Contractual Systems in Oil/Gas Sector

Subjects: Energy & Fuels | Agricultural Economics & Policy

Contributor: Fatima Dirani

Production activities in the oil and gas industry are capital intensive and associated with high technology, with these assets not always being available to oil-producing countries or national companies. Any form of interaction between the parties involved in natural resource extraction requires clear regulation regarding contractual relationships. This study attempts to analyze Indonesia's production sharing contract system in order to assess its applicability to other conditions. The article covers the key aspects of contract theory, provides a classification of contractual systems in the oil and gas sector, and discusses the most common types of contractual agreements. It also considers the key principles of production sharing contracts (PSCs), analyzes the development of PSC practices in Indonesia over the past sixty years, and highlights PSC advantages and disadvantages.

production sharing contract (PSC) production sharing agreement (PSA) concession Indonesia oil and gas sector contracts

1. Introduction

As a rule, in developing countries with significant hydrocarbon reserves, neither the state nor private companies have enough experience and/or capital to develop their natural resources. Therefore, they start looking for ways to attract foreign capital or cooperate with foreign companies in various forms. The key issues for oil companies and the state regarding such agreements are the distribution of income and risks shared between the parties.

The low level of technological development and lack of experience in the oil and gas sector in developing countries results from the following factors, which were identified by analyzing the situation in Lebanon.

The experience of using various types of contractual systems in the oil and gas sector has been analyzed using case studies of Algeria, Angola, Australia, Nigeria, Norway, Great Britain, China, Argentina, Malaysia, and the USA.

The purpose of the study is to assess the existing contractual systems used in the oil and gas sector in developing countries (Indonesia) and the main expected changes that should be considered in these countries.

2. Key Research Findings and Discussions

In countries using PSCs, legal regulations for their application have been developed.

A production sharing contract (PSC) is defined as a contract that is signed between the government and one or more investors concerning how much percentage of resource extracted from the country each will receive after the investors have recovered a specified amount of costs and expenses [1].

The principal goal of PSC is to attract multinational oil companies that are ready to transfer and share their technological expertise and money to extract reserves in the HC [2].

2.1. Parties and Instruments

A production sharing contract formally defines the rights and obligations of the parties: an international oil company (IOC) and a government representative, such as the head of the state, the ministry, or the national oil company (NOC). PSCs have common key characteristics despite the differences in their structure.

(a) IOC is selected by the host country and a contract is signed for a certain time and region;

(b) IOC's operations can be done under the HC's supervision;

(c) IOC shall give all the materials, equipment, and personnel required to conduct development and production processes;

(d) IOC has the right to recover the investments in the production;

(e) after the costs have been defrayed, the remaining from the extracted resources are shared between both parties in proportions given by PSC;

(f) IOC's revenues are subject to tax [3].

2.2. Production Ownership

In PSCs, the producing countries assign only the exclusive right to perform E&P operations, yet the produced oil and gas are the government's property [4]. If the IOC's discovery is commercially viable, the producing country as the owner of the reserves must refund exploitation costs ("cost oil") and share the remaining oil ("profit oil") between the state (or the NOC) and the IOC in proportions previously agreed in the contract.

2.3. Facility Ownership

According to PSCs, after the contract term is ended, the infrastructure is assigned to the host country without any added charges. In addition, all information obtained under a license or as a result of E&P activities will be the state's property [5].

2.4. Responsibilities of IOCs and the Government

The host government can work directly or by its agencies and departments. NOC can act as the organ that is responsible for granting E&P rights to the investor. IOCs can control exploitation and production operations on their own or have a smaller role. In general, the entire responsibility of the management is held by the host country and the routine operations are in the hand of the international oil company.

Having experienced more than 50 years of development, the PSC system in Indonesia is the most vivid example of PSC application in the world. Therefore, its evolution is further analyzed, and the factors of change are identified [6].

A production sharing contract was first applied in Indonesia [7]. The first contract was signed in 1966 by the International Indonesian American Petroleum Company (IIAPCO). The Indonesia's PSCs has the following peculiarities.

(1) Management is entrusted in the national oil company. Contractors, especially foreign oil companies, are the operators who are responsible to NOC for operations by the agreed work programs and the budget.

(2) All financial and technical supports for petroleum operations are provided by the contactor who also affords the risks associated with operating costs.

(3) Each year the contractor must prepare a work program and an operating budget to be approved with NOC.

(4) All equipment purchased by the contractor becomes the property of NOC upon arrival in Indonesia.

(5) NOC has the right to all data gained from the operations.

(6) The contractor pays Indonesian taxes on income. NOC refunds the contractor for other taxes paid for the work.

(7) The contractor must supply Indonesia's domestic demand for crude oil.

There are three characteristics of Indonesia's PSC system. First, one company manages one work site. Second, the company is responsible for all risks associated with exploration, the government owns both the resources and the facility, and the company has the right to produce oil and gas. Third, all production costs are defrayed by the government. Therefore, any E&P operation or budget that is planned shall have government approval. These characteristics demonstrate the state's sovereignty over natural resources.

By analyzing the contractual system in Indonesia, we identified five generations of contracts and the factors influencing their changes. Barrow (1993) discussed Indonesia's PSCs developed through three generations: 1966–1976 (1st generation), 1976–1987 (2nd generation), 1988–1994 (3rd generation). In our opinion, the 1994–2008 and 2008–2017 periods (4th and 5th generation, respectively) should also be distinguished. The new contract will be signed in 2022. **Table 1** analyzes and systematizes the key characteristics of PSC contracts and identifies transition factors as well as innovations in new generations.

Table 1. Key generation characteristics of PSC contracts in the oil and gas sector (a case study of Indonesia).

Generations	Features	Generation Transition Factors
1st generation (1966–1976)	- The contractor's equipment was transferred to the national company. - Contractors with more than one work site in Indonesia were unable to consolidate financial results to calculate their obligations to the government. - Cost recovery was 40% of the production [55,56]. - Contactors must supply the domestic market. - After-tax split for oil: government (85%), contractor (15%), 65/35 for border territories - After-tax split for gas: 70/30 - Effective tax rate: 56 (the general combined corporate and dividend (C&D) tax rate) [57].	- The PSC system was amended in early 1974 owing to the rapid growth in oil prices in 1973. - In 1975, a USA tax ruling disallowed tax credits for corporate taxes paid in Indonesia by the contractors under PSCs.
2nd generation (1976–1988)	- 100% cost recovery (costs were calculated based on the accepted accounting principles with no upper cap of 40%) - After-tax split for oil: government (85%), contractor (15%), 65/35 for border territories	- The fluctuation of oil prices especially in the 1980s created difficulties. - The National Oil Company has introduced a new rule: "Declaration of commercialization", in which a new field could be declared commercial for development only if the government accounted for at least 49% of the cash flow.

Generations	Features	Generation Transition Factors
3rd generation (1988–1994)	- The government provided some incentives to boost oil exploration activities. - Government revenue for small hydrocarbon fields was reduced to 80% in traditional areas and to 75% in border territories. - After-tax split for gas did not change. - The Domestic Market Obligation (DMO) fee grew, reaching first 10% of the export price and then 15% in 1992. - The combined tax rate was reduced from 56 to 48. - The concept of First Tranche Petroleum (FTP) was introduced in 1988.	- High-risk areas were identified (border territories, deep sea)
4th generation (1994–2008)	- The government introduced 65/35 after-tax split for oil. - Combined tax rate: 44 - After-tax split for gas: 60/40	- The need to stimulate investment in remote areas (eastern provinces)
5th generation (2008–2017)	- After-tax split became negotiable - Cost recovery items became limited - Incentives in other areas, such as investment credits	

Generations	Features	Generation Transition Factors
	- Combined tax rate: 40	
2017–present	- A sharing concept based on gross production without regard to a cost recovery mechanism. - Retention of the following key principles: (a) the ownership of natural resources remains with the government up to the point of delivery; (b) control over the management of operations lies ultimately with the government; (c) all capital and risks are borne by contractors. - The basic split rates should form the basis for determining the split rates at the time of development plan approval. (a) for oil: 57% (government); 43% (contractor) (b) for gas: 52% (government); 48% (contractor) [57]	

Compiled by the authors based on Barrows 1993, Sihotang 2003, and PWC 2019.

Key differences between earlier and later generations are as follows:

(a) Rather than having a fixed after-tax share, PSCs became more flexible with respect to the proposed production sharing percentage;

(b) PSCs now prescribe a DMO for natural gas;

(c) the government and the contractor are both entitled to 20% FTP of oil production;

(d) the profits tax rate for the contractor is 20%;

(e) some costs (e.g., those associated with seismic surveys) may be defrayed;

(f) the government must approve any changes to the direct or indirect control of the PSC system [8].

Changes to the PSC system during the first three generations tended to bring more benefits to contractors rather than to the government. In particular, the share of the state tended to decline in 1981 despite the growth in global oil prices, while the contractor's share tended to increase.

A number of incentive packages for exploration were made by the government in the early 1990s to get additional investment in the oil production sector, which increased the share of contractors by reducing the share of the state [9].

The introduction of a new cost recovery scheme in 1977 to replace the 40% cap on cost recovery appears to have resulted in the loss of the government's share [10]. One issue is that this new scheme has many weak points that can be used by contractors to inflate their costs, which makes the industry highly inefficient. Furthermore, changes in the content of PSCs do not seem to have added value to the oil industry since the current structure of managing the oil industry—with the NOC (now BP) as the manager the IOC only as the contractors to the NOC (now BP)—does not have enough capabilities and competence for effective control. In this respect, one could argue that, in order for the changes in the content of PSCs between the host country and IOCs to add value to the industry, the current accountability relationship between them needs to be properly restructured [11].

The analysis of PSC development/evolution showed that the Indonesian oil and gas sector has different PSC models with different incentives, such as investment credits, reduction in the contractor tax rate, and reduction in the state's production share.

This experience can be used in other oil and gas producing countries, for example, in Lebanon, where in the event of a dispute over maritime borders similar incentives can be offered to encourage investment.

In general, international oil companies prefer to sign production sharing contracts in countries with low institutional maturity because they feel more secure given the risks of political instability, lack of transparency, and legal uncertainty in the host country. Examples are such emerging economies as Angola, Indonesia, Lebanon, and others.

The exogenous factors that influence the choice of the model can be divided into three groups:

(a) time frames (terms of construction and oil field development; oil well lifespans; the total term of project implementation);

(b) technological features (well productivity; production performance; production peaks);

(c) economic parameters (oil transportation costs; the number of workers employed in well servicing; administrative staff) [12].

Many factors can influence the PSC content. Among them are political factors, the fiscal policy of the host country, the influence of brokers and decision-makers, the need for stabilization, corruption, the level of development of the regulatory framework, and production capacity.

In modern conditions, environmental, social, and governance (ESG) factors are becoming important in the development of mineral and oil and gas resources, and they should be taken into account when defining the

parameters of agreements as it creates value for society.

Production sharing contract advantages:

(a) practices are more workable than purely fiscal ones, which allow conditions to be changed or negotiated (for new contracts) in accordance with the business potential of a particular work site, market circumstances, etc.;

(b) after signing, they have the strength of the agreement and, unlike tax legislation, cannot be modified unilaterally by the government [13];

(c) they enable the state to supervise the contractor's obligations;

(d) low risks for the host country, as the IOC bears all operational and financial costs and risks;

(e) transfer of knowledge from the IOC to the host country, increasing the employment rate and improving the quality of training in the country;

(f) the government exercises sovereign control over the nation's natural resources;

(g) the government obtains a share in the production and the financial benefits associated with these wealth-producing assets without having to make an investment unless it agreed to do so [14].

Disadvantages:

(a) The PSC system is considered to be difficult for the government to inspect and control because it is generally difficult to calculate cost oil and profit oil. Thus, the profit calculation process is hard to do [15].

(b) This type of oil and gas agreement is very complex in structure and requires negotiations at a high level. The owner must have access to financial, commercial, legal, environmental, and technical expertise as well as information.

(c) Under the terms of the PSC, the host-country government is generally a decision-maker in oil field development. At the same time, it also gives oil companies a say in the enforcement of environmental and other standards when such standards are incorporated as contractual provisions [16].

Table 2 presents the main problems and directions in the development of the PSC system in Indonesia.

Table 2. Analysis of problems and possible solutions for the development of the PSC system in Indonesia.

Problems	Solutions
According to FTP conditions, 20% of production is given to the government before operating costs are reimbursed. This type and	- The portion of FTP oil received by the government should be reduced.

Problems	Solutions
level of effective royalties impose high fees (taxes) on large oil basins and can inhibit investment, especially at oil prices [17].	- FTP tax should be paid gradually after deducting the balance of accumulated unrecovered costs.
Low price paid to contractors for fulfilling obligations to supply oil to the domestic market [17].	- Contractors must be paid the international price for any supply to the local market. - Indonesia's national refineries and marketing industry should be liberalized. - Subsidizing the oil supply price on the domestic market should be abolished.
The investment credit is applied at completely different rates to oil and gas production in accordance with the contract standard for tertiary and pre-tertiary reservoirs. However, it is not applied for the Frontier PSC [17].	- Contractors should be provided with a large share of production in order to offset additional investment risks and costs.
The increase in the government's share of oil/gas profits is associated with a complex set of field profitability indicators [17].	- The conditions of the PSC should be changed to build a direct link between the government's share of profit and the profitability of the field. - Transition to a system in which either oil or gas profits (tax/royalties) are distributed according to the investor's realized return.

Compiled by the authors based on Energy and Mining Sector Unit East Asia and Pacific Region 2000.

As a result of implementing the proposed solutions, the following results will be obtained:

(a) elimination of economic obstacles to the development of marginal deposits, which will subsequently lead to an improvement in their economic situation and facilitate the attraction of PSC contractors to invest in hydrocarbon

fields located in border territories, deep waters, or other areas associated with high costs and risks [18][19][20][21][22].

(b) elimination of obstacles to the development of oil and gas projects [23][24].

(c) combining numerous existing types of contracts into one.

For the conditions of oil and gas fields in Lebanon, PSC contracts must take into account the following elements:

First, the legal objects to develop hydrocarbons on the shelf can be individual blocks or several blocks.

Second, the schedule and method of field development proposed by the contractor must be coordinated with the state authorities in order to ensure the most rational development of the block.

Third, the term of the contract should be determined based on the interests of the investor, profitability, and the timing of the block development; our analysis of the Indonesian experience showed that over 50 years there were five stages in the development of PSC. This means that external conditions are forcing government agencies to change the terms of the contract. This can be done only after its termination or the provision of flexible conditions in the contract itself, which should reduce the incompleteness of the contract.

Fourth, the rights of the state and government usually include taxes, the share of products, and the use of equipment and workers in the country where the oil is produced. In the case of Lebanon, the use of local resources and personnel can be difficult due to the lack of suitable resources or inadequate skills of the workers. Therefore, the contract may stipulate the conditions for training employees, selling technology, etc.

Implementing the win-win principle in the PSC and harmonizing the interests of the IOC and the state in Lebanon should be taken into account based on the previously discussed PSC issues:

- The choice of one or more blocks as a PSC object depends on the economic desires and investment opportunities of the IOC. At the same time, the joint development of two or more blocks by one contractor can bring additional (synergistic) effects both to the contractor himself and to the state, since CAPEX per unit of production, oil transportation costs, and others can be reduced.

- When determining the schedule and method for the block development, the interests of the state lie in the rational use of subsoil, compliance with the environmental and social interests of society and the maximum economic effect, and if the interests of the IOC are in the maximum commercial effect.

- The term of the contract and its terms, as noted, must be long in order to provide guarantees for both parties. On the other hand, a rapid change in the external environment, primarily the volatility of the oil price, should be taken into account in the contract, either on the basis of a change in the contractor/government shares, on the basis of a change in the DMO, or on the basis of a change in the tax rate.

- For the situation with Lebanon, the rights of the government may be expanded and additional conditions and requirements may be introduced, according to which the contractor must pay the costs of training workers, building infrastructure, or transferring technology to the state.

References

1. Bindemann, K. Production-Sharing Agreements: An Economic Analysis; Oxford Institute for Energy Studies: Oxford, UK, 1999.
2. Smith, E. International Petroleum Transaction, 2nd ed.; Rocky Moutain Mineral Law Foundation: Westminster, CO, USA, 2004; p. 448.
3. Bill of Law 5938/09—E.M.I n.00038 Article 14. 31/08/09. Available online: https://www.duo.uio.no/bitstream/handle/10852/22787/ThesisFinal.pdf?sequence=1 (accessed on 15 May 2021).
4. Paliashvili, I. The Concept of Production Sharing, Seminar on Legislation on Product Sharing Agreement. Available online: http://www.rulg.com/documents/The_Concept_of_Production_Sharing.htm (accessed on 15 July 2021).
5. República de Angola; Lei das Actividades Petrolíferas no 10/2004. Available online: https://www.sonangol.co.ao/Style%20Library/pt-pt/Pdf/licitacoes/law_petroleumTaxation_pt.pdf (accessed on 17 July 2021).
6. Handbook of Energy and Economic statistics of Indonesia; Directorate General of Oil and Gas: Ministry of Energy and Mineral Resources: Jakarta, Indonesia. 2013. Available online: https://www.esdm.go.id/assets/media/content/content-handbook-of-energy-economic-statistics-of-indonesia-2013-997ndnz.pdf (accessed on 15 July 2021).
7. Barrows, G. Production Sharing in Indonesia, 1966 to 1993: Evolution and Trends; Institute for International Research: Houston, TX, USA, 1993.
8. PWC. Oil and Gas in Indonesia-Investment and Taxation Guide, 10th ed.; PWC: Londong, UK, 2019; Available online: https://www.pwc.com/id/en/pwc-publications/industries-publications/energy--utilities---mining-publications/oil-gas-guide-2019.html (accessed on 15 May 2021).
9. Sihotang, P.; Russell, A. New Oil and Gas Law: Threat to Government? The Jakarta Post 29 October 2001.
10. Sihotang, P. A longitudinal analysis of the indonesian production sharing contracts (PSC): The question of economic accountability. J. Win. 2003, 4, 94–111.

11. Laughlin, R. Principals and Higher Principals: Accounting for Accountability in the Caring professions. In Accountability: Power, Ethos, and the Technologies of Managing; International Thomson Business Press: London, UK, 1996; pp. 225–244.
12. Lytaev, A.V.; Tokarev, A.N. Usloviya Soglashenij o Razdele Produkcii Neftedobychi; Novosibirskij Gosudarstvennyj Universitet: Novosibirsk, Russia, 2011.
13. Pandey, A. Production Sharing Contracts in Indian Oil & Gas Sector; Indian Institute of Management Ahmedabad: Ahmedabad, India, 2014.
14. Darus, M. Constitutionality in Production Sharing Contracts: Legal Policy On Petroleum And Natural Gas. Prophet. Law Rev. 2020, 2, 76–96.
15. Mikesell, R.F. Foreign Investment in the Petroleum and Mineral Industries: Case Studies of Investor-Host Country Relations; Johns Hopkins Press for Resources for the Future: Baltimore, MD, USA, 1971; p. 449.
16. Silvana, T. Fiscal Systems for Hydrocarbons; World Bank: Washington, DC, USA, 2007.
17. Bank, W. Indonesia: Oil and Gas Sector Study Report; World Bank: Washington, DC, USA, 2000.
18. Nevskaya, M.; Cherepovitsyn, A.E. Justification of an approach to an economic assessment of projects development of technogenic mineral objects. IOP Conf. Ser. Earth Environ. Sci. 2019, 302, 012049.
19. Ponomarenko, T.V.; Tarasova, E.A. Luchshie praktiki upravleniya znaniyami v neftegazovyh kompaniyah. St. Peterburg Politekh. Univ. 2016, 2, 201–205.
20. Cherepovitsyn, A.E.; Ilinova, A.; Evseeva, O. Stakeholders management of carbon sequestration project in the state—Business—Society system. J. Min. Inst. 2019, 240, 731.
21. Nikolaichuk, L.A.; Filatova, I.; Zakaev, D. Public-Private Partnership as a Tool of Sustainable Development in the Oil-Refining Sector: Russian Case. Sustainability 2021, 13, 5153.
22. Molchanov, K.; Romasheva, N. Conceptual approaches for building a balanced portfolio of projects in oil and gas companies in exploration and production sector. E3S Web Conf. 2019, 140, 03004.
23. Nevskaya, M.A.; Seleznev, S.G.; Masloboev, V.A.; Klyuchnikova, E.M.; Makarov, D.V. Environmental and business challenges presented by mining and mineral processingwaste in the Russian. Minerals 2019, 7, 445.
24. Katysheva, E.; Tsvetkova, A. Economic and institutional problems of the Russian oil and gas complex digital transformation. In Proceedings of the International Multidisciplinary Scientific GeoConference Surveying Geology and Mining Ecology Management, Albena, Bulgaria, 30 June–6 July 2019; STEF92 Technology Ltd.: Sofia, Bulgaria, 2019; Volume 19, pp. 203–208.