

## Energy Infrastructure of Oil and Gas Industries in Indonesia case; a SWOT Analysis

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### Abstract

In the past, oil and gas is one of superior industries in Indonesia, as the main source of foreign exchanges to support economic development. National revenue and expenditure heavily relied on selling price of oil in international market. Indonesia, as a member of OPEC, also uses oil as one of the powerful political tools. But now, the situation is changed significantly. Indonesia has changing from oil exporter to oil importer even resign as a member of OPEC. The situation also worsens, when the amount of oil reserves is declined but oil demand is increased markedly. The high consumption of oil and gas is determined by the increasing urbanization rate and petrol-powered automobiles. And also excessive and inefficient exploitation, making Indonesia faces with oil reserve problems.

Moreover, oil and gas contributes for 60 per cent of the total energy. To fulfill domestic demand, Indonesia imports oil from other countries especially from Middle East countries. It seems in the future, if there is no finding of oil and gas resources and no changing on local consumer's behavior, Indonesia will face the energy crisis. Regarding to find new oil resources, this is also creates economic opportunity in term of oil projects such as oil exploration, oil refinery, and oil pipelines. Since oil project needs huge of investment, Public Private Partnership (PPP) mechanism is useful for funding the project, of course, after some modifications. PPP mechanism is needed to develop energy infrastructure.

Since new Oil and Gas Law No. 22/2001 also changing the government's power over the petroleum sector and allows for open competition in downstream oil and gas distributing and marketing area. The role of Pertamina, state owned company, is replaced by two agencies; BP Migas and BPH Migas. This paper will try to look the role of oil and gas industries in Indonesia case. It will also look at financial mechanisms, problems, limitations and challenges. In the end, the paper will have some conclusions and recommendation for oil and gas industry in term of the development of energy infrastructure based on SWOT Analysis.

### A. Introduction

In Kompas, 13th April 2011, Minister of Energy and Mineral Resources (MEMR) stated that energy storage supplied by fossil fuel is predicted to persist only for the next 23 years, while natural gas and coal can serve for 63 years and 77 years respectively, caused by inefficient exploitation. Surprisingly, this statement does not have any

effects for those who consume more oil and gas in their daily life. Since electricity and transportation sector are the biggest consumer of oil and gas, but generally there is no reflection if we will consume oil and gas efficiently. As we can see, private car with only one passenger, motorcycles, and other petrol-powered vehicles jammed in the road. For economic congestion point of views, we can calculate how many thousand liters wasted everyday? How much is the cost of congestion?

From the minister point of view, there is mismanagement in oil and gas industry in Indonesia for some extent. The government as decision maker has been over confident with oil and gas reserves. They feel that oil and gas is long lasting reserve. The government of Indonesia is confident enough with hundreds of oil basin what we have and exploited oil and gas excessively, without any careful consideration. As result, oil production is rapid declining that is turning it from oil exporter to oil importer. This situation reaches the peak when Indonesia pulls out as a member of OPEC in 2008.

The economic development makes Indonesia people wealthier than ever. Now, the society can buy new cars, motorcycles, or any others motorized vehicles. Lower and middle income class is easily to have credit to buy petrol-powered vehicles, for example, in motorcycle credit, only needs photocopied ID card and down payments less than one million rupiah. The laziness of government to develop public transportation makes the situation worsen. More and more new motorized vehicles come to the roads, make the consumption of fossil fuels is increased significantly.

This paper is not talking about either economic congestion or oil and gas consumer behaviour, but focusing on how the government manages their oil and gas industry. Huge investment and limitation of the government budget needs participatory of private sector in term of PPP mechanism. Oil and gas mining or the extraction projects are vital project that have big contribution to economic development. But, since the nature of the oil and gas project is profitable and high demand, most of private company desire to put their money in this project. Of course, most of them usually are big player.

There are four objectives in this paper.

- 1) What is general picture of oil and gas industry in Indonesia?
- 2) What is framework for oil and gas industry in Indonesia?
- 3) How investment opportunities for private sectors?
- 4) What are the strategies for oil and gas industry?

#### B. The Petroleum Geology of Indonesia

Analyzing carefully geological data is very important. The cost of extraction and the nature of the equipment needed in oil and gas project are determined by geological conditions. In extractive PPP project, the very important step is analyzing data about reserves (Delmon, 2009). In this step, geologist plays important role. Since there are any limitation in determining of reserves, so the result is not exact and risky. For this reason making repayment period of debt in oil and gas project is shorter than the other infrastructure projects.

To begin with, the conditions of Indonesia has been strongly influenced its geography and geology with interplay between climate, rainfall, volcanic activity. The shapes of agriculture and settlement patterns are determined by these three factors. For instance, Java and Bali, which have volcanic soil, are the centre of culture and population, almost 60 per cent of the population live in these islands. Sir Alfred Russell Wallace, his famous with Wallace line, divided Indonesia Island became two regions, western Indonesia and eastern Indonesia. These two regions completely have different geological condition.



Source: Richard Netherwood

Western part of Indonesia represent tectonically disrupted of southeast Asia Plate (Sunda land) while eastern part of Indonesia as part of Australian Plate and also there is small plate of Philippines above Sulawesi Islands. These three plates are collided each other, so Indonesia is one of dynamic regions. This geological condition makes the pattern of hydrocarbon exploration and exploitation is differs across the archipelago.

As we can see from figure 1, most of the sedimentary basins in Indonesia are tertiary basins; only few of them are pre-tertiary basins. It's mean the age of basin less than 60 million year. There are 60 basins in Indonesia (new release from MEMR is more than 60), 38 of basins located in eastern part of Indonesia, and the rest are located in western part. However, western basins are more productive than eastern basins because the western Indonesia basins are considered to be mature with respect to exploration. Beside that, many of eastern Indonesia basins are undrilled since there are logistic difficulties and high cost associated with the exploration in wilderness and sparsely area with no or little infrastructure and also deep water. Among the western basins, the productive basins are North Sumatera, Central Sumatera, South Sumatera,

Sunda-Asri, Northwest Java, East Java, Barito, Kutai, Tarakan, and Natuna. From Eastern Basins, only Sawalati Basin is considered to be mature.

The development of infrastructure in eastern Indonesia will encourage oil and gas exploration in those area. It is projected oil and gas industry will be moved from western Indonesia if the resources depleted. Papua Island is considered as the prospective area which mostly oil basin located.

Indonesia has total oil resources about 71.52 billion barrel and about 7.99 billion barrel of oil reserves. With production about 346 million barrel, the ratio of CP is 23. Indonesia has natural gas resources of 334.5 TSCF and 159.63 TSCF is reserves. Indonesia's largest producers in 2006 (in order) were Total, Pertamina, ConocoPhillips, ExxonMobil, VICO, BP, Petrochina, and Chevron, all of which operate under production sharing contracts and account for 90 percent of the country's total production. The important resource beside oil and gas with same characteristic is coal bed methan with total reserve about 453 TSCF. (MEMR, 2009)

### C. Policy, Regulatory and Institutional framework

The framework of a credible infrastructure for effective implementation shall comprise a policy framework, regulatory framework and institutional framework.

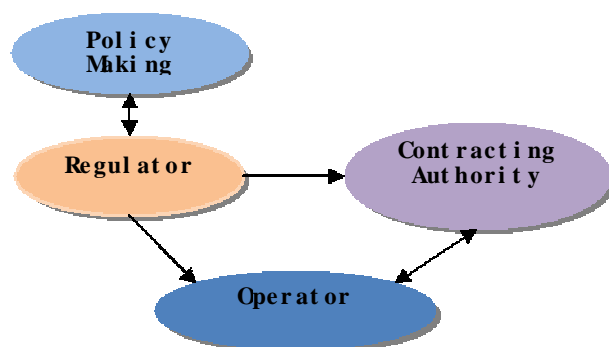
#### 1. Policy Framework

The development of oil and gas industry as backbone of national energy sector should have priority in term of law enforcement and law certainty. Because of that, Indonesia has bad experience when only 1 per cent of the world budget for explorations comes to Indonesia. Of course, this situation is not good for our economic development. So, Indonesia should have good policy to attract investor come to Indonesia.

In term of policy framework, there is some weakness in oil and gas industry. Firstly, there are double function in Pertamina (oil state owned enterprise), as player and regulator. Fortunately, in new law oil and gas is solved. Secondly, weak leadership. Since the oil and gas industry needs people who have good vision to anticipate the change and adjust to it. Lastly, the big challenge is cross sector policy. There is mismatch among sectors, for example, new forestry law prohibited to make exploration in protected areas and also constraints from environmental sectors.

## 2. Regulatory Framework

Lecture note from Prof. Bambang B.S (2011) stated "The ideal institutional arrangement for infrastructure provision is where the policy-making and strategy development (including coordination), regulator, contracting and operator (provision of infrastructure and services) role is each performed by a different institution".



In oil and gas sector, the important stakeholders are Ministry of Energy and Mineral Resources (General Director of Oil and Gas), Pertamina (oil) and PGN (gas), and Private companies as operator.

To begin with, look at the Indonesian Constitution, article 33 as follow.

"All natural resources in the soil and the waters of the country are under the jurisdiction of the State and shall be used for the greatest benefit and welfare of the People".

From this article, the constitution gives mandate for government to manage natural resources and use it for welfare of the people. To do this, Indonesia government make law and establish some institutions to manage oil and gas resources.

In the previous Oil and Gas Law No. 8 of 1971, Pertamina plays important role. The process of oil development began when Pertamina announcing the prospect area to be mined and making acreage preparation. After that, private companies give proposal to Pertamina as holder of oil mining right and Pertamina choose the best one. But, to determine the successful bidder is the right of President of Republic of Indonesia. When the bidder selected, the contract is signed as the authority of Pertamina. Pertamina also has responsible to manage and supervise of contract. The total taxes of this scheme are 60 per cent.

The latest Oil and Gas No. 22 of 2001 has different scheme. The initial process, acreage preparation and determining the successful bidder, is the right of Ministry of Energy and Mineral resources and the project is announced by Minister of Energy and Mineral Resources. Contract signing and management & supervision of contract is right of BPMIGAS. Mining right is belonging to government. The taxes are divided into taxes, import duties, levies on import and excise, regional taxes and retributions.

To manage and supervise oil and gas industry, there are four government regulations; Government regulation No.42 of 2002 about upstream activities (exploration) as operational law of BP Migas, Government regulation No. 67 of 2002 about downstream activities as operational law of BPH Migas, Government regulation No. 37 of 1994 about owned state gas company or Perusahaan Gas Negara (PGN), and Government regulation No. 37 of 2003 about owned state oil company or Perusahaan Tambang Minyak Negara (PERTAMINA). The authority of Ministry of Energy and Mineral Resources (MEMR) is regulated by Laws No.22 of 2001, No. 30 of 2008, and No. 30 of 2009.

### 3. Institutional Framework

In October 23, 2001, the House of People Representative (Dewan Perwakilan Rakyat – DPR) passed the oil and gas bill into law, famous as No. 22/2001. The new law replaced Oil and Gas Law No. 44/1960 and Law No. 8/1971. This law reduces the government's power over the petroleum sector and allows for open competition in downstream oil and gas distributing and marketing area.

Based on this law, government established two agency; implementation agency of oil and gas (Badan Pelaksana MIGAS – BP MIGAS) and regulatory agency of oil and gas (Badan Pengelola Hilir Migas –BPH MIGAS). These two agencies has replaced Pertamina in managing Production Sharing Contract (PSC) with private oil and gas companies. The purpose of the regulation is to eliminating the conflict of interest between Pertamina and its competitor and removing Pertamina monopoly in the downstream sector. Now, Pertamina became Limited Liability Company or PT. Pertamina.

#### BP Migas

Government Regulation No 42/2002 is signed by President Megawati on July 16, 2002, establishing an implementing agency for oil and gas upstream operations, Badan Pelaksana Kegiatan Usaha Hulu Minyak dan Gas Bumi (BP Migas), as mandatory of new Oil and Gas Law No. 22 of 2001. This agency has taken over Pertamina's regulatory functions and responsibilities in managing oil and gas contractors.

BP Migas has main responsibilities are to:

- 1) Provide recommendations to the Minister in preparing and offering work areas and cooperation contracts.
- 2) Sign cooperation contracts.
- 3) Control upstream business operations, and
- 4) Appoint sellers of the government's share of oil and gas.



From mid-2002, BP Migas has replacing Pertamina to manage upstream regulatory activities. As a non-profit state legal entity, BP Migas acts on behalf of the government as party to the cooperation contract with business entities. At the same time it also controls upstream oil and gas business operations. BP Migas is led by a chairman and vice chairman, assisted by five expert staff and four main operational divisions— planning, operations, finance and marketing, and general affairs. The chairman is appointed by the President, based on the recommendation of the Minister of Energy and Mineral Resources after approval by the House of Representatives (DPR). The Chairman must periodically report to the President (every six months or as requested), via the Minister of Energy and Mineral Resources. The agency must also report and give copies of signed Production Sharing Contracts to the DPR.

#### BPH Migas

Based on Government Regulation No. 67 of 2002 is signed by President Megawati on December 30, 2002 a new downstream regulatory body, the Badan Pengatur Hilir Minyak dan Gas Bumi (BPH Migas), which replaced the role of Pertamina in controlling downstream activities. BPH Migas was given the responsibility to regulate, develop and supervise the downstream industry.

BPH Migas' broad responsibilities are to:

- 1) Regulate and determine the supply and distribution of oil-based fuel;
- 2) Regulate the transmission and distribution of natural gas;
- 3) Allocate fuel to meet national fuel oil reserve goals;
- 4) Plan the use of oil and gas transportation and storage facilities;
- 5) Set gas pipeline tariffs;
- 6) Set natural gas prices for household and small consumers;
- 7) Recommend pipeline levies; and
- 8) Set the price of pipeline rights.

Acting on behalf of government, BPH Migas has the regulatory and development responsibilities to: 1) issue business licenses; 2) determine fuel types and standards for retail sale; 3) formulate strategic reserves policies; 4) determine price formulas for subsidized fuel; 5) protect occupational health and safety; 6) ensure environmental protection; and 7) promote community development. The agency is also charged with developing the master plan for national gas transmission and distribution. It also ensures the availability and distribution of fuel oil, and monitors reserves, market share and trading volumes.

BPH Migas is a smaller agency than its upstream counterpart, BP Migas. BPH Migas consists of a committee of nine (one Chairman and eight members). The Minister of Energy and Mineral Resources give recommendation and after approval by the House of Representatives (DPR), committee members are appointed by the President, The Chairman must periodically report to the President (every six months or as requested), via the Minister of Energy and Mineral Resources.

#### D. Investment Opportunities

New Oil and Gas Law No. 22 Of 2001 divides exploration and production of oil and gas into "upstream" and "downstream" activities. Upstream activities cover exploration and production, while downstream covers post-production activities such as refining, transport, storage, sales and trading. There are investment opportunities both upstream and downstream activities.

For upstream activities, the investment opportunities are high since Indonesia has declining oil production. From the data, Indonesia still has opportunity to boost oil production because still have 22 "undrilled" basin. But, the challenge is most of them located in deep sea. This business opportunity attracts people to invest in this sector. The government has target to produces 1 million barrel of oil per day. Since that the opportunity business for explorations investments is relatively high.

For downstream activities, to fulfill oil demand for domestic market needs huge investment such as tank of storage, transmission and distribution especially. Government tries to maximize the use of natural gas and reduce the use of oil. For that reasons, private investment is needed since distribution area of natural gas is very large.

Since the Indonesia government has given high priority to development of natural gas as an important source of energy. They are focusing on the development of supply source, transmission and distribution infrastructure.

#### 1. Agreement and Contract Scheme for Upstream Activities

Indonesia has two categories of agreements and contracts for the petroleum industry. The first category refers to the bundle of rights and obligations granted to an investor to invest in cooperation with the government in oil and gas exploration and exploitation. These types of contracts are the Production Sharing Contract (PSC), the Technical Assistance Contract (TAC), and the Enhanced Oil Recovery (EOR) contract, defined as follows (Petroleum Report Indonesia, 2008):

##### Production Sharing Contracts

- A cooperation contract for oil and gas exploration between BP Migas and a private investor (which includes foreign and domestic companies, as well as PT Pertamina);
- BP Migas is the supervisor or manager of the PSC;
- Investors are participating interest holders and contractors;
- The government take is under a production sharing arrangement whereby the GOI and the contractors take a split of the production measured in revenue based on PSC-agreed percentages;
- Operating costs are recovered from production through contractor cost formulas as defined by the PSC;

- The contractor has the right to take and separately dispose of its share of oil and gas;
- Title of the hydrocarbons passes to the contractor at the export or delivery point.

#### Technical Assistance Contracts

- Variation of a cooperation contract, or PSC;
- Typically used for established producing areas and therefore usually covers exploitation only;
- BP Migas is the supervisor or manager of the TAC;
- Operating costs are recovered from production;
- The Contractor does not typically share in production;
- The TAC can cover both exploitation and exploration if it involves an area where the GOI has encouraged exploration;
- In accord with Oil and Gas Law 22/2001, existing TACs will not be extended.

#### Enhanced Oil Recovery

- Variation of a cooperation contract, or PSC;
- Used for established producing fields with the intent of applying advanced technology to increase the recovery of hydrocarbons in the reservoirs;
- Pertamina is usually a participant, along with investors; collectively they are the Contractor;
- BP Migas is the supervisor and manager of the EOR;
- Operating costs are recovered from production and typically capped at a percentage. In some cases, the incremental oil lifted from an EOR operation may be shared on a production sharing basis;

In many cases, the EOR may also include provisions concerning how the parties will conduct petroleum operations.

## 2. Agreement and Contract Scheme for Downstream Activities

In addition to contracts that give bundles of rights to explore and exploit, the participants in the PSC, TAC or EOR may also enter into separate agreements to discuss how they are going to conduct petroleum operations. These are known as Joint Operating Agreements (JOA) and Joint Operating Bodies (JOB), defined as follows:

### Joint Operating Agreements

- A separate agreement in addition to the cooperation contract;
- Governs the relations of the participating interest holders, defining their rights and obligations, and describing the procedures the Contractors will abide by;
- The JOA typically includes: 1) the scope of operations; 2) designation, rights and obligations of the operator; 3) establishment of an Operating Committee; 4) production disposition; 5) relinquishment, withdrawal and assignment; 6) confidentiality; 7) force majeure; and 8) dispute resolution and choice of law.

### Joint Operating Bodies

- Typically part of the JOA;
- Governs the operations on behalf of the participating interest holders by establishing a non-legal entity, the JOB, to conduct petroleum operations;
- Representatives of the participating interest parties appoint representatives to the JOB;
- The JOB prepares an operating work program and budgets and carries out operations pursuant to the JOB agreement and the cooperation contract;
- Participating interest holders remain the Contractors;
- JOAs are supervised by BP Migas.

## E. Swot Analysis

To develop strategic planning for oil and gas, it is very important to scan of internal and external environment. This method usually used for to analyze the firm, but this time, SWOT Analysis used for analyzes the bigger one, energy sector. The internal environment factors to the firm can be classified as strengths (S) and weakness (W) and the external environment factors to the firm can be classified as opportunities (O) and threats (T), because of that this method call as SWOT analysis. (<http://www.quickmba.com/SWOT>)

### 1. SWOT Analysis Framework

#### 1.1 Internal Analysis

##### Strengths

The strengths are its resources and capabilities that can be used as a basis for developing a competitive advantage. Examples of such strengths include:

- patents
- strong brand names
- good reputation among customers
- cost advantages from proprietary know-how
- exclusive access to high grade natural resources
- favorable access to distribution networks

##### Weaknesses

The absence of certain strengths may be viewed as a weakness. For example, each of the following may be considered weaknesses:

- lack of patent protection
- a weak brand name
- poor reputation among customers
- high cost structure
- lack of access to the best natural resources

- lack of access to key distribution channels

In some cases, a weakness may be the flip side of a strength. Take the case in which a firm has a large amount of manufacturing capacity. While this capacity may be considered a strength that competitors do not share, it also may be considered a weakness if the large investment in manufacturing capacity prevents the firm from reacting quickly to changes in the strategic environment.

### Opportunities

The external environmental analysis may reveal certain new opportunities for profit and growth. Some examples of such opportunities include:

- an unfulfilled customer need
- arrival of new technologies
- loosening of regulations
- removal of international trade barriers

## 1.2 External Analysis

### Threats

Changes in the external environmental also may present threats to the firm. Some examples of such threats include:

- shifts in consumer tastes away from the firm's products
- emergence of substitute products
- new regulations
- increased trade barriers

## 2. The SWOT Matrix

The firm should not necessarily pursue the more lucrative opportunities. Rather, it may have a better chance at developing a competitive advantage by identifying a fit between the firm's strengths and upcoming opportunities. In some cases, the firm can overcome a weakness in order to prepare itself to pursue a compelling opportunity.

To develop strategies that take into account the SWOT profile, a matrix of these factors can be constructed. The SWOT matrix (also known as a TOWS Matrix) is shown below:

SWOT /TOWS Matrix

|               |                |                |
|---------------|----------------|----------------|
|               | Strengths      | Weaknesses     |
| Opportunities | S-O strategies | W-O strategies |
| Threats       | S-T strategies | W-T strategies |

- S-O strategies pursue opportunities that are a good fit to the company's strengths.
- W-O strategies overcome weaknesses to pursue opportunities.
- S-T strategies identify ways that the firm can use its strengths to reduce its vulnerability to external threats.
- W-T strategies establish a defensive plan to prevent the firm's weaknesses from making it highly susceptible to external threats.

### 3. SWOT Analysis for Energy Sector in Indonesia

#### Strengths

Developing economy: The oil demand will follow the economic growth of the country. Recently, GDP of Indonesia is predicted to grow at 6 per cent from 2010 to 2011, the industry would have benefit from this. For instance, oil demand is increasing from 37.75 per cent of total energy in 2008 to 40.27 percent in 2009. In addition, gas demand is increasing from 15.71 per cent in 2008 to 17.95 per cent in 2009. For long term, these demands tend to increases. The growing national economy will lead to increased energy consumption and purchasing power of the people, eventually will attract private investment in the energy industry.



Regulatory framework: Since there are two agencies, BP Migas and BPH Migas, that replaced the functions of Pertamina, oil and gas market is fair and free competition.

Government decision: To guarantee supply sources of oil and gas, BP Migas try hard to find new oil source, of course, this effort will success if there is collaboration with other sectors.

#### Weakness

Crude Price: 40 percent of total energy Indonesia is oil and almost 18 percent of energy comes from natural gas. Some of the requirement of crude oil is fulfilled by import, and the price of crude oil is fluctuated or even tending to increase about 100 dollar per barrel.

Lack of freedom: Production sharing contract would not sell to the buyer by freely negotiated prices. In the future, this regulation should be revised because reducing the margin of profit.

Lack of infrastructure: Especially for eastern part of Indonesia, for example, Papua with less developed infrastructure that making the budget oil and gas exploration is increased since the difficulties to move the large equipment for drilling.

Continuity of Supply: Since the oil production is tend to decreasing, perhaps in the future, Indonesia will have problem on the continuity of oil and gas supply.

Disparity of economic growth: Indonesia is large region but unfortunately, there is disparity of economic growth among regions. For example, western part of Indonesia is more developed than eastern part.

## Opportunities

Upstream opportunities: Among 60 oil basins, 38 have data exploration, and the rest is still need exploration.

Variety of energy: Indonesia has a variety of energy sources comprising oil and gas, coal, geothermal and other renewable energy sources.

Natural gas: the natural gas reserve is increasing since there is new finding of gas. Even, with the development of technology, it is predicted gas will replace oil as transportation fuel.

Alternative energy: since the price of oil is high and environmental concerns caused renewed the appeal of alternative energy forms.

Energy efficiency: Energy efficiency will be increasingly targeted in the future.

Market share: National and international market share increasingly open.

## Threats

Competition: Petronas, as imitation of Pertamina, has growing as main provider of energy in Malaysia with 30 per cent of total energy. Pertamina only provide 7 per cent of energy for Indonesia. The competition also is driven by declining reserves and production from existing fields that driving the leading oil and gas companies to formulate new strategies and technologies to acquire reserves and grow production.

Continuing government interference: this situation makes investment climate is not yet conducive and instability market.

Energy price: Current structure of energy price does not support energy conservation and diversification. Oil price is cheaper than other energies. For those companies that

developing renewable energy should have subsidies from government. The fluctuation of price of fossil energy is also making situation worsen. And also, high and increasing oil prices, their underlying causes and their effect on the major oil and gas companies.

Price disparity: The price of fossil energy is cheaper in domestic market than international market even for ASEAN countries. No wonder if there is smuggling oil to other countries.

Asian demand: Rapidly population growth and strong economic growth is forecast to drive energy demand in the Asian countries to increase 57% by 2025.

Production stability: Production is moving away from declining mature fields in Western countries, to politically unstable sensitive countries increasing the chances of disruptions increase and could contribute to higher oil prices in the future.

#### SWOT Matrix Strategies

| Strategy      | Strength   | Weakness  |
|---------------|--|---|
| Opportunities | <ul style="list-style-type: none"> <li>(i) Ensure economic efficiency in the utilization of existing resources and future investments.</li> <li>(ii) Give subsidies for those companies that develop alternative energy or reducing taxes.</li> <li>(iii) Mixing energy not only for electricity but also for transportation.</li> <li>(iv) Promote to attract investor to make exploration in Indonesia.</li> </ul> | <ul style="list-style-type: none"> <li>(i) Stop import of crude oil by developing alternative energy, and focus to oil domestic market.</li> <li>(ii) Develop infrastructure in eastern part of Indonesia</li> <li>(iii) Protect the interest of consumers in relation to prices and other terms of supply, the continuity of supply, and the quality of oil and gas supply services provided.</li> </ul> |
| Threat        | <ul style="list-style-type: none"> <li>(i) Improve the performance of Pertamina, so it can compete</li> </ul>  | <ul style="list-style-type: none"> <li>(i) Formulate new strategies and technologies to</li> </ul>  |

|  |  |  |
|--|--|--|
|  | <p>with foreign firms.</p> <p>(ii) Ensure transparency of price and resource costs.</p> <p>(iii) Minimize the political influence in oil and gas business.</p> | <p>acquire reserves and grow production.</p> <p>(ii) Ensure competition wherever feasible.</p> <p>(iii) Protect the public from dangers arising from the supply or use of oil and gas.</p> |
|--|--|--|

## F. Conclusions

The key challenges confronting Indonesia are decline in its production rate and reserve replacement rates in recent years. BP Migas, as a agency who have responsible for upstream activities should focus to exploring 22 basins. The challenge of this exploration is most of them located in deep sea and disparity of infrastructure in eastern part of Indonesia.

The government should develop alternative energy, in the future, perhaps only transportation use oil as fuels. The alternative energy such as Coal Bed Methane and Geothermal are potential to develop in the future. Especially for geothermal is very prospect because Indonesia is has the largest reserves.

The government should promote transmission and marketing of natural gas. The natural gas reserves tend to increase, and should focus to local market.

The extraction project is high risk project. Management of risk is one obligation in oil and gas industry. To minimize risk, government should make conducive investment to develop energy infrastructure.

To finance energy infrastructure projects, PPP method is useful but since extraction project is high risk, so it is crucial to make modification the application of PPP.

Expanding exploration not only in Indonesia but also to others countries is the key success to make continuity of oil and gas supply for domestic needs.

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