A Review of Strategies for Managing Uncertainty in Crude Oil Prices by Indonesian Oil and Gas Companies and the Government

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Abstract

The world oil and gas market has experienced uncertainty since 2014 until now. Fluctuating supply and demand, geopolitical tensions, and shifts in energy policies cause this. In addition, at the beginning of 2020, there was a prolonged pandemic, which made oil and gas conditions even more erratic. This uncertainty significantly impacts the Indonesian state, especially the Indonesian government and oil and gas companies operating in Indonesia. Various methods have been taken to mitigate the impact of this uncertainty, both by the government and oil and gas companies. Therefore, this study aims to conduct a literature review regarding the strategies undertaken by the Indonesian government and oil and gas companies in Indonesia to address the uncertainty in world oil prices since 2018. This research was conducted using the literature method. A review of scientific articles that have been published from 2018 to 2022. The selected articles follow the research objectives and comply with the inclusion and exclusion criteria set at the outset. Results of the literature process the review obtained as many as 67 articles that discussed various strategies carried out by the government and oil and gas companies. The discussion results show three strategies carried out by oil and gas companies in Indonesia: cutting costs, implementing digitalization, and diversifying into renewable energy projects. Meanwhile, the strategy undertaken by the Indonesian government includes providing fiscal incentives, investing in infrastructure that supports the oil and gas sector, deregulating the oil and gas sector, and encouraging the use of renewable energy as an alternative energy source. These various strategies aim to increase efficiency, reduce costs, diversify energy sources, and increase competitiveness in Indonesia's oil and gas sector to deal with the uncertainty of world oil prices.

Keywords: Indonesian government; literature reviews; oil and gas; oil and gas company; strategy; uncertainty price

I. Introduction

The world oil market is the leading market in the world economy. However, the condition of the world oil market has recently been affected by the spread of the COVID-19 virus. The pandemic has made the uncertainty in world oil prices even more uncertain. The prolonged pandemic caused the OPEC+ deal to break up or collapse (Yeshtayeva & Dabyltaeva, 2021). The collapse of the OPEC+ deal has also led to heightened oil price volatility and risk of loss for private companies in Russia (Bobylev et al., 2020). Uncertainty in oil prices significantly affects changes in the other eight macroeconomics in Indonesia (Sharma et al., 2019). At the beginning of 2020, travel restrictions and lockdowns were implemented worldwide, so the oil demand decreased. The drop in demand led to a significant drop in oil prices and a surplus of oil in storage (Yeshtayeva & Dabyltaeva, 2021). In April 2020, the oil market experienced a drastic fall, with crude oil dropping to -$37.63 per barrel (Corbet et al., 2021). This was due to a combination of reduced demand and limited storage capacity for surplus oil. In 2021, oil prices have recovered but remain well below pre-pandemic levels. In August 2021, crude oil was trading at around $70 per barrel (Jacobs, 2021). However, oil demand is still not recovering, and the market is still uncertain due to the ongoing pandemic and global economic uncertainty. An overview of world crude oil price fluctuations in the last five years can be seen in Figure 1.

Uncertainty in world oil market prices during the COVID-19 pandemic was influenced by several factors, including declining demand, lack of storage capacity, economic uncertainty, problems in oil and gas supply and production, political tensions, and the increasing use of new renewable energy (EBT) (Le et al., 2021; Turkeeva & Suleimenova, 2021). The pandemic caused travel restrictions and lockdowns worldwide, causing world oil demand to drop dramatically. This decrease in demand causes oil storage to become a surplus. This storage surplus causes a domino effect in the form of a decrease in oil prices. Apart from that, the effects of the

pandemic have also caused a slowdown in the global economy, so the demand for oil from industry players has decreased and is uncertain.

On the other hand, to stabilize prices, many oil-producing countries agreed to cut their production and supply capacities to reduce the surplus oil stored (Pirani, 2022). This further increases the volatility of oil prices in the market as it is still being determined how much of a cut will be needed to stabilize those prices. In addition, the world oil market is also affected by the ongoing tensions between the United States and Iran (Ruiz

Estrada et al., 2020). This political tension adds to the uncertainty in oil prices because Iran, as one of the world's oil producers, will experience an uncertain situation to be able to carry out oil production and supply activities. Uncertainty in world oil prices has also triggered an increase in the use of renewable energy sources (Tan et al., 2021). Some of the renewable energy sources that are widely used are solar and wind power. Using renewable energy sources long-term will add to the uncertainty in world oil market prices.

Figure 1. Graph of world crude oil price trends in the last five years (WTI Crude Oil, 2022)

Uncertainty in oil prices during the COVID-19 pandemic also affected Indonesia's condition. As an oil and gas net importer, Indonesia is heavily affected by the decline in oil prices (Ichsan et al., 2022). The decline in world oil prices caused the value of Indonesia's crude oil exports to decrease and the cost of oil imports to increase. This condition decreased government revenues and a widening trade balance deficit (Wicaksana et al., 2022). In addition, the implementation of travel restrictions during the pandemic also caused a decline in national economic activity, especially activities in the tourism and service sectors (Mursalina et al., 2022; Surya et al., 2022).

Various problems that have occurred both in Indonesia and the world caused by the uncertainty of oil prices which have become increasingly erratic

in the last few years, need to be anticipated with strategic steps. Therefore, this research aims to determine the various strategic steps used by oil and gas companies and the government in responding to the uncertainty of world oil prices.

II. Methodology

The method used in this study is the literature reviews method, namely identifying various existing articles to answer the research objectives. The literature reviews method in research in the oil and gas sector have been used previously to identify the sustainability of supply chain systems in the oil and gas industry (Wan Ahmad et al., 2017). Literature reviews method is often called the traditional literature review method because

collecting data sources is not systematic as in the systematic literature reviews method (SLRs). Selection of literature reviews method was chosen because the available data sources were insufficient to search according to the SLR protocol. Due to the limited amount of data, the choice of method for conducting a review is the literature reviews method.

Sources of data reviewed with the literature method reviews Derived from various scientific articles published in journals and proceedings. All selected articles are searchable by article search platforms such as "Google Scholar". In addition, to improve the quality of data sources, it is necessary to define inclusion and exclusion criteria. The inclusion criteria applied in selecting data sources include journals published no later than 2018, journals can be in English or Indonesian, research subjects in journals are oil and gas companies and or the government (preferably oil and gas companies in Indonesia or the Indonesian government), and journals must discuss related to strategies and ways to respond to uncertain global oil market conditions. Apart from those included in the inclusion criteria, the journal is included in the exclusion criteria, namely the category of journals or articles that will not be used in literature discussions. Reviews in this research. Exclusion criteria include journals before 2018, journals with writing other than Indonesian and English, research subjects in journals that are not oil and gas companies and not the Indonesian government that handles the oil and gas industry (in this case, the Ministry of Energy and Mineral Resources), and discussion of journals in outside of the discussion of strategies in responding to global energy uncertainties.

After completing the preparation stage, the next stage is the processing stage. Doing a literature review includes several steps (Li & Wang, 2018). The steps in the literature review process can be seen in Figure 2. The details for each step are described as follows:

1. Manage the data
   The first step is to organize the data collected from the internet through the article search platform. This step is done by creating a spreadsheet in Microsoft excel which lists the main findings and information from each source.

2. Coding the data
   The next step is coding the data by similar grouping findings and giving them a specific code. This coding makes it easier to identify the patterns and themes contained in the data.

3. Identify patterns and themes.
   After the data is organized and coded, the next step is to identify the patterns and themes contained in the data. This can be done by reviewing specific coded data and looking for emerging common themes and patterns.

4. Make a summary of the data found
   After identifying patterns and themes, the next step is summarising the findings. This could include a brief overview of the main findings, a summary of the main themes and patterns identified, and a discussion of the implications of the findings.

5. Interpretation of the data finding
   The final step is to interpret the findings by explaining the patterns and themes that have been identified. Interpretation of the data addresses, among other things, the implications of the findings, highlights gaps or limitations in the literature and makes recommendations for future research.

Figure 2. Stages of traditional literature review

The final stage of doing literature reviews is reporting and concluding. Reporting of literature results reviews will be presented in the "Results and Discussion" section. While making conclusions from the findings that have been described will be presented in the "Conclusion" section.

III. Results and Discussion

Before the report on the results of the literature review is made, it is necessary to display a summary of the data on the findings that have been carried out at the stage of the process of conducting literature reviews. The presentation of a summary of the findings in this article is intended to facilitate the next step, namely the interpretation of the findings. In

addition, the presentation of this resume also makes it easier for the reader to see where the source of the findings data was obtained. The appearance of these data sources also shows the quality of the data sources processed in this study. Search results, content selection based on research objectives, and inclusion and exclusion criteria were obtained from 67 scientific articles. The resume data on findings and article codes based on the theme can be seen in Table 1.

Table 1. Summary of the data findings

Year	Subject	Country	Strategy	Code	Source
2022	Oil and Gas Company	Indonesia	Oil and gas companies in Indonesia are digitizing and automating internal improvements to adapt to rapid technological changes and optimize performance.	C-2	(Hartono, 2022)
		USA	Oil and gas companies in the USA reduce CSR costs.	C-1	(Hassen & Hamdi, 2022)
	Government	Indonesia	The Indonesian government supports infrastructure investment in the oil and gas industry through tax incentives.	G-1; G-2	(Taufiq, 2022)
			The Indonesian government simplified bureaucracy and regulations to make it easier for oil and gas companies to operate.	G-3	(Turner et al., 2022)
		USA	The government provides fiscal incentives to oil and gas companies through investment in renewable energy and nuclear power.	G-1; G-4	(Jarboui et al., 2022)
2021	Oil and Gas Company	Indonesia	Oil and gas E&P companies in Indonesia have reduced operational costs.	C-1	(Djaja, 2021)
			The success of Indonesian oil and gas companies in digitalization and automation.	C-2	(Mario et al., 2021)
		Russia	Oil and gas companies in Russia are digitizing and automating, which are promising solutions to address the main problems of the oil and gas industry.	C-2	(Kuklina, 2021)
			Oil and gas companies in Russia carry out effective digitalization and automation.	C-2	(Drogovoz & Kharin, 2021; Shigaev, 2021)
		Australia	Oil and gas companies in Australia are diversifying their business by investing in renewable energy projects, and the results are compelling.	C-3	(Lee et al., 2021)
	Government	Indonesia	The Indonesian government provides fiscal incentives to oil and gas companies through subsidies and tax breaks. Aside from that	G-1	(Firwan Aprizal et al., 2021)
			The Indonesian government supports the oil and gas sector by investing in infrastructure and recommending improvements.	G-2	(Firwan Aprizal et al., 2021)
			The Indonesian government simplified bureaucracy and regulations for oil and gas companies to speed up the oil and gas production process in Indonesia.	G-3	(Subadi, 2021)
		USA	The US government provides fiscal incentives to oil and gas companies through federal tax incentives and fee waivers.	G-1	(Achakulwisut et al., 2021)
		Croatia	The Croatian government provides fiscal incentives to oil and gas companies through taxes, fees and concession contracts.	G-1	(Kolovrat et al., 2021)

Year	Subject	Country	Strategy	Code	Source
		Guyana	The Government of Guyana is investing in infrastructure to support the strategic oil and gas sector.	G-2	(Paulette & Denise, 2021)
		Spanish	The Spanish government encourages renewable energy by subsidizing wind, mini-hydro and solar PV energy.	G-4	(Álvarez et al., 2021)
2020	Oil and Gas Company	Indonesia	Oil and gas companies in Indonesia are investing in renewable energy.	C-3	(Vakulchuk et al., 2020)
		USA	US oil and gas companies cut costs.	C-1	(D. Barrows et al., 2020)
			Oil and gas companies in the US cut investment costs.	C-1	(Maghyereh & Abdoh, 2020)
		China	Oil and gas companies in China cut investment costs and invest in small companies and non-BUMN.	C-1	(Cao, Guo, et al., 2020)
			Oil and gas companies in China have cut costs and diversified their business in renewable energy, but the results have been less effective.	C-1; C-3	(Cao, Sun, et al., 2020)
		Russia	Oil and gas companies in Russia are digitizing and automating, which are vital factors in increasing efficiency.	C-2	(Kazanin, 2020)
		Russia, Azerbaijan	Oil and gas companies in Russia and Azerbaijan are proposing a public-private partnership (PPP) model to anticipate the current conditions.	C-4	(Semkova & Babayev, 2020)
		United Arab Emirates	The success of oil and gas companies in the United Arab Emirates is digitizing and automating.	C-2	(Arif & al Senani, 2020)
	Government	Indonesia	The Indonesian government is investing in infrastructure in the oil and gas sector as a source of financing for the current account deficit in Indonesia's balance of payments.	G-2	(Muarofah & Falianty, 2020)
			The Indonesian government simplifies permits for the oil and gas sector but still needs to have the authority to synchronize the issuance of these permits.	G-3	(Sujatmoko et al., 2020)
			The Indonesian government has simplified the bureaucracy and regulations for oil and gas companies to create fair competition and transparency in developing the oil and gas business.	G-3	(Aritonang, 2020)
			The Indonesian government changed the bureaucracy and regulation of oil and gas companies through PSC Gross Split. However, it harms oil and gas companies.	G-3	(Yun et al., 2020)
		China	The Chinese government provides fiscal incentives to oil and gas companies through subsidies.	G-1	(Wang & Zhang, 2020)
			The Chinese government provides fiscal incentives to oil and gas companies in the form of direct compensation to households affected by shale gas development projects.	G-1	(Zhang et al., 2020)
		Ghana	The government of Ghana's investment in infrastructure to support the oil and gas sector is limited due to the government policy framework.	G-2	(Yaw Boahen & Oppong, 2020)

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Year	Subject	Country	Strategy	Code	Source
		North Dakota	The North Dakota government is investing in the oil and gas sector infrastructure, but it needs to be clarified how stakeholders will utilize it.	G-2	(Smith & Haggerty, 2020)
		Nigeria	The Government of Nigeria is investing in significant infrastructure in the oil and gas sector.	G-2	(Kazeem & Oyelakun, 2020)
			The Nigerian government is investing in infrastructure to support the oil and gas sector, but more is needed.	G-2	(Omodero & Ehikioya, 2020)
		Canada	The Government of Canada is easing environmental policies to boost the performance of oil and gas companies.	G-3	(Dong et al., 2020)
2019	Oil and Gas Company	Indonesia	Oil and gas companies in Indonesia are digitizing and automating using machine learning and advanced analytics.	C-2	(Hajizadeh, 2019)
		China	Oil and gas companies in China are pressing operational and investment costs.	C-1	(Cheng et al., 2019)
			Oil and gas companies in China are diversifying their business into renewable energy with quite effective results.	C-3	(Hsiao et al., 2019)
		Russia	Oil and gas companies in Russia carry out effective digitalization and automation.	C-2	(Balashova & Bolshakova, 2019)
	Government	Indonesia	The Indonesian government provides fiscal incentives to oil and gas companies through tax breaks and subsidies.	G-1	(Kraal, 2019)
			The Indonesian government provides fiscal incentives to oil and gas companies in the form of 5 straight years of line depreciation (SLD), 5% 1st Tranche Petroleum (FTP), 78% Contractor Share (CS) and 35% income tax.	G-1	(Acquah-Andoh et al., 2019)
			The Indonesian government is investing in infrastructure in the oil and gas sector, but more is needed, so the foreign investment is needed to cover the financing shortfall.	G-2	(Duffield et al., 2019)
			The Indonesian government's investment in infrastructure to support the oil and gas sector needs to be increased.	G-2	(Santoso, 2019)
			The Indonesian government encourages using renewable energy sources to reduce dependence on oil and gas.	G-4	(Taqwa, 2019)
		Australia, Malaysia, Papua New Guinea	The governments of 4 countries (Australia, Malaysia, Indonesia and Papua New Guinea) provide fiscal incentives to oil and gas companies through tax breaks and subsidies.	G-1	(Kraal, 2019)
		Russia	The Russian government provides fiscal incentives to oil and gas companies through benefit over risk. It invests in oil and gas infrastructure to support Russia's new oil and gas development.	G-1; G-2	(Sidortsov, 2019)
			The Russian government is trying to adjust the legal mechanism for taxation in the oil and gas industry, but this still needs to be resolved.	G-3	(Gorbunova, 2019)
		USA	The US government provides fiscal incentives to oil and gas companies through tax breaks and subsidies.	G-1	(McDonald et al., 2019)

Year	Subject	Country	Strategy	Code	Source
		Nigeria	The Nigerian government provides fiscal incentives to oil and gas companies through subsidies.	G-1	(Gidigbi et al., 2019)
		China	The Chinese government provides fiscal incentives to oil and gas companies through subsidies.	G-1	(M. Liu et al., 2019)
			The Chinese government provides fiscal incentives to oil and gas companies through special subsidies for R&D.	G-1	(Du & Li, 2019)
		Ghana	The Government of Ghana is investing in infrastructure to support the oil and gas sector, but the country's infrastructure deficit needs to be improved.	G-2	(Obiri et al., 2019)
		Brazil	The Brazilian government changed the regulatory framework to encourage investment in the oil and gas sector.	G-3	(Araujo & Leoneti, 2019)
2018	Oil and Gas Company	Indonesia	Private oil and gas companies in Indonesia have reduced production costs.	C-1	(Daryanto & Samidi, 2018)
			Indonesia's largest oil and gas company still has excellent financial condition and a cost reduction strategy.	C-1	(Mardawiyah Daryanto & Nurfadilah, 2018)
		UK	Oil and gas companies in the UK are making drastic cuts and delaying essential investments.	C-1	(Vătavu et al., 2018)
		Southern North Sea	Oil and gas companies in the Southern North Sea use effective digitization and automation of decision-making to maximize the value of information and asset performance.	C-2	(Elichev & Muñoz, 2018)
		China	Oil and gas companies in China are implementing a public-private partnership (PPP) model in shale gas development.	C-4	(Luo et al., 2018)
	Government	Indonesia	The Indonesian government made attractive terms and conditions of the PSC fiscal system.	G-1	(Mardawiyah Daryanto et al., 2018)
			The Indonesian government provides fiscal incentives to oil and gas companies through tax breaks and subsidies.	G-1	(Rulandari et al., 2018)
		Kuwait, Saudi Arabia, Qatar	The strategic policies of 3 countries (Kuwait, Saudi Arabia, and Qatar) in overcoming the fiscal deficit are by conducting public-private partnerships (PPP).	G-1	(Biygautane et al., 2018)
		USA	The US government provides fiscal incentives to oil and gas companies through tax breaks and subsidies.	G-1	(Newell & Raimi, 2018b)
			The US government provides fiscal incentives to oil and gas companies through state taxes related to oil and gas industry activities.	G-1	(Newell & Raimi, 2018a)
		Nigeria	The Nigerian government passed amendments to the Petroleum Act 1969, which included fiscal policy through new regulatory and commercial frameworks.	G-1	(Adeyinka & Aron, 2018)
			The Nigerian government provides fiscal incentives to oil and gas companies through tax breaks and subsidies.	G-1	(Nwosi-Anele et al., 2018)
		India	The Indian government provides fiscal incentives to oil and gas companies through subsidies.	G-1	(Jain, 2018)

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Year	Subject	Country	Strategy	Code	Source
		China	The Chinese government provides fiscal incentives to oil and gas companies through tax cuts and production subsidies.	G-1	(Z. Liu et al., 2018)

Based on the resume results in Table 1, the findings are made into several codes. The code includes letters and numbers. The letter C represents *the oil and gas company,* and the letter G represents *the government*. Meanwhile, the number code behind the letter code is strategic funding from *oil and gas companies* or the *government*. Where each code represents:
C-1 : Cost cutting
C-2 : Digitalization
C-3 : Investment Diversification
C-4 : Public-Private Partnerships (PPP)
G-1 : Fiscal incentives

G-2 : Investment in infrastructure
G-3 : Deregulation
G-4 : Encouraging energy renewable

To analyze the findings in Table 1, it is necessary to map each code found and the distribution of existing references by year. Reference by year is used to see when and where the strategy was carried out and continued to be carried out or only a few years. Therefore, the findings are in Table 1, and then a mapping is made, as shown in Table 2.

Table 2. Mapping Strategy for Oil and Gas Companies and the Government

Code	Strategy	Strategy in Indonesia					Other countries implementing the same strategy				
		2022	2021	2020	2019	2018	2022	2021	2020	2019	2018
C-1	Cost cutting		1			2	USA		USA (2) China (2)	China	UK
C-2	Digitization	1	1		1			Russia (2)	Russia United Arab Emirates	Russia	Southern North Sea
C-3	Investment Diversification			1				Australia	China	China	
C-4	Public-Private Partnerships (PPP)							Russia Azerbaijan			China
G-1	Fiscal incentives	1	1		2	2	USA	USA Croatia	China (2)	Australia Malaysia Papua New Guinea Russia USA Nigeria China (2)	Kuwait Saudi Arabia Qatar USA (2) Nigerian (2) India China
G-2	Infrastructure investment	1	1	1	2			Guyana	Ghana North Dakota Nigerian (2)	Ghana	
G-3	Deregulation	1	1	3					Canada	Brazil	
G-4	Encouraging Renewable Energy				1		USA	Spanish			
	Amount	4	5	5	6	4	3	7	16	13	12

III.1. Oil and Gas Company Strategy

The findings show that several strategies have been implemented by oil and gas companies, namely cost-cutting, digitalization, diversification, and Public-Private Partnerships (PPP).

C.1. Cost cutting

Cost cutting is the company taking cost-cutting measures such as reducing capital expenditures and cutting jobs to reduce expenses and maintain profitability. Based on Table 2, various cost-cutting strategies were found in 2018 and 2021. These cost-cutting strategies were also found in the USA, China and the UK. Meanwhile, when viewed from the distribution every year, this strategy is carried out.

The company's cost-cutting strategy was in line with the conditions at that time, apart from the uncertainty over oil prices exacerbated by the sudden pandemic. In this sudden pandemic, the quickest policy is to make financial savings by evaluating work and investment plans. Where the job chosen is the job that has the most impact on profits for the company. In investment, the company's finances will be spent long-term and will not get a return immediately. It can help overcome the increasingly severe economic downturn at that time.

C.2. Digitization

The digitalization strategy is for companies to use digital technology and automation to carry out remote monitoring to increase efficiency and reduce costs. The strategy for digitizing oil and gas companies in Indonesia is found in articles for 2019, 2021 and 2022. This strategy is carried out by overseas oil and gas companies such as Russia, the United Arab Emirates and South East North Sea. When viewed from the time, some articles discuss the use of digital strategies in oil and gas companies every year.

In line with the first strategy, one way to increase profitability and reduce financing is to use a digital system. Digitalization can integrate all aspects of company operations, including automation, remote monitoring, and analytical data for decision-making processes. In the uncertain condition of the world oil market, companies can use digitalization to increase efficiency, thereby reducing their operational costs. In addition, digitization can also improve the quality and accuracy of data so that companies can make more

precise decisions related to operations and investment plans.

C.3. Diversification

The company is diversifying its operations and investing in other energy sources, such as renewable energy projects, thereby reducing dependence on the oil and gas sector. The application of this strategy in Indonesia was found in an article in 2020. Meanwhile, overseas, this strategy was used by Australia and China. When viewed over time, almost every year, this strategy is carried out by oil and gas companies. However, the implementation of this strategy in Indonesia still needs to be improved.

The selection of investment diversification into renewable energy projects in Indonesia is still minimal because it is influenced by several factors, including the amount of infrastructure investment required and the need for certainty on the selling price (feed-in-tariff) from the government. The dependence on determining the feed-in tariff is also due to the government, in this case, the State Electricity Company (PLN), having to monopolize the selling price of electricity.

C.4. Public-Private Partnerships (PPP)

Public-private model strategy *partnerships* (PPP) are companies seeking to collaborate with governments to increase competitiveness and access to new markets. However, this strategy has yet to be found in articles that state this in the case of Indonesia. However, this strategy has been implemented in Russia, Azerbaijan, and China.

In the PPP strategy, a division of tasks can be carried out. Namely, oil and gas companies provide capital and resources for projects. At the same time, the government is responsible for providing regulation and support. By adopting this PPP model, the third strategy regarding investment diversification into renewable energy projects by oil and gas companies will be more accommodated. In addition, PPP can also be used to increase efficiency and effectiveness in providing oil and gas projects, reducing the risk of oil price volatility. Private companies with experience in project management can provide more efficient and effective solutions than the government alone, which can reduce the risk of oil price volatility.

However, PPP also risks conflict of interest and lack of transparency in fund management. Therefore, the government must ensure that the PPP

contracts signed meet high standards of transparency and accountability. The strategy for oil and gas companies to choose the PPP model has yet to be found in Indonesia because this strategy cannot be taken by oil and gas companies alone. However, there must be an agreement with the government that this PPP strategy is also the government's strategy to overcome the uncertainty of oil and gas prices.

III.2. Strategy Government

The following strategy is the strategy from the government side. When facing uncertainty in world oil and gas prices, the two actors most affected are the oil and gas companies and the local government. The Indonesian government's strategy is also inseparable from the role of oil and gas companies. Some of the strategies rolled out are expected to increase the productivity of oil and gas companies operating in Indonesia.

The findings show that the government has implemented several strategies to support the oil and gas sector, including fiscal incentives, investment in infrastructure, deregulation, and encouraging the use of renewable energy.

G.1. Fiscal incentives

The fiscal incentive strategy is the government providing financial incentives such as tax breaks and subsidies to oil and gas companies to help them overcome the economic downturn due to uncertainty in world oil prices. Based on Table 2, almost every year, some articles discuss fiscal incentives given to oil and gas companies. This strategy was also followed by many other countries, including the USA, Russia, Australia, Croatia, China, India, Malaysia, Papua New Guinea, Kuwait, Saudi Arabia, Qatar and Nigeria.

The Indonesian government's strategy of providing fiscal incentives is in line with the strategy of oil and gas companies to increase profits and reduce operational costs. Tax breaks and subsidies from the government can reduce operational expenses for oil and gas companies so that company profitability increases and oil and gas companies can continue to invest in this oil and gas sector. The fiscal incentives aim to support the stability of the oil and gas sector and ensure that oil and gas companies can continue to operate and invest in this sector, even though the uncertainty in world oil prices is always haunting.

G.2. Infrastructure investment

The infrastructure investment strategy is for the government to invest in infrastructure to support the oil and gas sector, such as building new pipelines and upgrading existing infrastructure. Articles discussing infrastructure investment strategies in Indonesia are found almost every year. Apart from that, this strategy is also carried out by the governments of other countries, namely Guyana, Ghana, North Dakota, and Nigeria.

This infrastructure development is essential to increase the efficiency and competitiveness of the oil and gas sector. Several investments in infrastructure that support the oil and gas sector include the construction of pipelines, ports and storage facilities. This can reduce the cost of transporting and storing oil and gas and make it easier for companies to access these resources. In addition, this infrastructure development can help companies improve system security and reliability. For example, constructing oil and gas pipelines can reduce the risk of oil spills and other environmental hazards. At the same time, the creation of storage facilities can increase the safety of oil and gas stocks.

G.3. Deregulation

The deregulation strategy is for the government to reduce bureaucratic obstacles and simplify regulations to make it easier for oil and gas companies to operate. Five articles discuss the Indonesian government's strategy regarding deregulation from 2020 to 2022. Meanwhile, other countries that are implementing the same strategy are Canada and Brazil.

The government's deregulation strategy aims to reduce bureaucratic obstacles and simplify regulations for oil and gas companies, increasing the sector's efficiency and competitiveness. For example, the government could simplify the licensing process for oil and gas exploration and production. This can reduce the time and costs associated with obtaining the necessary approvals and make it easier for oil and gas companies to start operations immediately. In addition, reducing bureaucratic obstacles and simplifying regulations can also increase the security and reliability of the sector. For example, simplifying regulations can reduce the risk of a company operating in a manner inconsistent with international standards, thereby reducing the risk of environmental and safety incidents. With this deregulation strategy, the

government aims to increase the efficiency and competitiveness of the oil and gas sector and to ensure that oil and gas companies can operate and invest even in uncertain oil market conditions.

G.4. Encouraging Renewable Energy

The strategy for promoting renewable energy is that the government seeks to promote renewable energy as an alternative energy source to reduce dependence on oil and gas. One article discusses the Indonesian government's strategy to encourage oil and gas companies to use renewable energy sources. This strategy has also been implemented in the USA and Spain.

This strategy aims to reduce dependence on oil and other fossil fuels and promote cleaner and more sustainable energy sources. By reducing dependence on oil, governments can reduce the economy's exposure to uncertainties in world oil markets and promote a more sustainable energy mix. This strategy correlates with the government's first strategy (G-1) regarding fiscal incentives and the strategy of oil and gas companies regarding investment diversification plans in the renewable energy sector (C-3). For example, the government offers fiscal incentives such as tax breaks and subsidies to encourage the development of renewable energy projects. This can reduce these projects' development and operating costs and make them more attractive to investors and companies.

In addition, encouraging the use of renewable energy can also increase energy security and reliability. For example, promoting wind and solar energy can reduce the risk of supply disruptions and price spikes, which are often associated with oil and other fossil fuels. The government's strategy for promoting renewable energy use aims to reduce dependence on oil and other fossil fuels and promote a more sustainable and reliable energy mix.

III.3. Limitations of Findings

The findings related to the strategies undertaken by oil and gas companies and the government, particularly the Indonesian government, may vary. The findings focused on the Indonesian government and oil and gas companies operating in Indonesia. The mention of strategies that exist outside the country of Indonesia is only a confirmation of what is being done in Indonesia. This shows that this strategy has been empirically carried out in several countries.

In addition, these findings only sometimes convey that the best strategy that the government and oil and gas companies should adopt is the same as the findings. The findings based on this literature only show empirical evidence that this strategy has been implemented. However, they need to provide information that this strategy is the best or the worst. Although from several articles reviewed, some say that one strategy has negative results. This shows that each of the findings in this article cannot be claimed as a strategy that must be implemented. It is essential to understand the condition of the operating oil and gas companies and the condition of the government in the local area in determining the choice of strategy in dealing with the uncertainty of oil prices.

Nonetheless, these findings can be used as a source of reference for conducting hypotheses regarding policies to be taken by oil and gas companies and the Indonesian government both at the central and regional levels. However, the hypotheses taken from this article still need to be tested empirically in the field according to the situation and conditions in the region.

IV. Conclusion

The conclusion drawn from the results of a literature study related to these various strategies is that the common goal of oil and gas companies and the Indonesian government is to increase competitiveness and efficiency in the oil and gas sector while reducing its dependence on oil and promoting a more sustainable energy mix in the face of uncertainties in world oil. The strategies found to achieve this are companies cutting costs, implementing digitization, diversifying into renewable energy projects, and partnering with the government through the PPP model. Meanwhile, the government provides fiscal incentives and infrastructure investment that supports the oil and gas sector, deregulates the oil and gas sector and encourages using renewable energy as an alternative energy source. This joint strategy of oil and gas companies and the Indonesian government aims to ensure the long-term viability and reliability of Indonesia's oil and gas sector while promoting a cleaner and more sustainable renewable energy future.

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