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Research paper

The Investors' Perspective on Investment Attractiveness of Oil and Gas Exploration Industry in Indonesia

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Abstract

As from the year 2011 to date, the oil and gas exploration (O&G) industry in Indonesia is not attractive anymore to the investors. It is clearly shown by all indicators of the O&G exploration performance in Indonesia which decline sharply causing the RRR (Reserves Replacement Ratio) is currently about 0.5. As the result the national O&G reserves and production decline as well. Starting the year 2004 Indonesia has become an oil nett impoter; the consumption is much bigger than the national production. This is threatening the availability of O&G energy source so that it can cause state instability. This study aims to conduct the assessment of the investors' perspective on the investment attractivenesss of O&G exploration industry in Indonesia, taking into account two main variables, i.e: the Government Regulation and Global Environment Variables using Analytical Hierarchy Process (AHP) method. The units of analysis are the O&G investors which means the shareholders. Meanwhile, observation units are the top management and the managers of O&G companies in Indonesia. Result of the study shows that Government Regulation Variable is the worse variable to accommodate the investors' expectation causing the low attractiveness of the O&G exploration industry in Indonesia. Surprisingly the influence of Global Environment variables, such as world crude oil price, is not significant compared to the Government Regulation. To increase the attractiveness of O&G exploration industry, Government of Indonesia should reform the existing regulation and increase government support for this industry to match the global environment which keeps changing.

Keywords: *government regulation, global environment, investment decision-making, oil and gas, Indonesia.*

1. Introduction

Oil and gas (O&G) is still the main source of the energy for Indonesia. Industry and households is very dependent from this sector as stated by Hall et.al. [1]
:"*energy has systemed a critical role throughout human society's demographic, economic and social development. Today, fossil fuel resources are among the most important global commodities. The prosperity and stability of modern society is inextricably linked to the production and consumption of energy, especially oil"*.
Unfortunately, since 2011 performance of O&G exploration in Indonesia starts declining marked by a worsening of the various indicators:

1. Decreasing in O&G exploration investment (Figure 1) and the numbers of exploration companies (Figure 2) as follows:

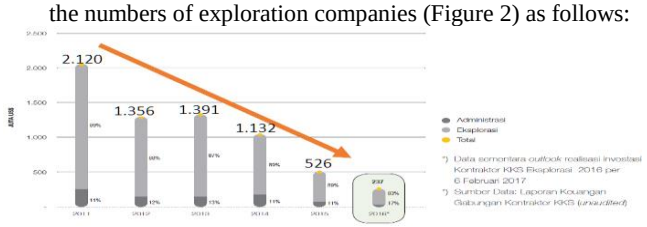


Fig. 1: Petroleum Exploration Investment Realization SKK Migas 2017 and Ditjen Migas 2017)

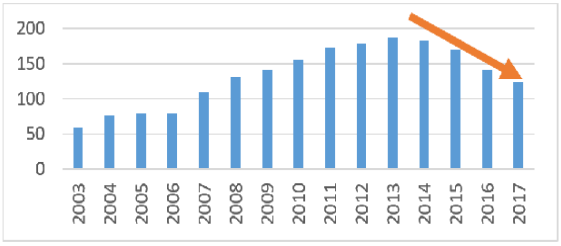


Fig.2: Number of Exploration Companies in Indonesia [2] [3]

2. Decreasing of potential investors participating in the tenders of O&G blocks offered by the Government of Indonesia. Within the year 2014-2017 almost no investors participating in the tenders [2].

'Reserves' are defined as 'Resources' that can be produced and has commercial value. Indonesia has huge amount of Resources but very small Reserves compared to others countries. To convert the Resources to become Reserves the exploration activities is required. The increase in Reserves and production depends greatly on the exploration activities. The more exploration, the more likely the occurrence of additions to Reserves.
According to the BP Statistical Review (2017), Indonesia's reserves decrease as time passes. In the year 1996 national Oil Proven Reserves is about 4.6 billion barrels but by the end of 2017 it is only 3.2 billion barrels and continues to decline. This is due to the RRR is only 0.5 indicating that the production is about two times bigger compared to the discovery of new Reserves. As the consequence the production is declining as well. Even worst, starting

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from the year 2004, the national consumption of oil has been much more bigger rather than the production. Since then Indonesia has become a net oil importer country [4].
For the financial sector within the years 2004-2006 the O&G production contributed over 20% of state revenue, but in 2016-2017 the contribution to the state revenue is only about 3%-4% (PWC, 2017). Although at this moment the O&G are no longer as the main contributor of the state revenue but still the O&G remain the most important commodities in Indonesia because most of all energy sources in Indonesia depends on O&G resource. Thus, a study to find out the investors perspective on the most important variables and indicators affecting the attractiveness of the investment in O&G exploration industry in Indonesia, is very important and urgent to execute.

2. Literature Review

According to Perlack [5] factors that have become barriers in the development and exploration of O&G include geologically prospects, infrastructure development, contracts and tax arrangements, and political risks. Broadman [6] in Solomon [7] explained that the investment determinant factors in the exploration of O&G business are geologic, economic, institutional, and political factors. Razak [8] recommended that to assess the investment in the exploration of O&G based on 3 factors: (1) Strategic factor having indicators of O&G prices, technology, existing infrastructure, synergy with existing operations, environmental considerations, geographical locations, alignments with company's goals, strategies, and objective, (2) Governmental factor having indicators of fiscal regimes and political risk, (3) Geological and financial factor having indicators of potential explorations and development cost and company short-term cash flow. Kaiser and Pulsipher [9] said that exploration and production activities in the O&G business cannot be explained only by geological factor, but also political, economic, technological factors, regionally and globally as a whole serves as factors preventing, encouraging, or inhibiting exploration and production activities in investment activity.
Furthermore, Stedman and Green [10] conducted the survey 'Policy Perception Index' (PPI) for the mining policy, especially on O&G in the world. The result shows that in the Oceania countries, the perception of investors against the government policy of Indonesia, having PPI score more or less 35% or 0.35, is the lowest compared to other countries in the zone. Government regulation of Indonesia is considered the most worse to accommodate the attractiveness of the investors.
Therefore, based on explanation above, this study explores the most two significant factors i.e.: Government Regulation and the Global Environment as the determination of the O&G exploration investment attractiveness in Indonesia from the perspective of investors.

3. Methodology

O&G industry in Indonesia is Government to Business deal. Regularly every year the Government of Indonesia invites the potential investors to participate the tender process to operate the O&G blocks offered by the government. Investors will decide whether to follow the tender or not. So, it is about decision making of the investors. They will perform the assesment of the offered block by studying gathering the internal and external informations (environmental scaning) and constructing long range plan (strategy formulation).

To know the hierarchy of variables that influence the investors in the decision-making, this study will use the Heirarchy Analytical Process (AHP) approaches. The reason for using this method is because the AHP can answer complex problem with number of aspects [11] [12].
The basic approaches of AHP are:

1. Decomposition: complex aspect is divided into parts in a hierarchy.
2. Comparative judment: between every alternative of the criterias.
3. Synthesizing the priorities

Figure 3 shows the basic model of the AHP concept:

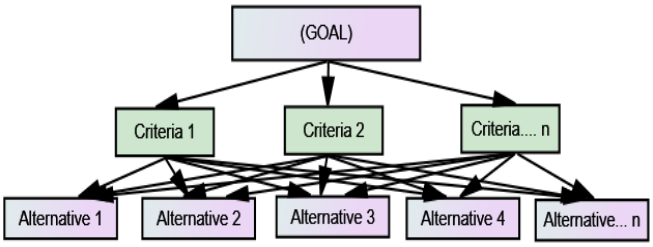


Fig.3: The concept of AHP Model (Saaty, 2008)

The method of AHP is a theory of measurement through the paired comparisons that rely on expert judgment to obtain a scale of priorities. Steps in the AHP are the following: defining problems and objectives, making the structure hierarchy, making constructs the matrix, and the last one is assessing measurement priorities [11]. The approach in this method is quantitative and descriptive approach.
Variable Government Regulation and Global Environment is extremely complex consisting of many indicators. AHP hierarchy can give the answers of variables and indicators that most influence in the investment attractiveness of O&G in Indonesia.
The Variable Government Regulation consists of four (4) major dimensions i.e.: (1) the dimensions of the Regulation that is all the main regulation relating to O&G exploration, (2) Contractual Dimension, namely the content of the contract between the Government of Indonesia and O&G companies, (3) Dimensions of O&G Block Tender offered (4) Political risks that exist today in Indonesia. In this study, the Global Environment variable Consists of a single variable.
By means of AHP Model, the analysis about scale of priorities will be conducted. Decision making can be derived from the collected information and be calculated using a mathematical approach [13]. Approach on important factors considered by investors in the decision making to invest or not in O&G exploration in Indonesia is the main goals to be examined. Government Regulation and Global Environment Variables and also the construct of the dimensions and attributes of the indicators will be reviewed in comparative values and priority scales.
The data is compiled from the face-to-face interview using structurized questionnaires of 25 respondents consist of 3 majority shareholders of O&G, 6 President Directors, 9 General Managers and 7 Managers of existing O&G companies in Indonesia so the expertise in that field is not in doubt.
AHP model of this study with main attributed indicators can be illustrated in Figure 4 below:

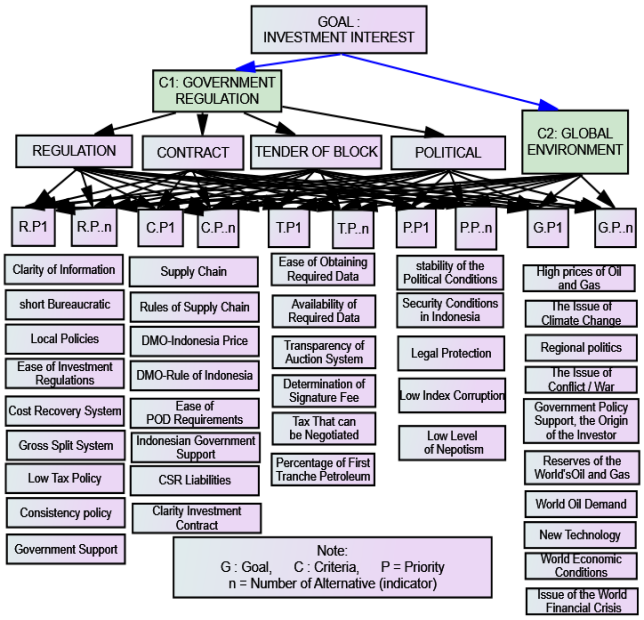


Fig. 4: AHP Model of the Research Study

4. Results and Discussion

Based on analysis results obtained by AHP method, Regulations and Political Risks dimensions are the the most dominant dimensions affecting the investors attractivenesss (Table 1). Investors argued that Government Regulation and the Political Risk are the top priorities that needs to be examined before investors decided to invest. Table 1 shows the Government Regulation dimension has weight average of 42.8% in influencing investors attractivenesss, Political Risks of 41.16%, Global Environment of 7.1%, and Contracts and tenders of block of 4.3% respectively.

Table 1: Results of AHP Approach

DIMENSION	WEIGHT AVERAGE
REGULATION	0,428
CONTRACT	0,043
TENDER OF BLOCK	0,043
POLITICAL	0,416
GLOBAL ENVIRONMENT	0,071
CR	0,010
CR < 0,1 = (Consistent measurement)	CONSISTENT

EFFECT ON INTEREST INVESTMENT

DOMINANT INDICATORS	WEIGHT AVERAGE	REGULATION	CONTRACT	TENDER OF BLOCK	POLITICAL	GLOBAL ENVIRONMENT	SUM
R2 (Short Bureaucratic)	0,076	3,23%	0,32%	0,32%	3,14%	0,54%	7,56%
R9 (Government Support)	0,211	9,03%	0,91%	0,91%	8,78%	1,50%	21,11%
C6 (Government Support In Dispute Settlement)	0,107	4,58%	0,46%	0,46%	4,45%	0,76%	10,71%
C8 (Clarity In Terms Of Contract)	0,123	5,27%	0,53%	0,53%	5,12%	0,87%	12,32%
T1 (Ease Of Obtaining Required Data)	0,123	5,27%	0,53%	0,53%	5,12%	0,87%	12,32%
T2 (Availability Of Required Data)	0,123	5,27%	0,53%	0,53%	5,12%	0,87%	12,32%
P2 (Security Conditions)	0,123	5,27%	0,53%	0,53%	5,12%	0,87%	12,32%
P3 (Clarity In Terms Of Legal Protection)	0,076	3,23%	0,32%	0,32%	3,14%	0,54%	7,56%
GE1 (High Global Oil And Gas Prices)	0,014	0,60%	0,06%	0,06%	0,59%	0,10%	1,41%
GE8 (Use Of New Technology)	0,024	1,01%	0,10%	0,10%	0,98%	0,17%	2,36%
SUM	1,000	42,75%	4,29%	4,29%	41,58%	7,09%	100,00%
CR	0,013						
CR < 0.1 = Consistent measurement	CONSISTENT						

Table 2: Application of Researched Indicators

DOMINANT INDICATORS	WEIGHT AVERAGE	PERFORMANCE VALUE (9 SCALE)	W.A * V.P	IMPLEMENTATION
R2 (Short Bureaucratic)	0,076	3,72	0,281053183	3,12%
R9 (Government Support)	0,211	4,92	1,038674363	11,54%
C6 (Government Support In Dispute Settlement)	0,107	4,32	0,462849772	5,14%
C8 (Clarity In Terms Of Contract)	0,123	6,52	0,803543154	8,93%
T1 (Ease Of Obtaining Required Data)	0,123	5,76	0,709878614	7,89%
T2 (Availability Of Required Data)	0,123	5,16	0,635932925	7,07%
P2 (Security Conditions)	0,123	5	0,616214075	6,85%
P3 (Clarity In Terms Of Legal Protection)	0,076	5,16	0,389847963	4,33%
GE1 (High Global Oil And Gas Prices)	0,014	5,08	0,07161297	0,80%
GE8 (Use Of New Technology)	0,024	6,68	0,157474391	1,75%
SUMMARY IMPLEMENTATION OF RESEARCH INDICATORS IN INDONESIA				57,41%

Indicators analysis indicates that Government Support is the most important indicator for investors which weight average of 21%, the Clarity of the Employment Contract, the Ease and Availability in obtaining the data, and the Security Conditions of the country affecting investor's attractiveness to invest of 12.32%, relatively Short Bureaucracy and Certainty in Legal Protection each is affecting to investor attractiveness to invest of 7.56%, used of new technology affects investment attractiveness of 2.36% and world oil prices of 1.41%.

The value of consistency of measurement (Consistency Ratio) based on AHP approach required is smaller than 0.1 proving that measurements conducted in this study is consistent, because the value of consistency of measurement (CR) of 0.013.

After comprehensing the importance of each indicator in O&G investment in Indonesia, the next step is to measure the indicator applications. The approach of AHP results showed that based on investors' perspective, the government of Indonesia was only able to meet the expectations of investors of 57.41% as shown in Table 2.

5. Conclusion

Government regulation and political risks are the worst dimensions among other dimensions. That means, according to the investors that the dimensions of Government Regulation and Political Risks do not satisfy the expectation of investors and so it is not attractive. While the attributes and indicators testing the results show that the government support is the most important priority indicator that makes the industry O&G do not attract to the investors. In the hierarchy of the other important factors are the clarity of the contract agreement, ease and avaibility data, condusivity of environment. These become the second important factors for investors. The government support in in the disputes/conflicts (in other word legal protection) becomes the third priority, and the last is the highly short bureaucracy. Surprisingly the global environtment of world oil prices have less effect compared to other attributes.

In general, the implementation of the indicators resulted by this study is only 57.41% only. This means that the expectations of investors could not be fulfilled by the government of Indonesia based on the indicators of this research. This result is a bit better compared to PPI (Policy Perception Index) score of Indonesia made by Stedman and Green [10] which is 35%.

Finally, it is recommended that the government of Indonesia has to focus in the reformation of Regulation and Policies to anticipate the investors' expectation because the global environment, such as world oil price, has less influence to the attractivenesss of investors.

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