

Indonesian Upstream Oil & Gas Governance for Sustainable Innovation

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ABSTRACT

Indonesian oil reserves and production are greatly influenced by investment. The focus of the study is to evaluate governance options to boost investment through appropriate fiscal regime and non-fiscal policies. The main aspect of the fiscal regime to increase investment is cost recovery. When cost recovery is still interpreted as a burden on state finances and there is still a stigma that contractors commit fraud in cost recovery, it is then a big challenge for oil and gas contractors to maximize investment and for regulator in giving approval on budget. Flexible Split and First Tranche Petroleum (FTP) are the 2nd highest priority to improve to accommodate dynamic situation on the oil industry such as oil price fluctuation and size of reserves. Incentives and windfall profit treatment are the other key issues on fiscal. Sufficient geological surveys and researches are crucial things to attract investment. The duration of a contract that is only 30 years is too short to maximize the contractors return because of lengthy period for exploration, construction and drillings prior production. Combination of *NOC dominated* and *Separation of Power* model seems to be the best governance model. Partnership between Pertamina and multi-national company will facilitate investment funding.

Keywords: Cost recovery, fiscal regime, flexible split, governance model.

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INTRODUCTION

Indonesian oil production started in 1965 with increasing trend until reached plateau production in 1976 and then stable until 1996 before declining. Indonesia has been a net oil importer since 2003 when national oil production was no longer able to meet the increasing consumption needs (Lubiantara, 2020). The continued decline in Indonesia's crude oil production shows the inability of proven oil reserves to meet production needs. The proven reserves (P1) are continuing to decrease due to the lack of additional new oil and gas reserves. The rate of replacing oil reserves that have been depleted due to production is known as Reserves Replacement Ratio (RRR). This is the main problem raised in this article in addition to other problems which are problems that lead to the main problem. The most important effort to increase production and reserves is through increasing investment realization. Oil and gas investment can be realized through existing contracts or by signing new contracts. This article will focus on governance efforts through fiscal regime and non-fiscal policies.

Low oil price pressures have caused upstream expenditure collapse, reaching a 30% to 40% overall reduction. Growth rates in upstream expenditure vary significantly by region, country and sector of activity. As for Indonesia, total Production Sharing Contract (PSC) Production expenditure which peaked in 2014 was \$ 19.2 billion, down by 43 percent in 2016 and then dropped to 45 percent in 2017 while the total PSC Exploration expenditure fell by 54% in 2014 and continued to decline by 85 percent in 2017 as can be seen on Figure 1 (Muin, 2019). By sector, exploration and development in 2016 were aggressively cut and remained around one third of the 2014 level for each activity. Even spending on production has shrunk by 38 percent. On the other hand, exploration companies suffer from a crisis of very low oil prices and most of them cannot fulfill their company's commitments. The total expenditure of this exploration company has fallen sharply by 85 percent in 2017. This figure shows a very critical situation for future upstream activities in Indonesia that requires immediate response from the government and its shareholders to provide a breakthrough solution through fiscal regime, non-fiscal policies and regulations.

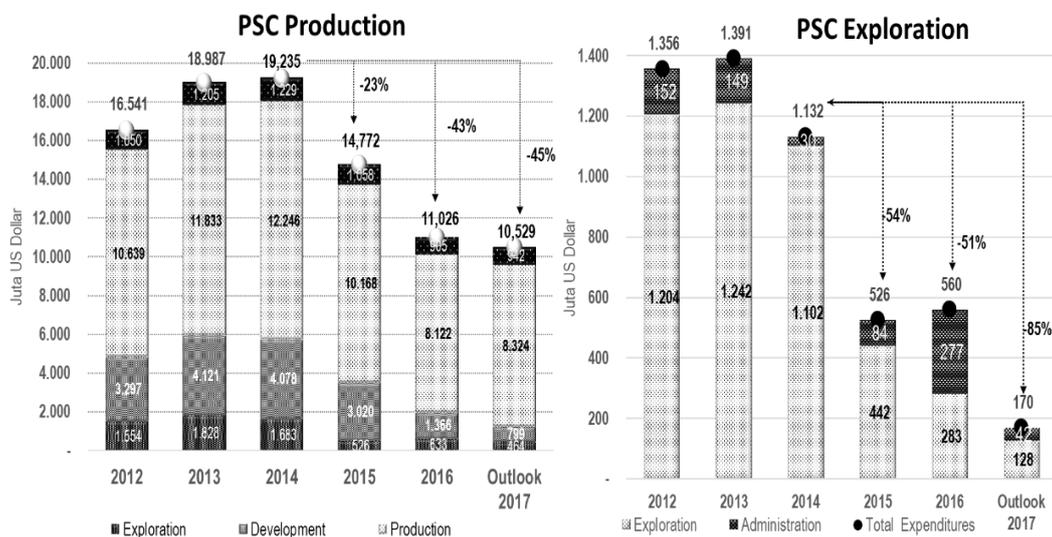


Figure 1. Investment Profiles for PSCs Production and PSCs Exploration (Muin, 2019)

Some of the most important governance policies to reform are related to fiscal regime and non fiscal policies. Efforts to increase the number of new contract signings and to increase investment in existing contracts can be implemented through attractive fiscal policies. Improving non fiscal policies will also increase Indonesia's credibility in the eyes of investors, thereby generating investor confidence to return to investing seriously and massively in the oil and gas sector in Indonesia.

This article will discuss important components in the fiscal regime and non fiscal aspect through synthesizing the combination of secondary data and primary data. Such synthesizing process is regarded as and *extended systematic literature review* (ESLR) method. The references from the existing literature on the fiscal and non fiscal component that have succeeded in increasing investment and in increasing the effectiveness and efficiency of management in the oil and gas sector will be integrated with primary data collected through in-depth interviews with stakeholders into a form of recommendations for the formulation of a fiscal regime and non-fiscal policy. The final recommendations are intended to improve investment climate.

Review of Literature

Some of the literature introduction will be described in this section even though the synthesizing process of the literature will be explained in the Results and Discussion section. Historically, the revenues of oil and gas companies in Indonesia have continued to increase in line with the upward trend in crude oil prices. Gross revenue increased 218 percent to \$ 54 billion in 2008 from just \$ 17 billion in 2002. This gross revenue peaked at \$ 61 billion in 2012 before fell in 2014 (Muin, 2019). However, since mid 2014 the price of crude oil has fallen sharply below \$ 50 per barrel. These low oil prices have persisted in volatility for almost three years, resulting in significant income shortages in many energy producers including Indonesia (Muin, 2019).

The most common types of oil and gas contracts in the industry today are production sharing contracts (PSC) or the royalty system. Nearly 50 percent of the contracts in force in the world use PSC and the rest use Royalty. The structure of the two types of contracts above is very similar from a financial, economic and accounting point of view although they differ from a legal and philosophical perspective. In both contractual approaches, there is the possibility for the contractor to get a refund for the investment costs that have been incurred and get a share of the profits if there is a commercial discovery and the income from production is sufficient (Johnston, 2015). In terms of government revenue, royalty is not very significant, but it is important. The average percentage of Royalties worldwide is around 7-8 percent. Royalty calculation and payment is based on gross production or gross income not based on profit (Johnston, 2015).

Indonesia has experienced various types of fiscal regimes with Concession as the first Contract system before changing to Production Sharing Contract (PSC). The reason behind the implementation of the PSC is to maximize the government's role in managing the operational and financial aspects of oil field development (Johnston, 2015). Oil and gas revenues in the PSC system are distributed to Government Revenues, Contractor Revenues, and Cost Recovery. All expenditures during the exploration phase can be recovered (replacement costs) when there are economic discoveries of oil and gas accumulation followed by approval of the Plan of Development (POD) from the Government Regulatory Agency namely SKKMIGAS. All costs to discover and develop oil fields can be categorized as *cost recovery* that can be recovered when there is commercial production after POD approval.

The important thing in the current PSC scheme in Indonesia is more on offering incentives for marginal field exploration, because most of the fields in Indonesia are considered mature (Cayarani, 2011). Most of the remaining oil and gas fields in Indonesia are oil and gas fields with small reserves or known as marginal fields. Marginal oil and gas fields have a high risk of being abandoned without being developed because of their low economic level. Some countries that have succeeded in overcoming the problem of marginal field economies have implemented flexible profit sharing systems that are adjusted to the size of reserves and the amount of costs incurred. The amount of reserve that determines the amount of revenue and the amount of cost is combined in a single parameter called the R-factor which was first developed in 2010 (Meurs, 2010).

The R-Factors theory explains that the R-Factor can be used to create a sliding scale where sliding scales can be applied to parameters such as Royalties, Profit oil or profit gas, Taxes or profit shares and net cash flow shares. R-factor in general is the ratio between Cumulative Revenues and Cumulative Costs. Some of the options developed (Meurs, 2010):

1. R-Factor scale for Royalties relates with geological conditions. The more difficult the

- geological condition the lower the Royalty or First Tranche Petroleum (FTP).
2. R-Factor scale for Profit Oil on some countries shows that the lower the R-Factor, the lower Profit oil to government
 3. R-Factor in India is the ratio between the Cumulative Net Profits after Tax with Cumulative Investments. The higher the R-Factor the higher Profit Oil to government
 4. R-Factor for Nigeria is the ratio between cumulative costs and profit oil with Cumulative Costs.

RESEARCH METHOD

Extended SLR approach and Goal Programming

The Extended Systematic Literature Review (ESLR) method on this article will be used to formulate fiscal regime and non-fiscal policies. The standard SLR method consists of several stages among others 1) Formulate Research Question (RQ). A Good RQ has several characteristics including RQ must be important and meaningful for researchers or practitioners and RQ is primarily based on research interests. 2) Identification of relevant literatures where this stage consists of determining the search strategy carried out iteratively and thoroughly. 3) Performing selection of main studies. 4) Performing Data Extraction which includes reading the full text articles and basically collecting all the information to answer RQs and to meet study's quality criteria. In case of findings of similar publications, it must refer to the most complete one. 5) Conducting assessment on study's quality with the purpose of minimizing bias and maximizing internal and external validity. 6) Synthesizing the evidence which is the final stage before writing up the SLR. In addition to the standard SLR, this article will use extended SLR where the synthesizing process will involve the combination of secondary and primary data. Goal programming will be used to demonstrate the benefit of *sliding split* over the *constant split*.

Data

The data used in this article is a combination of primary data and secondary data. Primary data is taken by in-depth interviews with oil and gas stakeholders consisting of stakeholders with background from the policy makers which is the DITJEN MIGAS, regulatory body namely SKKMIGAS, top and middle management of oil and gas contractors and upstream oil and gas policy researchers. Secondary data is taken from e-journal databases such as Proquest, EBSCO, Scanning Direct and through software applications such as Mendeley.

Research Questions

Some research questions that will be developed to find answers through the SLR approach are as follows:

1. What are the critical issues in term of Fiscal and Non Fiscal Components to improve investment climate in Indonesia?
2. What should Indonesian government do to increase Indonesian competitiveness?
3. How is the effect of the nationalization of oil and gas management on investment realization ?

RESULTS AND DISCUSSIONS

The results and discussion sections are the results of a synthesis of literature and in-depth interviews that produce a final conclusion regarding the fiscal regime and non-fiscal policies. Some of the challenges faced by the Indonesian government were raised at the IPA Convention in 2012 where the Boston Consulting Group noted that the success of Indonesia's exploration and drilling activities had lagged behind their peers and that a collaborative approach was needed to increase production. Indonesia needs to compete for funds on a global scale, provide incentives, encourage exploration and develop infrastructure to exploit conventional oil and gas. In addition, there needs to be improved coordination between ministries, central and local governments and early consultations with the industry to assess the impact of new or proposed legislation.

Some of the challenges mentioned above are also in line with the views of most scholars, including the competition in attracting investment on a global scale, providing incentives for exploration and infrastructure development challenges. However, there are additional challenges that are also crucial that scholars have raised, namely the extension of contract period beyond 30 years because it is considered insufficient to maximize profit for the contractor. In addition to that, another important thing is application of appropriate contract on different stage or on different type of contracts. Additional emphasize is on over regulated condition faced by investors. There are unrealistically abundant of permits prior execution of any projects which create delay of the project execution. Deregulation is the key solution for over regulated situation.

The discussion continues by discussing critical issues related to investment climate in Indonesian oil and gas sector that influence the production sustainability and reserves addition. The critical issues discussed relate with fiscal regime and non fiscal aspects that influence the investment climate in Indonesia.

All of the critical governance issues in increasing oil and gas investment lead to global competitiveness because investors always compare economic parameters regarding Return On Investment (ROI) and Investment Risks in various countries or regions. The critical governance issues can generally be divided into fiscal governance and non-fiscal governance. The Critical issues in the fiscal governance in term of fiscal component revealed from Primary and Secondary data include: 1) Cost Recovery; 2) Profit Split and FTP; 3) Tax and other Incentives; and 4) Windfall Profit.

Several important non-fiscal issues revealed from primary and secondary data sorted by priority scale and influence on investment are as follows: 1) Investment Rules Certainty and Contract Sanctity 2) Geological Attractiveness 3) Duration of contract 4) Over regulation 5) Nationalization and Partnership and 6) Institutional Governance model.

Fiscal Regime

PSC Cost Recovery and PSC non Cost Recovery (Gross Split)

The most common type of contracts in upstream industry today are either PSC or Royalty system. Both systems are fundamentally different from philosophical and legal point of view but similar from accounting, economic and financial perspectives. The non cost recovery system has been referred to as the Peruvian Model (particularly in Latin America). This model typically splits gross production or revenues between the government and the International Oil Company (IOC). The IOC is expected to recover costs and earn a profit out of their share of gross production (Cayarani, 2011).

This system eliminates the need to conduct audits and other forms of supervision required in typical profits-based systems such as PSC. Governments have no need to monitor or even concern about costs. Mathematically, this Peruvian system works like a large royalty system with no profits-based elements (Johnston, 2015). This Peruvian model is closer to the PSC Gross split system than the PSC cost recovery system. Another opinion that supports the elimination of the cost recovery system is that one dollar of savings from cost recovery means extra dollars from profit oil so that efforts to control cost recovery are very important and high cost recovery will also harm the contractor, as it reduces the value of profit oil for both the government and the contractor (Johnston, 2015).

In Indonesia the tendency to eliminate cost recovery schemes is magnified because there is still an incorrect view because of the stigma that cost recovery adds to the burden on state finances. Another stigma is the tendency for oil and gas contractors to cheat by including components not related to increased production as part of cost recovery. Cost recovery type of contract is absolutely required during exploration stage to compensate high risk and uncertainties. The gross split type of contract where cost recovery is discarded will not be attractive at all for investors which actively conduct exploration program because no information on size of the oil and gas accumulation are available to provide the basis for split of sharable oil.

Specifically, for Indonesia where the country has limited funding for large projects with high risks, the cost recovery system can be a solution because the country does not spend even a

penny. The funds spent for the investment will come entirely from the pockets of the contractor which will be returned as cost recovery through revenue generated from production. The government will not bear the risk of losing large funds due to the failure of exploration because the exploration failure is fully borne by the contractor (Ismoyo, H. 2020, personal interview, 20 July).

Regarding the two existing contract systems, which are PSC Cost Recovery and Gross Split, there are several main aspects that are different and affect the realization of contractor investment:

1. In PSC Gross split system, because there is no cost that can be recovered, the contractor's pay out time will be longer and cash flow during early time period is reduced which will reduce the economic parameters such as IRR and NPV
2. In order for the contractor's economy to improve, the profit sharing split for contractor in Gross Split system must be drastically increased to 80 percent -90 percent and this will significantly reduce government revenue (government take).
3. Contractor split of 80 percent – 90 percent in Gross Split system for contractor can only be achieved with the discretion of the ESDM Minister. This discretion opens up opportunities for debate and has the potential to be legally disputed in the future when a government regime changes.

Contractor's concerns are solely the cash flow and return on investment regardless of type of PSC Contracts (Cost Recovery or Gross Split). PSC cost recovery has a very dominant advantage in terms of cash flow at the beginning which is greater than the gross split because revenue after deducting FTP which is relatively small percentage will be allocated up to a maximum of 100 percent for cost recovery. This results in higher internal rate of return (IRR) and net present value (NPV). From this perspective the PSC Cost Recovery is preferred by investor over Gross Split.

Profit Split and Royalty (FTP)

Profit Split is applicable after FTP is deducted from Gross Revenue (Cayarani, 2011). FTP is applied to ensure government gets priority access on gross revenue on PSC Cost Recovery system prior any cost recovered from the gross revenue. The profit split or best known as Equity to be Split (ETS) in PSC Cost Recovery system is designed such a way to ensure that government gets income in yearly basis because the government's income from ETS could be null when cost recovery is higher than Gross Revenue.

Under the current PSC scheme, the default of the equity split between the government and the contractor determined after tax is 80/20 for oil and 70/30 for gas fields. But in practice, the government take could be much higher than this, due to un-recovered costs and the Domestic Market Obligation (DMO) (Harimurti, 2017).

The government take on the small and medium gas fields is larger than that on the oil fields while based on the sharing split the government take in oil fields should be higher than gas fields (Harimurti, 2017). The reason behind this anomaly is the Royalty or FTP burdened on small and medium gas fields with the low NPV pre government take. Considering this finding, it is then urgent to immediately reform the fiscal term to make the investment in this area attractive for investor. As has been explained in several literatures and in accordance with revenue sharing diagrams that the profit sharing split is the parameter that has the greatest impact on cash flow and the economic parameters of the contractor and the government. Therefore, profit split or better known as ETS is the most flexible variable to be adjusted in meeting the dynamics of the oil and gas industry, including fluctuations in oil prices, size of reserves and costs required.

R-Factor reflects the economic benefit for contractor where the higher the R-Factor the higher economic benefit for contractor. The main component of economic profit is revenue or net profit which is a function of reserves, production and oil prices so that the R-Factor concept can accommodate dynamic conditions in the oil and gas industry such as oil price fluctuations that trigger windfall profits when it rises or a marginal economic benefits when it falls. The weakness of constant split and benefit of using flexible or *sliding split* can be illustrated in Table 1 below.

Table 1. Economic problem under PSC Cost Recovery with constant split.

Parameter	Base case Conctant Split Gov Take 35%	Scenario-1 Constant Split Cost Recoverables 100%, Gov Take 24%	Scenario-1 Constant Split Cost Recoverables 100%, Gov Take 135%	Scenario-1 Constant Split Cost Recoverables 100%, Investasi 64,33%
IRR	13,86%	18,96%	26,18%	28,60%
GR	287.537	287.537	386.565	287.537
Contr Split beforoe Tax	58,55%	58,55%	58,55%	48,55%
Gov Split before Tax	41,45%	41,45%	41,45%	41,45%
Contr Split after Tax	33%	33%	33%	33%
Gov Split after Tax	67%	67%	67%	67%
Contractor NPV	7315	19578	34645	26995
Governer NPV	30114	17850	39058	28502
Cost Recoverables	14%	100%	100%	100%
Investasi	100%	100%	100%	64,3%
Tax	44%	44%	44%	44%
Gov Take (%GR)	35%	24%	35%	35%
Contractor Take (%GR)	17,27%	11,85%	17,27%	17,13%
Cost Recovery (%GR)	47,9%	64,45%	47,92%	48,35%

From Table 1 above, it can be seen that by using the existing contract system which is the PSC Cost Recovery with Constant Split, to get a certain minimum percentage of government income (Gov Take) for example 35 percent, the trade off of Cost Recoverables is only 14 percent (Base Case). This cost recovery limitation is a violation of the Contract Sanctity because cost recoverables should be 100 percent. If the Cost Recovery to be achieved is 100 percent then Gov Take is only 24% as seen in Scenario-1. It can be seen in scenario-2 that to get Gov Take 35 percent and Cost Recoverables 100 percent, it can be done by increasing Gross Revenue, for example by using an optimistic oil price assumption. However, this causes the validity of the economic calculation is reduced and if it deviates far, it can become a finding in the audit process. It can be seen in scenario-3 that to get the minimum Gov Take 35 percent and cost recovery 100 percent is to use a smaller investment cost assumption. However, this also carries the risk of project delay or even cancellation due to the large difference in cost between the planning phase (POD phase) and the execution phase. From the illustration above it is necessary to change the Fiscal regime by changing the *constant split* into a flexible or *sliding split* to solve such issues.

The solution for the above problem by using goal programming can be seen on Table 2 below. Under normal (constant) split which results in cost recovery in the form of sunk cost only 14 percent to get Gov take 35 percent. By varying *split*, the cost recovery can be increased even until 100 percent (last column) while maintaining Gov Take, Gross Revenue and Investment.

Table 2. Flexible or Sliding Split solving contract sanctity problem while increasing IRR

Parameter	Normal Split	Flexible Split-1	Flexible Split-2	Flexible Split-3
IRR	13,86%	14,65%	14,86%	14,85%
GR	287.537	387.537	287.537	287.537
Contr Split before Tax	58,55%	44,46%	26,36%	2,79%
Gov Split before Tax	41,45%	55,64%	73,64%	97,21%
Contr Split after Tax	33%	25%	15%	1,6%
Gov Split after Tax	67%	75%	85%	98,4%
Contractor NPV	7315,4	8650	8961	8946
Government NPV	30114	28779	28468	28483
Cost Recoverables	14%	43%	71%	100%
Investasi	100%	100%	100%	100%
Tax	44%	44%	44%	44%
Gov Take (%GR)	35&	35%	35%	35%
Contractor Take (%GR)	17,3%	11,7%	6,1%	0,56%
Cost Recovery (%GR)	47,9%	53,4%	58,9%	64,45%

Tax and Other Incentives

Incentives are an inseparable part of an oil and gas fiscal regime because of very dynamic conditions both from global (external) and internal factors that cause conditions to vary from country to country. The main purpose of incentives is to attract investors (Mark *et al.*, 2001). Although incentives will be beneficial to attract investors in investing, there are some conditions where the provision of incentives to foreign companies will not provide significant benefits, among others, if incentives are provided for large fields that have the potential to be sub-marginal if the percentage of royalties is too large.

Fiscal incentives should be in positive (proportional rather than inversely proportional) relationship with the geological complexity but negative (inversely proportional) with windfall economics (Lubiantara, 2019). The more complex the geological condition the higher the incentives should be and the other way around the more the windfall profit the lower the incentives should be.

However, in addition to some of the things mentioned above, specifically for Indonesia, the incentives provided should be given to increase investment especially when low oil prices continue to affect global investment decline. Critical aspects on incentives must address the following issues:

1. Incentives must target the exploration realization because the main problem facing Indonesia is lack of proven, probable and possible reserves. The main “incentives” are to apply cost recovery without cap (100 percent) and followed by an attractive profit sharing split whose purpose is to increase the contractor's IRR and NPV value
2. Incentives must target the implementation of EOR projects because EOR is the only approach to increase proven reserves. Petroleum contained in subsurface cannot be drained 100 percent but the percentage that can be drained known as recovery factor is influenced not only by the number of production wells but also by the existing technological capability known as EOR technology.
3. Other incentives such as DMO holiday, Tax incentives, Investment Credit will give impact only moderate and far below impact given by incentives in point 1 and 2 above.

Exploration targets are areas that from initial indications contain large potential oil and gas reserves, moreover the potential of giant fields but have not been explored intensively, require

large costs and risks. Such areas in Indonesia are located in the frontier areas, deep water, and in eastern Indonesia where there is a large risk of exploration failure.

Another incentive to consider is the Land and Building Tax (LBT) where in the cost recovery scheme, all contractors are required to fulfill property tax obligations first, while under the *assume and discharge rule* the government will bear the LBT expense. LBT expenses are also treated as operating costs which will be reimbursed once the work area reaches commercial production (Rosdiana & Inayati, 2015).

Windfall Profit Treatment

The levy of taxes aimed at targeting windfall profits is not uncommon in global perspective. A case that is quite prominent is the one represented by the U.S. Crude Oil Windfall Profit Tax Act, which was introduced in 1980 and subsequently replaced in 1988. This levy aimed to neutralize the excessive profits determined by business operating in the oil sector as a result of the increasing oil prices. The Court of Justice argued that no violation occurred with reference to the tax scheme that aimed at limiting the benefits obtained to carry out operations in the sector (Amorello & Ronco, 2016). In line with the above opinion, the economic reasons for the imposition of a windfall profit tax lies in the government's efforts to redistribute additional domestic production income caused by the increasing power of oligopolistic prices by energy companies. The concept of windfall profit has been accommodated by agreement between Ministry of Energy and Mineral Resources and Ministry of Finance on PP no 79 2010 regarding Recoverable Costs and Tax Treatment for upstream business. One of the point on that agreement is the concept of sliding scale on profit split to adjust government income in the event of windfall profit (Menkeu, 2016). The Gross Split contract also accommodate windfall profit as a function of oil price fluctuation.

Non-Fiscal Governance

Investment Rules Certainty and Contract Sanctity Issues

Investment rules certainty is one of the determining factors for investors in deciding whether or not an investment is realized. Investors will dig deeper into the risk of placing their capital in a country. The stability in the calculation of cash flow generated from an investment becomes one of the benchmarks because a situation full of uncertainty will produce an uncertain cash flow. Investment uncertainty in Indonesia is dominantly related with contract sanctity. In Indonesia's positive law, the meaning of contract sanctity is contained in article 1338 of the Indonesian Criminal Code. The concept of contract sanctity shows that the contract is the result of 'reasonable expectations' of the parties that must be respected and protected from violations (Al Faruque, 2015). This concept is based on the economic value of business transactions that effective economic activity would not have been possible without the enforcement of the agreement that has been promised in a contract (Al Faruque, 2015). So, it becomes important to uphold the award of the sanctity of contract for the smooth running of various industries including upstream oil and gas industry. One scholar explained that the word sanctity implies a moral element, that the parties should do what has been promised because it has been formally promised. The last two opinions mean that violations of the sanctity of the contract cause the government's credibility to be morally degraded.

Contract sanctity implies that an oil and gas block already contracted under PSC should not be subject to government cancellation because of any reasons (Al Faruque, 2015). Another scholar explains that Contract sanctity is one of crucial issue which put a concern for investors to operate in Indonesia (Wajong, 2020). Both scholars gave the same conclusion about the importance of the sanctity of the contract where the contract should be placed above the applicable law without violating its contents by the government for any reason.

However, different views come from several parties regarding the contract sanctity where sanctity of contract is very important, but not necessarily absolute (Wajong, 2020). In certain circumstances, sanctions can be exempted from the contract. If the sanctity of the contract cannot be exempted, it will make the contract unfair and burdensome to one party (Erkan, 2015). Thus, it becomes important for parties to seek flexibility at a certain level. Flexibility in this context can

be a form of compromise from each party to renegotiate the terms and conditions in the contract as some scholars argued that the parties can renegotiate the results of inefficient contracts. Indonesia has a poor track record against the sanctity of contract (Erkan, 2015).

Some forms of contract violations are among others on the determination of gas price which is firmly backed by Presidential decree. The changes of gas price provide serious implication on the economic aspect of field development. Another violation on contract sanctity was activities post operation and abandonment which is called Abandonment and Site Restoration (ASR) which put the land recovery as the main priority so budget need to be available for that ASR program. Regulation is good to ensure availability on funding violated are changes in gas prices after the signing of the Gas Sale and Purchase Agreement (GSPA), delay in payment of cost recovery so that the amount of unrecovered cost is getting bigger.

Considering the character of the oil and gas industry which is a long-term business field (long-term investment) that requires large capital, high risk of failure, high technology, sophisticated and reliable expertise, the sanctity of contracts and mechanism of state control must be harmonized in order to create a win-win solution between the Government and investors.

The lack of appreciation of contract sanctity will reduce investors' interest to invest in the upstream oil and gas industry which is full of risks and uncertainties. Investors have a relatively small bargaining power compared to the government's power to issue absolute regulations. So for the sake of creating a conducive investment climate, the government needs to provide sufficient considerations to accommodate the interests of oil and gas investors.

Geological Attractiveness & Petroleum Funds

Another important thing to improve the investment climate besides the certainty of investment rules and the contract sanctity is the attraction in terms of geology and the potential size of oil and gas reserves contained below the surface. Data limitations and unopened data access become an obstacle that causes investors to experience difficulties in evaluating potential resources and reserves (Rubiandini, 2020, personal interview, 2 August). Various geological surveys that are followed up with in-depth research are crucial things to be done by the government so that the results can later be used as information presented to potential investors to increase investment attractiveness (Rubiandini, 2020, personal interview, 2 August). One scholar's gave opinion that the Indonesian government needs to find a way out to find a source of funds for petroleum funds because the funds are very important for obtaining geological data through geological and geophysical survey activities so that the potential for hydrocarbons in Indonesia becomes clearer and will increase geological attractiveness to attract investors (Muin, A. 2020, personal interview, 12 September). In some countries, oil and gas revenues are deposited into Petroleum funds before being declared a source of state revenue (Pityt & Iswahyudi, 2016). The Petroleum fund has not been implemented in Indonesia, but it had been included as one of the discussions in the revision draft of the oil and gas law. In essence, a petroleum fund is intended to increase the discovery of new oil reserves and as future savings. Conceptually, the Petroleum Fund or the Sovereign Wealth Fund is part of the State revenue fund originating from the oil and gas sector, stored or set aside for certain uses (Chitra & Rasyid, 2011).

Duration of Contract

The duration of the Oil and Gas Contract extends from the exploration stage, the stage of approval for field development (POD) and the stage of production. Historical exploration activities took on average 10 to 12 years before commercial reserves were discovered. The duration of a contract that is only 30 years is too short to maximize the contractor's return (Rubiandini, R. 2020, personal interview, 2 August). One scholar's conclusions are in line with the fact that exploration activities take up to 10 years which are often even extended to 12 years and then await POD approval approximately one year before the contractor can get revenue from production. In addition to that the contractor needs to build a production facility that takes 4 to 5 years so it is feasible if the contract duration exceeds 30 years.

Over Regulation

Over regulation has an impact on the index of ease of doing business in Indonesia (Rubiandini, 2020, personal interview, 2 August). Over regulation can take the form of overlapping regulations between the central government and regional governments, regulations that often change and the tendency for new regulations to add to the bureaucratic chain. This has more or less resulted in the slow implementation of work programs and added costs that did not exist before. The government has made progress lately in cutting licensing and other overlapping rules, but it is felt there are still many gaps in improvement that need further improvement.

Nationalization and Partnership

Guyana, one of State in Africa has successfully attracted investor not because Guyana is a developed country with numerous number of well educated citizen, but because Guyana is quite friendly for investor by facilitating any requirements for investors (Lubiantara, 2020, personal interview, 10 August). Exxon Mobil and Hess announce the success of deep water exploration drilling in 2017 which may promptly confirm that the seabed beneath Guyana's waters has one of the richest natural oil and gas discoveries in decades. Experts now estimate that just one offshore field, known as Liza, can contain 1.4 billion barrels of oil mixed with natural gas, comparable to some large fields drilled in South America.

However, the opposite less success story came from Mexico. Prior 2012 although Mexico has significant amount of reserves but the production is low because oil sector has been taken over entirely by PEMEX the state owned Mexican company. Oil production in Mexico was low at that time because of the high dependency on government budget which was low. But after the government opened the investment in 2012 for foreign investors, oil production began to rise (Lubiantara, B. 2020, personal interview, 10 August).

From the two contradictory cases above and given Pertamina's position that does not have large funds for massive investment in the oil and gas sector, it is better for Indonesia in the future to rely on a partnership where Pertamina could be an operator but the multi-national company acts as a partner that owns participating interest in an oil and gas block. This kind of partnership will facilitate investment funding while creating good checks and balances, peer reviewed work program and budget and sophisticated audit process.

Institutional Governance Model

There are 3 templates of governance model in the world (Lubiantara, B. 2020, personal interview, 10 August), namely:

1. *NOC dominated model* where NOC's function is double as both regulatory and player based on Law (UU Pertamina no 8 tahun 1971). Indonesia adopted this model when the regulatory function was taken over by BPPKA which was a Division under Pertamina . The NOC dominated model is also applied by Saudi Arabia, Malaysia, Angola
2. *Separation of Power Model* based on UU no 22 tahun 2001 where BPMIGAS exist to share authority with Pertamina. This model is good for governance and also has been applied in Norway and Brazil. But, this model is discarded by Constitutional Court (MK).
3. *Ministry Dominated Model* which was applied after BPMIGAS was dismissed by Constitutional Court (MK) in 2012. Under *Ministry Dominated Model*, the policy, supervisory and regulatory functions are all under the Ministry's control.

The ideal model for Indonesia should be a combination between NOC dominated with Separation of Power model to comply with MK (Lubiantara, B. 2020, personal interview, 10 August). Another scholar generally agrees that there are 3 templates on institutional governance model. But the difference between them is that in the first model, the Regulators and Contractors are in one camp while the government represented by the Ministry of Energy and Mineral Resources is in another camp. The second model is where the Ministry of Energy and Mineral Resources and Regulators are in one camp while the Contractor is in another. The third model is a model where each party is in a different camp. Considering both opinions, it is then concluded that any model chosen should contribute to energizing the State-owned company such as Pertamina dan contribute to energy security and development of sustainable resources.

However regardless of templates of governance that will be applied, it still will not have a major effect on increasing reserves and production if there is no improvement in the fiscal side oriented to a significant increase in investment realization.

CONCLUSION

All of the critical governance issues in increasing oil and gas investment lead to global competitiveness because investors always compare economic parameters regarding Return On Investment (ROI) and Investment Risks in various countries or regions. Fiscal regime aspect which is on top priority is the cost recovery. The cost recovery system has a vital advantage compared to the gross split where contractor's economic parameters are better and faster in capital returns. The second priority in Fiscal aspect is the R-factor which is a good concept for flexible split and flexible FTP applications in order to anticipate dynamic situations such as fluctuating oil prices and varying reserve sizes that have the potential to cause contractor profits to be marginal or to increase dramatically due to windfall profits. The third priority in the fiscal aspect is providing incentives to increase exploration and EOR activities.

The non-fiscal aspect which are essentials include contract sanctity, certainty of investment rules, intensification of geological surveys, duration of contracts, non-overlapping regulations and institutional governance model. Contract sanctity when violated will reduce investor's interest. The certainty of investment rules creates a safe atmosphere for investors. Intensification of geological surveys that are followed up with in-depth research can be beneficial to provide investors with valuable information on geological attractiveness.

The duration of a contract that is only 30 years is too short to maximize the contractor's return because of lengthy period for exploration, POD approval, building facilities and drilling some development wells which require up to 12-15 years in average. Over regulation will result in the slow implementation of work programs and adding costs that did not exist before. The ideal institutional model for Indonesia should be a combination between NOC dominated model with Separation of Power model to share authorities while comply with Constitutional Court. In addition to that any model chosen should contribute to energizing the State-owned company such as Pertamina dan contribute to energy security and development of sustainable resources.

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