 of 2022 promotes renewable energy infrastructure development and stops new coalbased power plant construction to reduce greenhouse gas emissions and reliance on fossil fuels. The goal is to prepare the nation for green energy. The 2024 Presidential General Election creates energy sector uncertainty, notably for nonrenewable energy corporations [8]. Companies struggle to develop long-term strategy in a shifting regulatory landscape driven by politics and the environment. Geopolitics, like the Russia-Ukraine war, reported from aa.com.tr, raises coal costs 96% in six months , affecting the company's coal production chain. This dynamic interaction may change the company's coal-related operational sequence downstream.

b) Economic

The natural resources commodities sector, predominantly coal mining, accounted for about 2.4% of Indonesia's GDP at constant prices in 2021. Despite a slight decrease since 2013, coal, along with oil and natural gas extraction, collectively contributed around 5% to the nation's GDP at constant prices and 6.5% at current prices in 2021[9]. Comprising onethird of Indonesia's total net exports, coal, natural gas, and palm oil play a significant role. Not only does coal impact exports, but it's also crucial for meeting 67.21% of Indonesia's electricity generation needs [10]. Despite global price volatility, especially since the end of the commodity boom in the 2000s, the coal sector remains foundational to Indonesia's economy. It significantly contributes to state revenue and local GDP as shown in Figure 3. Below:

Figure 3. The primary contributor to the state's revenue stems from the coal mining industry (Author, 2023)

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Particularly in provinces like East Kalimantan, shaping the economic landscape and positioning Indonesia as a major player in the global coal market [11].

c) Social

Prioritizing community empowerment, especially in areas near mining activities, is crucial for both mining proprietors and contractors, given the extensive use of heavy equipment requiring direct community involvement in operational processes. Sustainable mining business development requires effective community relations management, which can benefit SE's business in many ways. Proactive steps counter unfavourable sentiments, helping the mining company's success and reputation. Figure 4.8 shows that empowerment includes CSR and SS. CSR shows the firm's commitment beyond profits by empowering social groups and communities, boosting regional and national economic growth.

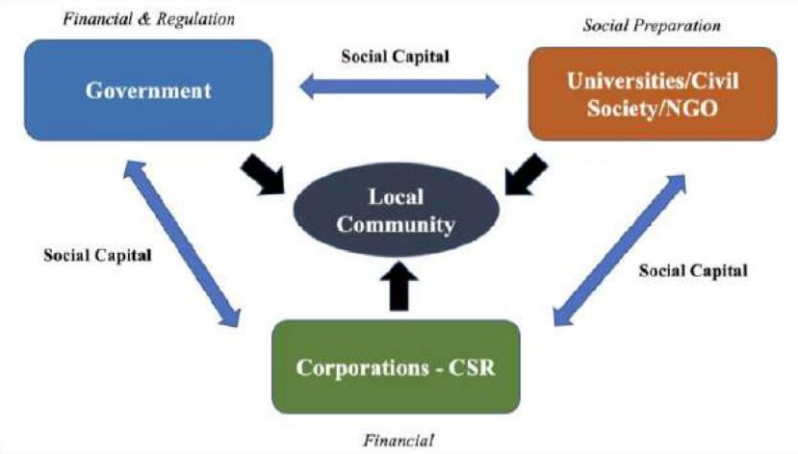

Figure 4. Synergy of each Stakeholder towards community empowerment (Author Analysis, 2023; Fukuyama, 1995)

d) Technology

Coal mining contracting services must employ cutting-edge safety solutions due to external factors, mainly government regulations. Compliance rules and legislation require contractors to invest in safety techniques, equipment, and training. External variables like industry conventions and consumer expectations encourage technology adoption to stay competitive and maintain market repute. The Ministry of Energy and Mineral Resources (MEMR) reported 1642 mining accidents in Indonesia over 10 years, demonstrating the industry's dangers. Macroeconomic conditions and technical advances like sensor technologies, automation systems, and data analytics affect safety. AI boosts efficiency and supervision in company operations using Big Data and ERP models [12]. Hybrid trucks in mining operations are essential to sustainability [13]. The global goal of Net Zero Emissions by 2060 or earlier motivates this movement to reduce fuel use and carbon emissions.

e) Environment

A significant are concerned focuses around GHG emissions, which serves as a catalyst for raising awareness about the environmental socioeconomic issue. According to data gathered by the energy institute in 2022, Indonesia holds the 6th position worldwide in terms of its contribution to energy sector emissions, which amounted to 691.97 million tons of CO_2 in the same year. This signifies a substantial impact on global emissions. According to projections from Low Carbon Development Indonesia (LCDI) in 2022, Indonesia relies on fossil energy for about 90% of its primary energy mix. This highlights the pressing need for decarbonization. According to the findings of a study conducted by the Ministry of National Development Planning/Bappenas, it has been determined that beginning in 2022, the energy sector will surpass the forestry industry as the primary source of emissions in Indonesia [14]. In 2022, the energy and transportation sector accounts for the majority of emissions in Indonesia, contributing to 50.6% (equivalent to 1 Giga Ton CO_2eq) of the total emissions. Emissions are projected to rise steadily until 2030, at which point the energy sector is expected to account for a significant proportion of these emissions. The amount of carbon dioxide equivalent is 1.4 gigatons, which accounts for 59% [15].

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f) Legal

SE, a mining contractor, is vulnerable to regulatory changes in the coal business. Mining laws, created in Law No. 4 of 2009, must adapt to changing circumstances. Government reports emphasize rock exploitation permits (SIPB), reclamation duties, and licensing periods, showing a deliberate attempt to comply with laws [16] . Compliance requires adapting to regulatory changes, and import limitations hinder mining contractors' operations. These restrictions, especially on heavy equipment imports, complicate supply chain maintenance and servicing. The legal framework governing mining permits and contracts must be monitored and adjusted to navigate complex regulatory procedures and ensure compliance with environmental, safety, and land utilization standards in the coal mining contracting services industry [17].

2. VRIO Analysis

This analysis utilizes supporting data acquired from the author's observations, interviews, and secondary sources to evaluate the competitive advantages held by SE Companies in the mining services business in Indonesia [18]. These factors consider the internal competency and capability of the company. However, some of the data used to validate the indicators may not have clear quantities and instead rely on the company's competitive advantages in the industry. The findings of the analysis are presented in the form of Value (V), Rarity (R), non-Imitable (I), and Organized (O), which will demonstrate that this capability possesses a competitiveness value and the extent to which it influences the performance of SE companies in comparison to the industry as a whole. Several of these items are presented in table 4.1 Below:

Table 2. VRIO Analysis of SE's company

Competency & Capabilities		V	R	I	O	Competitive Advantage (CA)	Performance Implication (PI)
1	*Integrated E2E system*	Yes	Yes	Yes	Yes	**Sustainable CA**	**Above Average Return**
2	*Capital Assets*	Yes	No	No	Yes	Parity CA	Average returns
3	*Technology related to Safety Initiatives*	Yes	Yes	Yes	Yes	**Sustainable CA**	**Above Average Return**
4	*Overburden Removal Production*	Yes	No	Yes	Yes	Temporary CA	Above Average Return
5	*Cloud management and ERP*	Yes	Yes	No	Yes	Temporary CA	Average returns
6	*Working Culture*	Yes	No	No	Yes	Parity CA	Average returns
7	*Company Brand Image, Trustworthy & Position*	Yes	Yes	Yes	Yes	**Sustainable CA**	**Above Average Return**
8	*Coal Mining Value Chain (CMVC)*	Yes	Yes	Yes	Yes	**Sustainable CA**	**Above Average Return**

3. SWOT Analysis

Based on the research from Theordor Leiber in 2018, about Bridging theory and practice of impact evaluation of quality management in higher education institutions: a SWOT analysis, SWOT can be defined as a methodical assessment approach that systematically evaluates the strengths (S), weaknesses (W), opportunities (O), and threats (T) inherent in a process or structure[19]. This assessment encompasses identifying the objectives of the process or structure, analyzing both internal and external influences that impact the attainment of these objectives, and most notably, characterizing the strengths, weaknesses, opportunities, and threats associated with the process or structure being examined [20].

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Table 3. SWOT Analysis of SE's company

Strengths	Opportunities
1. Implementation of an end-to-end system for seamless integration in downstream mining operations.	1. Integration of Big Data, Automation, and Artificial Intelligence for improved contractor services.
2. Emphasis on technology in mining operations to reduce accidents and fatalities.	2. Collaboration with external parties to discover new prospects and boost portfolio productivity.
3. Robust human resources culture with mutual support across various mining operations.	
4. Solid track record with numerous repeat contracts, reflecting a high reputation for dependability.	
Weaknesses	**Threats**
1. Operational inconsistencies requiring improvement in both prescriptive and initiatory measures.	1. Safety initiatives are crucial concerns directly connected to commercial activities.
2. Lack of a winning culture, impacting energy and competitiveness within the company.	2. Imbalance in professional knowledge and abilities, highlighting the need for continuous training.
3. Low public brand awareness, limiting interaction with a wider audience.	3. Urgent need to enhance the ability to conduct business operations with more agility.

B. Scenario Planning Development

Stage 1: Assessing Perception of Key Focal Issue (Orientation)

The primary focus of this analysis revolves around anticipating and addressing how SE companies will navigate coal regulatory challenges and uncertainties in 2040. This pivotal question serves as the foundation for strategic initiatives aimed at guiding the organization through the anticipated uncertainties in its business landscape. This fundamental question underpins strategic measures to help the company navigate business risks. An research was done to determine the most likely situations for the next two decades. This analysis suggests that SE should consider maintaining its coal-centric business model, expanding, or even making a more radical shift by starting a transition early to ensure its long-term viability. The research period is 15–20 years, chosen to allow for proactive planning and readiness. Stakeholders agree that this extended period gives the organisation enough time to prepare for probable scenarios. This approach to foresight and planning recognises the need of preparedness to overcome complicated challenges and seize future possibilities.

Stage 2: Recognizing the Driving Forces (Exploration)

The next step involves a detailed analysis of potential factors shaping future business operations. This research utilizes interviews and assessments of five key personnel chosen by the SE company. The gathered data is organized using methods like PESTEL, VRIO, and SWOT to offer insights into both external and internal aspects of the company. Table 4. visually presents data-driven insights from key driving forces, summarizing significant factors identified during data collection in a structured manner.

Table 4. Identified Key Driving Forces

Key Driving Forces	
Political aspect	**Technological aspect**
Government Commitment for Net Zero Emissions	Safety Initiatives
General Election 2024	Integration of IoT, Big data, and AI in Mining operations
Geopolitics & Global Regulations Pressure	Hybrid Vehicles
Economic aspect	**Environment Aspect**
National Commodities	Societal Pressure

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Coal Prices Fluctuation Currency Exchange Rate Indonesian GDP	Greenhouse Gas (Emission) & Carbon Footprint
Social aspect	**Legal Aspect**
Social Community (Site Operation)	Legal permits and contract
Public Sentiment	Investment Protection Provision

In order to establish a number for the degree of influence and uncertainty, an evaluation was carried out on many driving factors that were identified. The result of this evaluation is illustrated in the diagram that can be seen next to figure 5. listed below:

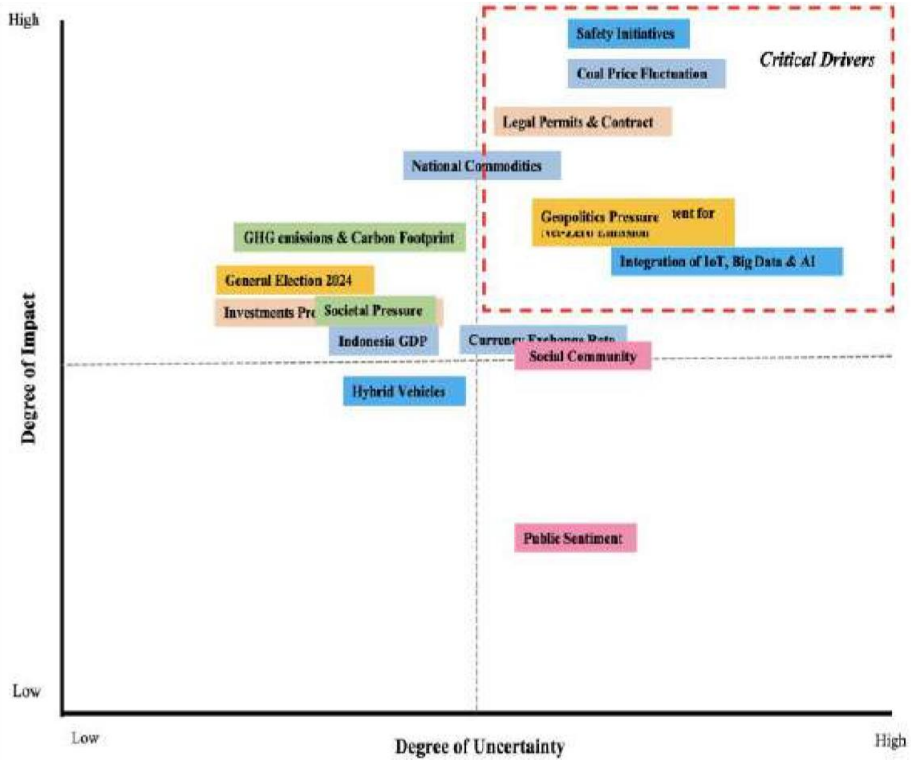

Figure 5. Key Driving Forces appraisal & evaluation of SE Company (Author Analysis, 2023)

Following the previous investigation, an explanatory step is needed to explore the association between each driving force's variables. As a mining services company, the SE company must use all of the above elements to establish future strategic plans. CLD of identified driving forces is shown in Figure 4:

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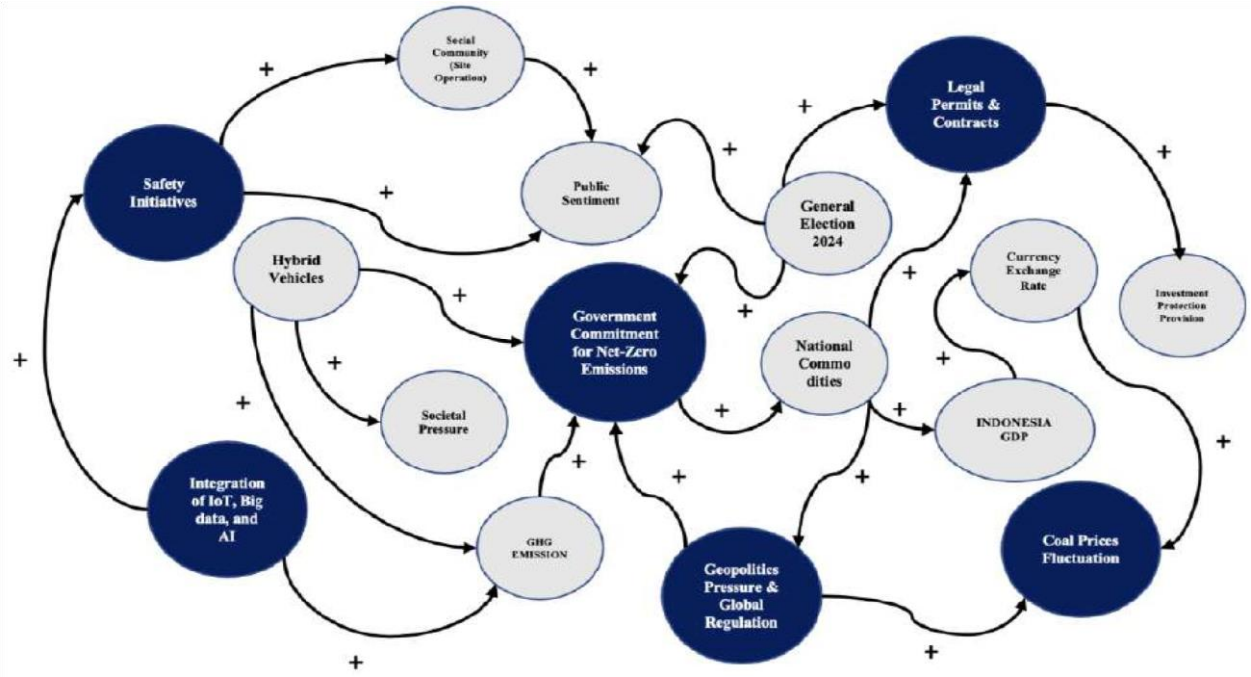

Figure 6. Causal Loop Diagrams of Identified Driving Forces (Author Analysis, 2023)

Stage 3: Envisioning future headlines and scenario components

The construction of this scenario is tailored to the data derived from the analytical findings, subsequently aligned with the future prospects of the coal sector and its interdependent association with the SE company, functioning as a prominent coal mining contractor to build four believable 2x2 situations that shows in Figure 7. Each scenario will be formulated and delineated in easily memorable and comprehensible terms, ensuring concise comprehension and accurately portraying the anticipated scenarios that are projected to transpire in 2040, specifically pertaining to the future of the company's operations.

Figure 7. The Tetrad of Disparate Scenarios (Author Analysis, 2023)

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Stage 4: Pinpointing the consequences of the scenarios

Following the development of all the implications and effects of each potential scenario or step taken by the organization, the next stage of scenario planning is to develop all of these options. When it comes to the firm, this is a crucial element to take into account as a standard before all decisions are made.

Scenario 1: BELIEVING SPIRIT

In this case, the company is not focused on business change. Thus, the company's technological progress looks to be slow, focused on maintaining and improving corporate operations. The company's strategy focus is on maintaining its current commercial ventures rather than quick technical improvements or initiatives to change its operational trajectory.

Implication: Indonesia will rely on coal for 70–80% of its energy supply until 2040 due to strong demand. The corporation expects a $100–250 million gross profit, 85-91% from coal. Business development seeks 300 million BPCM overburden from new coal assets by 2030. Despite CCT promises, coal industry GHG emissions are expected to exceed 80 million tonnes of carbon dioxide by 2040.

Options: Technology-driven standardisation and integration improve safety measures for business operations, customer confidence, and work unit productivity. The company implements carbon capture, utilisation, and storage (CCUS) technology to alleviate fossil fuel-related social issues. To compete on price, BCPM production and cost efficiency are prioritised. A roadmap is created to navigate market fluctuations using innovative ideas.

Scenario 2: PIONEER OF CHANGES

Within the context of this situation, the primary objective is to increase the rate at which new firms that are more suited and diverse are explored. However, the pressure from the government is still deemed to be modest. This is due to the fact that the implementation of the planned roadmap that the government has created has not been achieved to its full potential.

Implication: The strategic forecast until 2040 expects fossil-based energy to endure, especially coal at 60-75% notwithstanding a decline. Diversification into renewable energy is predicted to reduce the company's coal industry gross profit by 60–80%. To optimise assets and decrease carbon emissions, the strategy emphasises renewable energy and sustainable business practices.
By 2040, coal industry GHG emissions are expected to drop by 60–70 million tonnes of carbon dioxide.

Options: The strategic initiatives include implementing asset management restructuring for optimal business transition and diversification. Efforts will be directed towards enhancing the efficiency of employee training programs for both head office and site operations, facilitating smooth transitions and boosting stakeholder competencies. The overarching goal is to achieve equilibrium in the company's portfolio by integrating both short-term and long-term strategies.

Scenario 3: TRULY FIGHTER

Despite government pressure and tightening renewable energy laws, the energy shift in this part tends to be gradual. This strengthening shows that the government is serious about NZE 2060, which would tighten fossil-fuel rules.

Implication: The national roadmap plan proposes that less than 30% of energy generation to use non-renewable fuels by 2040 due to coal regulation adjustments. Production is predicted to drop 36.80% from 2019, raising coal prices by 42.86%. The company estimates gross earnings of $100 million to $250 million, with coal accounting for 75 to 85 percent. Over 80 million tonnes of carbon dioxide will be released by the coal industry by 2040.

Options: To adapt to changing market conditions, the corporation prioritises safety programmes and technology-driven standardisation in mining operations. To solve fossil fuel-related social issues, proactive solutions like carbon capture, utilisation, and storage (CCUS) are needed. Optimising ongoing projects and taking advantage of price hikes would assist offset BPCM output loss owing to limited coal sector projects post-NZE commitment. Developing a forward-looking roadmap helps explore new ideas and adjust to market changes.

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Scenario 4: CHAMELEON SPECIALIST

The final scenario exhibits a more rapid pace in the changeover process, accompanied by government coercion that compels enterprises to persist with coal as a long-term measure, despite its perceived risks, in order to foster sustainability. This situation enables enterprises to respond actively, swiftly, and accurately to uphold the business direction pursued by the company, particularly in addressing the dynamic changes in coal legislation.

Implication: Expecting regulatory changes by 2040, the corporation confronts problems from reducing non-renewable fuel use in energy generation. This change is predicted to reduce gross profit by 10–20%, mostly from coal. Renewables, diversified services, and lowering coal industry greenhouse gas emissions by 60-70 million tonnes by 2040 are the strategy's main goals. This supports worldwide sustainability goals and the company's commitment to reducing coal's environmental effect and addressing climate change.

Options: Expansion of internal training programmes aims to equip resources for success in new business categories. Diversifying into sustainable energy sources like hydrocarbon or solar power is another option for the corporation. A dedication to renewable and environmentally friendly energy sources contributes to a cleaner energy future. Focusing on new business opportunities, the company wants to gradually move away from Coal Mining Value Chain supremacy in mining contractor services. This strategic shift acknowledges the changing industry landscape and the need to seek and invest in new opportunities while reducing dependence on coal.

Stage 5: Anticipating Early Warning Signals

The final step in developing scenario planning involves the identification of specific indicators that can serve as characteristics or early warning signals for the company, aiding in the selection of the four scenario options previously outlined.The primary indicators, serving as key benchmarks for signaling within the SE companies, show in table 5.

Table 5. Indicators of potential problems in each scenario

Early Warning Signals	Scenario 1	Scenario 2	Scenario 3	Scenario 4
	BELIEVING SPIRIT	PIONEER TO CHANGES	TRULY FIGHTER	CHAMELEON SPECIALIST
Coal Prices[1] *(estimated[1])*	**2021**: 58,0 USD/Mt **2040:** 80,0 USD/Mt	**2021:**58,0USD/Mt **2040:** 80,0 USD/Mt	**2021:** 58,0 USD/Mt **2040:** 100 – 230,0 USD/Mt	**2021:** 58,0 USD/Mt **2040:** 100 – 230,0 USD/Mt
Coal Demand *(estimated[2])*	**2030:** ~4600 Mtce **2040:** ~4200 Mtce	**2030:** ~4600 Mtce **2040:** ~4200 Mtce	**2030:** ~3200 Mtce **2040:** ~1900 Mtce	**2030:** ~3200 Mtce **2040:** ~1900 Mtce
IMA Revenue-Coal portion *(estimated [3])*	**2022:** ~91% **2030:** ~85 – 90% **2030:** ~80 – 90%	**2022:** ~91% **2030:** ~75 – 85% **2040:** ~60 – 70%	**2022:** ~91% **2030:** ~85 – 90% **2030:** ~80 – 90%	**2022:** ~91% **2030:** ~75 – 85% **2040:** ~60 – 70%
GHG CO_2 Emission from Energy	**2020:** ~ 36 Gt CO_2 **2030:** ~ 27 Gt CO_2	**2020:** ~ 36 Gt CO_2 **2030:** ~ 27 Gt CO_2	**2020:** ~ 36 Gt CO_2 **2030:** ~ 20 Gt CO_2	**2020:** ~ 36 Gt CO_2 **2030:** ~ 20 Gt CO_2

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(estimated[2])				
Public Sentiment of 2030	Low public pressure on renewable awareness has led to no action.	Low public pressure on renewable awareness has led to no action.	Public pressure on renewable awareness is high, and acts are taken.	Public pressure on renewable awareness is high, and acts are taken.
Indonesia's Primary Energy Mix[4] *(estimated)*	**2025** Coal = 36 - 38 % RE = 11 – 15 %	**2025** Coal = 36 - 38 % RE = 11 – 15 %	**2025** Coal = 30 % RE = 23 %	**2025** Coal = 30 % RE = 23 %
Technology Factors	Technology still limited and over cost for transition option.	Technology still limited and over cost for transition option.	Government support makes technology and costs more affordable.	Government support makes technology and costs more affordable.
Investments *(estimated)*	**Renewable energy :** = $7 million (2030) = $23 million (2040)	**Renewable energy :** = $7 million (2030) = $23 million (2040)	**Renewable energy :** = $32 million (2030) = $16 million (2040)	**Renewable energy :** = $32 million (2030) = $16 million (2040)
CCUS **Deployment Rate *(estimated)***	**2024** 20 – 30% Mt CO_2	**2024** 20 – 30% Mt CO_2	**2024** 38 – 40% Mt CO_2	**2024** 38 – 40% Mt CO_2

: From sourcemarket report, Coal Market Price Outlook (2020).[21]
: From IEA report, World Energy Outlook (2020) [22]
: From IEA report, Annual report IMA (2022) [2]
: From National Energy Council report, RUPTL (2021 – 2030 [23]

CONCLUSION & RECOMMENDATION

The relationship between government dedication and coal industry regulation changes is crucial. These changes will impact coal owners and mining contractors, especially in 2040. The administration pledged a 2060 aim. It certainly affects the company's strategic decisions, especially in building a sustainable business. Companies in affected industries must plan beforehand to avoid a disruptive change. This can reduce cash flow and company portfolio instability caused by rapid commitment changes. Created this. Thus, the scenarios focus on future events, particularly in the coal industry by 2040. These scenarios can change SE companies' roadmaps and strategies by revealing expected consequences. This research found:

Around *16 Driving Forces* were identified from interviews and cited in journals. These dynamics could affect the coal industry and mining contractors immediately. Four planning scenarios were obtained: *Believing Spirit (BS)*, this scenario shows a slow transition without government support, causing companies to move slowly and not explore new opportunities because the government's commitment has not been realised. *Pioneer of Change (PC)*,shows that the company is rapidly diversifying without government support, so its changes are based on its awareness and strategy. *Truly Fighter (TF)*, a transition from companies that are slow to explore new business opportunities, even though government pressure and support are strong, shows that the company's business focus is still on existing businesses, taking advantage of opportunities that arise precisely because of strong government pressure.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 06 Issue 12 December 2023
DOI: 10.47191/ijcsrr/V6-i12-55, Impact Factor: 6.789
IJCSRR @ 2023

Chameleon Specialist (CS), the fastest due to the government's strong commitment to a sustainable energy transition and companies' eagerness to diversify by developing technology that supports sustainable business exploration and eliminating coal-centric businesses. Evaluation of four planning scenarios yields many implications. BS predicts a sustained reliance on fossil-based energy, with 70–80% of the national supply being coal, emphasising the need for Clean Coal Technology. PC predicts a drop in coal demand, affecting gross profit. TF increases coal sector regulations and environmental concerns. Environmental sustainability is stressed in CS which predicts regulatory reforms and a 10-20% loss in gross profit. Coal pricing, demand, revenue growth, GHG emissions, public opinion, renewable energy, technology, and investments provide early warning signals for future planning.

The key element of the scenario planning process is utilising the created scenarios as a basis for making strategic decisions and strengthening readiness for future uncertainties. Important suggestions involve closely monitoring government positions and actions as key indicators for important decisions regarding the company's future operations, exploring potential options to improve capital efficiency, and proactively diversifying into areas with high potential for the company's portfolio. Additionally, optimising employee development programmes is recommended. To greatly boost the company's future effectiveness, it is important to ensure that each employee develops a responsive mindset and remains adaptive to upcoming changes in workforce dynamics, duties, and technical proficiencies.

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International Journal of Current Science Research and Review
ISSN: 2581-8341
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Cite this Article: Ekky Febri Noor Hamzah, Yudo Anggoro (2023). Revitalizing PT. Sindo Energy (SE): A Forward-Thinking Proposed Scenario Planning to Navigate Coal-Regulatory Changes and Ensure Sustainability. International Journal of Current Science Research and Review, 6(12), 7992-8005