



The Oilfield Service Company's Business Development Strategy towards a Sustainable Energy with Scenario Planning

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ABSTRACT: Since the Paris Agreement where the countries in the world commit for the carbon emission reduction and net zero in 2050 or sooner, the energy transition has become the top topic in the energy sector. The oil-field services (OFS) industry is one of the business actors in the O&G supply chain with complex value chains, business structures, and models, and this research will explore scenario planning on the energy sector in Indonesia to have a forward-looking view of future O&G conditions in Indonesia including the energy transition which later became the key focal issue in this research. Scenarios are made based on the key driving factors and uncertainties that have been identified through the analysis of primary data from stakeholder interviews and secondary information from various literature studies. Furthermore, Scenarios are constructed based on how society responds to sustainable consumption and supporting infrastructures such as regulatory policies, the economic and investment environment, as well as technology and innovation. The four scenarios are (i) Empty Boat, (ii) Leaking Boat, (iii) Rocking the boat, and (iv) Rowing to Win. This research describes the implications, options, and strategies for each scenario which can then be taken into consideration by Green Bay Hornet Company (GBH) as an OFS company to enable proactive decisions and evaluate strategies to be resilient in each scenario. Reassessing the energy market, business conditions, and core competencies and how to expand and diversify technology, product, and service portfolios to renewable energy and decarbonizing initiatives in their operation is some of the strategies to expedite the transition in 2035.

KEYWORDS: Energy Transition, Oilfield Services, O&G Industry, Scenario Planning.

INTRODUCTION

The Oil and Gas Industry has had consistent development and prosperity for a long period of time with excellent records of investment returns. As the world's primary fuel source, the oil and gas business has a significant impact on the global energy market. Oil and gas production and exploration is a high-risk venture and highly complex that requires a significant amount of financial investment and state-of-the-art technology. However, this industry has had to deal with a significant level of uncertainty in the business environment, not only in terms of supply and demand for these fuels, but also in terms of economic evaluation and geological concept, with no assurance of effectively discovering and extracting the hydrocarbon. Furthermore, another oil and gas industry collapse caused by the Covid-19 disaster has demonstrated how vulnerable the global economy is to uncertainty, leading oil prices to reach negative for the first time in history in April 2020, plummeting to about -\$37 a barrel.

Despite the fact that oil and gas prices are volatile or cyclical in nature as other commodities, optimism persisted even during recessions, including covid-19 pandemic. As a result, the whole business player throughout the supply chain is performing strategic planning to anticipate the upswing, manage the risk, and capture the opportunities in every situation.

Scenario planning is a technique used in strategic planning. This approach was first adapted in the Industry by Shell in the early 1970s and has since been adopted by many businesses in the energy sector, which is impacted by numerous factors. In order to assist the OFS company in developing more accurate future predictions, this paper attempts to examine the scenario planning methodology used in Indonesia's oil and gas industry. Understanding the consequences and potential options of the scenario that has already been built is crucial for GBH Company in developing strategies to sustain and cope in this sector

RESEARCH METHODOLOGY

The data for this research will originate from both primary and secondary sources. Interviews involving O&G stakeholders such as regulators, operators, and service companies are used to acquire primary data. In-depth interviews with each stakeholder serve multiple purposes, such as gathering their current view about what is important that is going on now and might be happening in the

industry, what their hopes and worries are as well as their expectations for the business. A literature review, a published journal/report, and institutional annual reports are examples of secondary data used in this research. In addition to that, the External analysis, include PESTEL Analysis, and Porter’s 5 Forces, are used as external analysis, while VRIO analysis is used to understand the internal competitive advantage of the company.

The primary focus of this study will be a qualitative evaluation of scenario planning, and the scenario planning model will make use of deductive methodologies developed by Garvin & Levesques (2006) by placing an emphasis on the identification of relevant issues, stakeholders, external and internal key drivers, trends, and limitations as well as the importance and uncertainty of each of these driving factors

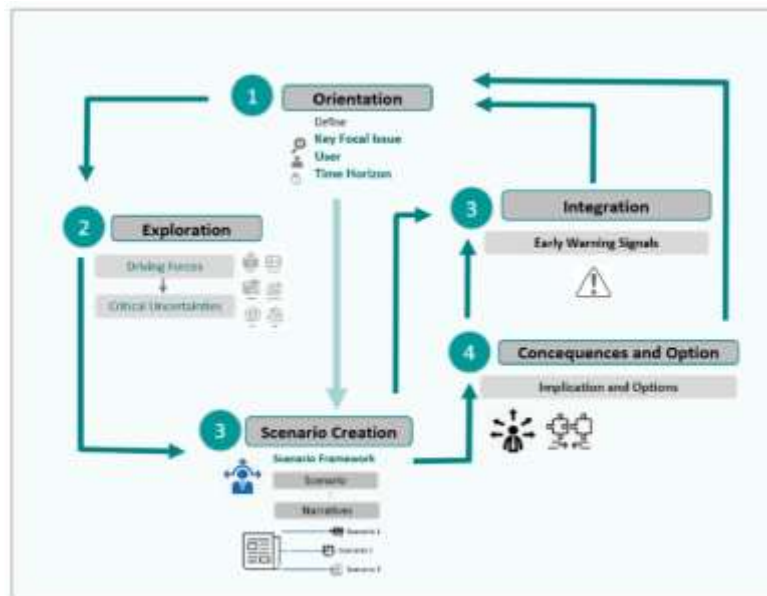


Figure 1. Scenario Planning Flow chart

a. 1st Stage – Orientation

This step comprises gathering background information and performing initial interviews to determine the stakeholders, pinpointing primary issues as the scenario planning component, with precise time horizon and specific targeting scope of area

b. 2nd Stage – Exploration

This stage calls for an in-depth investigation to broaden the researcher's understanding of the driving forces, the trend, and critical uncertainties around the determined key focal issue by defining, analyzing, and ranking those driving forces and its uncertainties. Scenarios are constructed by expanding a focal issue toward the external environment (Chermack, 2015). The generally best practice is to start by having a dialogue with the decision-makers or stakeholders to learn about their present viewpoints on the external environments and understand the concern and key driving forces.

The driving forces was formulated by analyzing the contextual and transactional environment. PESTEL Framework is used to identify the contextual environment describing the political, economic, sociocultural, technical, ecological, and legal components and Porter’s 5 force to understand the industrial analysis. For the transactional environment, this research is using internal information such as VRIO analysis and analyses of the internal environment, strengths, and weaknesses in order to discover the internal dynamics that support or impede strategy creation.

Interviews are used as primary information from respondents to rank the driving forces based on two criteria, (1) the degree of importance and (2) the degree of its uncertainties. This approach serves as the foundation for this research’s driving forces. An additional method, such as Causal Loop Diagram (CLD) is recommended to use to validate the relationship of the key driving forces. Understanding the system's structure and feedback will help better understand the system environment, and in scenario planning, it has been used to analyze the system’s condition through cause and effect.



c. 3rd Stage - Scenario and Narrative Creation

With the chosen key driving forces after further analyzing and synthesizing process, the scenario is structured in this stage, followed by creating the narratives. According to Pierre Wack (Chermack, 2015), this process focusses on options generation, which takes scenarios beyond as set of interesting stories and connect them directly to the decision. By concentrating on the key driving forces which has the most impact in the CLD, which has crucial uncertainties, then in this stage scenario is constructed. A scenario framework is built with four distinct quadrants of low and high degrees of uncertainty in the future, with each crucial uncertainty expressed within a 2x 2 matrix. The next step in this stage is to incorporate the constructed scenario into a narrative or story which makes sense and logic.

d. 4th Stage - Consequences and Option

The formulation of implications, as well as the assessment of the options, are included in this stage. It will discuss how the scenario would affect the industry and option selections to support the decision-making process since it is crucial to assess each scenario's robustness.

e. 5th Stage – Integration

A successful scenario planning execution is a recurring event which integrated into several ways in the decision-making approach with the help of the early warning signals or leading indicators. Early warning signals show how likely it is that the scenarios will happen and move in a particular with the chosen key driving forces after further analysing and synthesizing the process. Then in this stage the strategy is made for each scenario and create the implementation plan.

BUSINESS ISSUE

There is no assurance that the energy demand will follow the historic pattern since the oil and gas industry has historically been extremely cyclical. In Indonesia, the covid-19 pandemic has significantly reduced the demand of OFS (Oilfield) services, resulting in an adverse effect on the company's cash flow and financial conditions in addition to the oil prices volatility. The operations are also reduced due to the suspension or deferral of drilling activities, including downward revision on the customer budget.

Currently, Green Bay Hornet Indonesia has quite low market share at an average of 15-20% in upstream oil and gas in Indonesia, while for geothermal, the market share is even lower at less than 10%. In view of the uncertainty of the depth and extent of the contraction in oil demand due to the covid-19 as well as the oil price volatility, Green Bay Hornet needs to turn their strategic focus to protect their business to be able to sustain not only in this industry but also to support the industry transition as the world diversify its energy mix by expanding the business into energy verticals beyond oil and gas.

The objective of this study is to analyze the driving forces and critical uncertainties in the form of scenario planning that could impact Green Bay Hornet to have a sustainable business by 2035. By using scenario planning, it allows the company to project several possible futures and identify the potential outcomes to make the right decision

ANALYSIS OF SCENARIO PLANNING

The scenario planning method by Garvin and Levesque (2006) is utilized in this research by identifying the key focal issue, driving factors, and crucial uncertainties before developing four possible futures and a set of strategic alternatives for GBH Company.

a. Stage 1 - Orientation

Multiple plausible scenarios are expected to be employed in this research to characterize the range within which the future is likely to evolve, and the outcome will be utilized by the management of the GBH Company as the user to develop their company's strategy so that they can adapt to and even shape the future. "How will the Oil and Gas business evolve by 2035?" is the key focal issue that was agreed by the stakeholders and served as the foundation for the scenario planning for this research. Another key focal issue which being discussed with the stakeholder is whether the company need to expand their business focus, how to deal with the future changes and how R&D engage in. The time horizon for the scenario planning in this research is until 2035 considering the plausible scenarios and the scope is limited to the Oil and Gas Industry in Indonesia. 10-15 years is chosen which far enough to allow possible diverse outcomes and close enough to be relevant and applicable for the current planning



b. Stage 2 – Exploration

In these stages, the transactional and contextual environment is mapped in identifying the key driving forces through the interview and questionnaire with the stakeholders. To understand the driving forces of the challenges in the business and the perspective on the future of the oil and gas industry, primary data is collected by interviewing and questionnaire surveying a total of 21 stakeholders with different positions in the oil and gas sector, including O&G operators or PSC contractors, Regulator and O&G services companies. The contextual environment analysis is carried out using the PESTEL framework and Porter’s 5 forces and for the transactional environment, the VRIO and internal company data were utilized. The summary of key driving forces can be seen in table 1.

Table 1. identified key driving factors

No	Key Driving Forces	No	Key Driving Forces
	Political		Technological
1	Geopolitical Dynamics	17	O&G Technology Advancement
2	Net Zero and Carbon Emission Commitment	18	Renewable Technology Development
	GHG Emission Level		
3	International Relations	19	Innovation
4	Presidential Election	20	CCUS Technology Implementation
5	Sinergy and Coordination within government institution, industry, and private sector.	21	Electric Vehicle Adaptation and battery
	Economy		Environmental
6	Country Economy stability	22	Public and Government Commitment in Environmental Issue
7	Financing Options, Investment		Legal
8	Commodity - Oil Prices Volatility	23	Energy Transition Law Enforcement
9	Infrastructure Spending	24	Tax Regime
10	Energy Production and Distribution	25	Incentives Regime
11	Carbon Pricing	26	Greenwashing Issue
12	Infrastructure Spending		
	Sociocultural		
13	Consumer Behavior towards Green Energy		
14	Energy Access		
15	Qualified Talent		
16	Mobility Changes/Preference ~ Related to Work/School from home		

In view of this, the relationship within pre-determined driving forces element were identified using causal loop diagram (CLD) as can be seen in Figure 3-3. The variables in the CLD consisted of the key driving factors which impacting to the O&G industry, its developments and production.

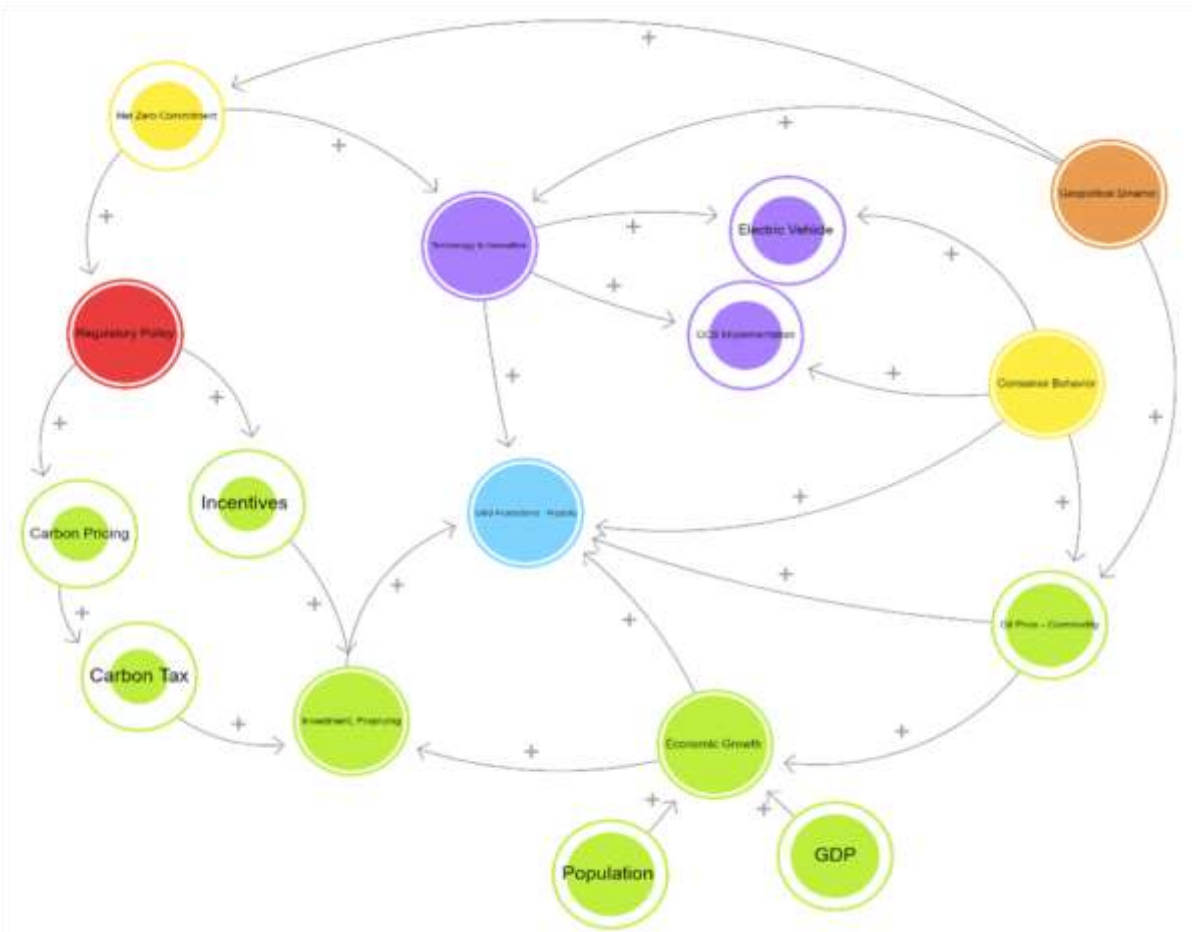


Figure 2. The relationship between identified key driving factors in Causal Loop Diagram

To create future scenarios, it is vital to concentrate on the key drivers that have the greatest impact and the highest degree of uncertainty with similar attributes. In this stage, we concurrently address many uncertainties which human as the primary changeeffecting mechanism. The respondent was asked which from the driving forces mentioned from their point of view has the greatest impact and uncertain in the future, then the data gathered was being scored and ranked. Figure 3 is the visualization of all the different key driving forces indicates the critical uncertainties zone to unfold distinct and plausible scenarios.

In line with the stakeholder’s response during the interview process in the addition to the secondary data, the following are the main key driving factors in this study that have a high degree of uncertainty and impact: policy & regulation, investment regime, technology & innovation, and consumer behaviour.

The approach developed in this study is by grouping the key driving factors into two categories, namely the category of supporting factors or infrastructure, including Policy and Regulation, Investment Regime, Technology & Innovation, while consumer behaviour or societal response is affecting factors. The speed at which decarbonization is implemented in Indonesia will be determined by these two key variables and later will be translated into plausible scenarios.



Figure 4. The Four divergent scenarios

d. Stage 4 - Consequences and Option

Each scenario illustrates the situation that might be occurred in the future which analyse both risk and opportunity. This implication and options of each scenario will be discussed in this section. The GBH Company may utilize the scenarios to determine how they might affect their present strategy and to guide various levels of decision-making. Based on the characteristics of a particular scenario, its likelihood, and the level of confidence, the Company and business players can start to develop insights that drive a wide range of planning requirements and actions, from short-term investment choices and asset plays to digital initiatives, partnerships, and ecosystems.

Scenario 1: EMPTY BOAT (EB)

In this scenario, support from both the infrastructure (including the Policy & Regulation, Economic & Investment, and Technology) and the Societal Response are considerably low, which leads to a late and slow energy transition.

Implications: This base case scenario forecasts if the current energy system and business practice continue their trajectories. Hydrocarbon energy will remain a dominant and important part of the National Energy Mix. This will be showed by the increasing of oil field projects as the current markets still offer the attractive opportunities to maintain or increase the production. All stakeholders also focus on the fossil-based energy. The discussion on the climate change didn't translate into real action by the government which the policy and investment decision is focused on the fossil-based energy. The consumer behaviour shifts marginally towards sustainable lifestyle and the social preference continues to evolve in a manner and speed as seen as now. Lastly, the revenue from Oil and Gas Market is still at around 80-100% total company earning.

Options: Its crucial in this scenario that OFS Company need to strengthen core competencies to increase the standard service level and expand market share and customer footprint in country while re-assess the hydrocarbon portfolio and consider establishing



optimal organizational structure to enable financing and operations in a hybrid model. It's needed to reduce the operating expenses and reinstate the supply chain to increase efficiency. The OFS company's core competencies are not applied to the new energy (low carbon) system. In addition to that, the GBH Company require to anticipate and prepare for any future climate change-related regulatory requirements. Ensure that the operational, technological, and capital resources are ready to capitalize on any upswings or change for example, in the market or policy and regulation.

Scenario 2: LEAKING BOAT (LB)

In this scenario, the conversation about addressing the environmental issue is not translated into actual action through regulatory policy, investment, and technical innovation to aid in decarbonization. However, the positive societal response to green energy indicates that consumers are willing to change their behaviour but access to renewable energy, which is low carbon, is quite difficult, thus hindering the decarbonization process, where fossil fuels in this case still predominant energy source with another diversified and small-shared energy source mainly renewables.

Implications: Fossil-based energy system is still dominating the energy mix in Indonesia with slow renewables adaptation. Oil and Gas Projects are increasing along with the increasing interest from the energy industry, especially the private sector, to move towards renewables, although not yet showing significant growth. Positive societal response to changes in behaviour towards sustainable consumption has boosted the demand for low carbon technology and appliances which is quite high. However, access and supply to low-carbon energy is insufficient. Lastly, the revenue from Oil and Gas market at around 70-90% total company earning.

Options: Similar to scenario EB, the GBH Company also needs to strengthen core competencies, consider establishing optimal organizational structure to enable financing and operations in hybrid model, and increase the efficiency by reducing the operating expenses and reinstate the supply chain. In this scenario, as increase of societal change towards the sustainable consumption, its important for the company to continue develop innovative and efficient technology would help to increase the operational and economic performance while minimize the cost.

Scenario 3: ROCK THE BOAT (RTB)

Contrarily, in this scenario, it is feasible to observe changes in how energy is generated and delivered to customers. The available infrastructure can be characterized as being of a high standard, with government regulations and policies that have been implemented, as well as investments that are sufficient to support either the energy transition or low-carbon technology innovation.

Implications: In this scenario, a transition away from fossil fuels is observed driven by renewable energy and despite the slow pace, the energy sources are more diverse. Oil and gas projects begin to decline over time and vice versa for renewables projects are on the rise. This is shown by the fact that the share of renewable energy in the energy mix has started to rise over fossil energy with a relatively minor difference. The OFS segments won't be able to provide long-term profitability and the company is able to build or acquire relevant new capabilities However, Societal response to lifestyle changes towards sustainable consumption is still minimal, this can be seen from the use of terminology which is still a mix between existing technology and low carbon efficient technology. And the revenue from Oil and Gas market at around 40-60% total company earning.

Options: GBH company need to maintain a balance between the hydrocarbon and renewables markets to take advantage of both short-term prospects and reassess the core competencies which related to the hydrocarbon portfolio. In addition to a limit the selection of core markets, identify the priority energy transition segments to enter based on geographical option within area in Indonesia or company own capabilities. The other strategy is business diversification by diversify the portfolio into a nonhydrocarbon portfolio through priority assessment such as the Power vale chain (gas or renewables power plant), new fuel (biofuel) or CCUS. Also in this scenario, GBH need to consider establishing optimal organizational structure to enable financing and operations in hybrid model. The technology system must through a significant transformation to become more efficient, low carbon, digitally advanced and flexible. This will need considerable infrastructure investment.

Scenario 4: ROWING TO WIN (RTW)

Energy shifts take place more quickly now. With the complete backing of stakeholders involved, proper infrastructure, including regulatory policy, an investment climate, and technological advancements. This condition changes the way consumers use energy



as a result of the growing concern over climate change. The share of hydrocarbons (O&G, Coal) is declining in a considerably fast pace align with significant increase of the renewables.

Implications: An energy transition is achieved and O&G Production peaks within the scenario timeline. As a result, the hydrocarbon segment receives few or no compelling offer in the market and O&G projects decline significantly. A substantial acceleration of the energy transition will result in the creation of new, appealing markets in non-hydrocarbon segment. Demand indicates a shift away from conventional energy sources and a significant change in consumer behavior towards sustainable lifestyle. In this scenario, revenue from Oil and Gas market at less than 30% total company earning. Increase in energy diversification leads to greater competition in the market as well as increase in bargaining power of consumers.

Options: GBH Company need to consider to re-branding and promote the business as a provider of solutions for businesses committed in energy transition, to be the energy company instead of O&G Services Company. Internally reallocate the resource and organization re-structuring towards competencies preferred by new energy market sectors. Refocus the efforts on the areas that are essential to the business's sustainability in the new market. Business Diversification is crucial in this scenario and can be done by diversify the portfolio into a non-hydrocarbon portfolio through priority assessment such as the Power vale chain (gas or renewables power plant), new fuel (biofuel) or CCUS. Lastly, implementing key emerging decarbonization technologies and innovative system by investing in the new energy market internally and through Merger and Acquisition. *e. Stage 5 – Integration*

The options presented in the previous section will work well to be put into practice and to ensure that the options are implemented at the appropriate time by the Stakeholder, the early warning signal is necessary.

Table 4. Early warning signal for each scenario

Early Warning Signal	EMPTY BOAT (EB)	LEAKING BOAT (LB)	ROCK THE BOAT (RTB)	ROWING TO WIN (RTW)
Est. GDP growth Within 2022 -2035	2.5-3.5 %	2.5-3.5 %	3.5 – 4 %	3.5 - 5%
Est Annual CO2 Emission	1200 – 1700 Mton CO2	1200 – 1500 Mton CO2	1000 – 1200 Mton CO2	700 – 1000 Mton CO2
Energy Mix – share of Hydrocarbon in primary energy	70-80%	70-75%	50-60%	<50%
Energy Mix – share of Renewables	The RE target is not meet, significantly lower than <23% in 2025 and < 42% in 2030.	The RE target is not meet, lower than <23% in 2025 and < 42% in 2030.	Meet RE target of 23% In 2025 and 42% in 2030	Exceed RE target of > 23% In 2025 and > 42% in 2030
Est. Total Energy Demand	300-350 Mtoe and continue Increasing up to 500-550 Mtoe in 2025	300-350 Mtoe and continue Increasing trend up to 480-500 Mtoe in 2050	250-350 Mtoe and slow Increasing trend up to 480 Mtoe in 2050	250-350 Mtoe and slow increasing trend up to 450 Mtoe in 2050
Technology Innovation – Renewables and Low Carbon Technology	Difficult and expensive to commercialize	Difficult and expensive to commercialize	Manageable and costeffective to commercialize	Manageable and costeffective to commercialize
Societal Response – Consumer Behavior	No indication of shifting to the low carbon and sustainable lifestyle	Moderate change towards sustainable consumption behavior	Minimal Change towards sustainable consumption behavior	Full meaningful shift towards low-carbon consumption



Electrification of end uses – Electric Vehicle	<5%	20-30%	20-30%	40%
Electrification of end uses – Industry and Residential	3%	3-5%	15-20%	>20%
OFS Revenue	>80%	60-80%	40-60%	<30%

RECOMMENDATION

While meeting the increasing energy demand, the business need to contribute simultaneously reducing the GHG emission. The private sector also has a crucial role in limiting the global temperature rise to 1.5 deg C as per Paris Agreement. Strategic imperatives that can be taken by the GBH company for each scenario are as follows:

a. Business Model

- i. Evaluation of the current core competencies and business* It’s important to re-assess the current business environment, core competencies, and hydrocarbon portfolios regularly in every quarter or biquarterly. Engage multiple stakeholders to get insights, including the customers, shareholder/investors, government, employees, partner, industry associations sand communities, and universities for strategic alignment, coordination, and knowledge sharing.
- ii. Roadmap to Net Zero and Decarbonization pathway.* Roadmap for the GHG emission, including commitment in Scope-1, and Scope-2 that is related to the direct emission generated from the operation and facilities. For scope 3 that the emission is coming from indirect emission outside company’s value chain, including the emission from the purchased goods and services, fuel, transportation, business travel and etc which need continuous identification and deep analysis on the decarbonization pathways on this scope. Rogelj et al. (2021) mentioned some factors needed to reach the energy transition which is Scope; which includes clarity on which GHG is targeted, which activities and areas, how much the contribution of removal and balancing carbon including risk mitigation and Road Map; which includes milestones, monitoring, and review systems to assess progress and revise targets if changes occur.
- iii. Diversification technology portfolios.* Portfolio diversification plays an important role, especially in the Rock the boat and Rowing to win scenarios, considering that the share of hydrocarbons is starting to decline. Technology and portfolio diversification by investing in renewables is critical to advancing decarbonization, e.g., geothermal power, CCS, energy storage, hydrogen as an energy carrier
- iv. Develop strategic partnerships and Collaboration.* The organization will be able to seize prospects for a better future with the help of a strategic alliance. This initiative might be carried out through a partnership, joint ventures, or an M&A by expanding the company into energy verticals other than oil and gas and involving the workforce and working with business partners, clients, industry associations, and communities.

b. Investment in R&D for Technology Innovation

Cost-effective and performance-based innovation in technological development is fundamental for OFS company for a meaningful GHG emission reduction journey. It is crucial to accelerate innovation, leveraging the company technologies in AI, Digitalization and provide proven technologies to help customers as they progress towards their own net-zero objectives. With Innovation, Decarbonization Technologies play an integral role in addressing GHG emission and reaching Net Zero, and the customers could be able to adopt new, smarter technology more quickly and alter the energy consumption patterns.

c. Decarbonization Initiatives in Operations

Below is the strategy that the company could consider in initiatives to progress on the decarbonization in operational aspects.

- i. Transition Technologies* by improving or changing the existing technology portfolios or processes and procedures in operation to reduce the customer GHG emission while keeping high performance and its efficiency. Technologies include automated and remote operation, equipment electrification and transportation, etc.
- ii. Energy efficiency and Carbon abatement* by facility consolidation and energy saving in the process of manufacturing, assembling and maintaining tool and equipment in the country.
- iii. Electrification and electric consumption from renewables.* Using renewables and zero-carbon energy sources both onsite and offsite location such as change the diesel generators to electric power including the use of renewables, solar installation or natural gas fuel cells.



- iv. *Improvements on tool, equipment, and vehicle fleets in reducing emission.* Increasing electrification, low carbon fuelling and tracking and reducing unnecessary idling.
- v. *Supply Chain Localization.* Optimizing the supply chain by having local suppliers which are more affordable, technically feasible and cost-effective as well as increase the local content.
- vi. *Track and collect the GHG emission* across all committed initiatives.

d. Workforce Development

The Human Capital Strategy is essential for fostering the transition energy and boosting innovation. The company need to create an inclusive and open culture and workplace to drive innovation in order to attract in, retain, and develop the best talent to steer the energy transition journey. Additionally, workforce development is needed to help the employee advance professionally as the business evolves and by Providing the workforce with access to training and development for the kinds of skills and job functions that will be required in the future that are in line with the company's strategy.

CONCLUSION

The ambitious target of Indonesia to achieve net zero emissions by 2050 or earlier is a crucial component of its economic growth, and there is still a long way to go before reaching the declared objectives. It's crucial for country and specifically the industry to execute several initiatives, including utilizing its competitive advantage in renewable energy value chains, economic diversification away from a concentration on natural resources, and economic development which is driven by technology and innovation.

Over the next decade, it is anticipated that the future of the energy system will have a substantial impact on the operations and strategy of the organization. Scenario planning offers a set of approaches to explore how the O&G industry will grow and change in the future. No single scenario can accurately predict how energy will develop in the future. Instead, these scenarios could be able to support and guide the company in defining strategies that are contingent on probable future developments or assess the suitability and robustness of existing strategies.

Four scenarios are developed using key driving forces which were determined through interview and discussion with the respondents. The uncertainties and impacts are determined as well as the foundation for scenario development using the key driving elements that have been identified. The two uncertainties are societal response and infrastructure, including regulatory policy, economic and investment regime, and technology & innovation.

Strategic Planning is important for effective and efficient transitions. There are four main strategies that can be implemented based on constructed scenarios. They are Business Model Strategy which includes reassessing the core competencies and re-assess the hydrocarbon portfolios and portfolio diversification. Generate the decarbonization pathway and roadmap to net zero for clear guidance to reach net zero, build capability to expand and invest into renewables and technology innovation, reduce the operational emission through decarbonization and efficient operations and workforce development and social engagement to support the company to achieve the sustainable growth. It's always needed for the GBH Company to always monitor the early warning signal and always anticipate and plan for the future regulatory requirement changes relating to the climate issue.

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