

1-2-2007

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Arsegianto Arsegianto
arsegianto.arsegianto@yahoo.com

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Recommended Citation

Arsegianto, Arsegianto (2007) "Economic and Legal Views of Depletion Premium in the Extraction of Petroleum Resources," *Indonesian Journal of International Law*. Vol. 4 : No. 2 , Article 3.

DOI: 10.17304/ijil.vol4.2.139

Available at: <https://scholarhub.ui.ac.id/ijil/vol4/iss2/3>

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Economic and Legal Views of Depletion Premium in the Extraction of Petroleum Resources

Arsegianto*

Kontrak Bagi Hasil (*Production Sharing Contract/PSC*) telah menjadi sebuah standar kontrak usaha perminyakan sektor hulu di Indonesia. Berdasarkan Undang-Undang No. 22 Tahun 2001, aktivitas atas minyak dan gas bumi di sektor hulu hanya dapat berjalan apabila terdapat Kontrak Kerjasama yang dapat berupa Kontrak Bagi Hasil ataupun bentuk lain dari Kontrak Kerjasama, dimana memberikan lebih banyak keuntungan bagi Negara. Dalam pengelolaan sumber daya alam yang tak dapat diperbarui seperti minyak dan gas bumi, harus terdapat pengalokasian atas biaya pemakaian atau *depletion premium* untuk mengganti pengambilan satu unit yang menyebabkan hilangnya kesempatan atas satu unit sumber daya di masa yang akan datang, sebagai bagian dari pembangunan yang berkelanjutan. Tulisan ini berupaya untuk mengantarkan konsep dari *depletion premium* dalam Kontrak Kerjasama yang akan direalisasikan oleh Pemerintah dengan pengawasan nyata terhadap usaha minyak dan gas bumi di sektor hulu, sebagaimana dinyatakan dalam Pasal 33 Undang-undang Dasar 1945.

* The Author was born on September 25th 1950 in Yogyakarta. He received his Undergraduate Degree from Department of Petroleum Engineering ITB, (1981); received his Master from the University of Wisconsin, Madison (USA), Department of Urban and Regional Planning in the field of Energy analysis, policy and Planning (1984); and received his Doctoral Degree from the Technical Science, Asian Institute of Technology, Division of Energy Technology, Bangkok (1991). The Author has many experiences from various fields such as research, teaching, and other variety of works. Aside from that, the Author teaches not only in ITB but also in the University of Technology Sidney (UTS).

OVERVIEW OF UPSTREAM PETROLEUM REGULATION IN INDONESIA

Production Sharing Contract (PSC) has long become a standard contract of Indonesia upstream petroleum undertaking since the first PSC, which was signed between Pertamina and Independent Indonesia American Petroleum Company (IIAPCO) in 1966. Prior to that, foreign companies worked under Contract of Work (COW), where they held full control overall business. PSC system drastically changed the rules, which put the management control in the hands of government. Government assigned its state company, Pertamina, to carry out the government mission in managing the business. This was a long struggle for Pertamina to gain the rein of control since the big companies were not happy with change.

The first law that recognizes the state entitlement on natural resources is law No. 44/1960, which states explicitly that oil and gas, belongs to the state and only state companies may conduct the oil and gas business. In 1968, the three state companies were merged

Under the new oil and gas law, Law No. 22/2001, the upstream oil and gas activities work under Co-operation Contract; this can be Production Sharing Contract or other forms of co-operation contract, which gives more advantages to the State.

When Indonesia gained independence in August 17th of 1945, oil and gas resources belong to the people of Republic of Indonesia. In addition to Production Sharing Contract (PSC) that has been the standard contract for upstream oil and gas business in Indonesia, the new oil and gas law, Law No.22/2001, offers other types of contract as long as it brings benefit to the state.

Under PSC terms, contractor bears all expenses incurred during exploration and exploitation activities. If contractor fails to find oil and/or gas reserves at commercial value (economically feasible to be exploited under the contractual terms), he has to

relinquish the contract area to the government and bears all cost unrecovered. However, if he succeeds, all expenses are subject to recovery from the oil and/or gas sale. Cost recovery, a term used for cost reimbursement to the contractor, is spared before splitting the oil and/or gas sale revenue between government and contractor. To insure government receipt from oil and/or gas sale, a FTP (first trenced petroleum) term is put in the contract, which spares a portion (20%) of the gross revenue before cost recovery is to be imposed. This FTP is to be split between both parties at the same manner. The schematic diagram of PSC is depicted by Figure 1.

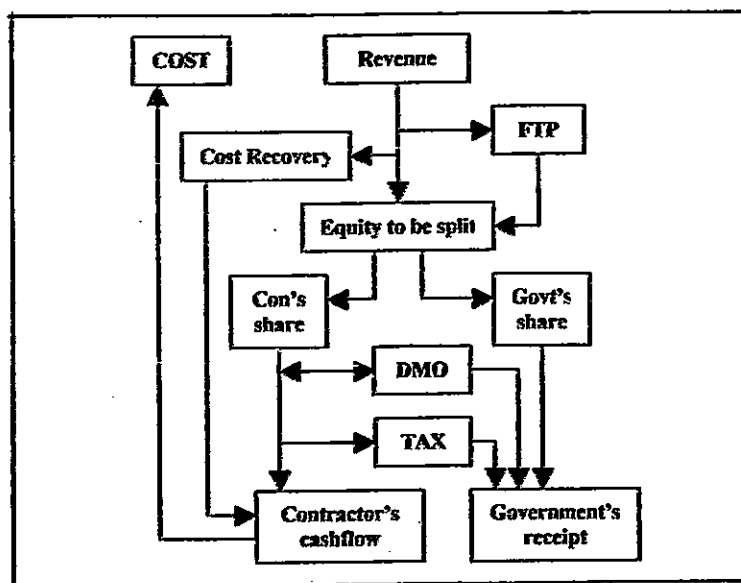


Figure 1. Schematic diagram of PSC

Other important issue in PSC is oil DMO (domestic market obligation), an obligation of contractor to spare 25% of his oil share to be delivered to the state with compensation of only 15% of market price. Under the new oil and gas law, this term applies for gas as well, but has not been implemented yet.

A standard PSC splits the net revenue (after cost recovery) as such that government receives 85% of oil and 70% of gas net revenue, including taxes. Besides, contractor is also obliged to pay contribution (for education of local human resource) and bonuses. Together with Government Decree No.35/2004 on Oil and Gas Upstream Activities), this non-tax-receipt is to be split between Central and Local Governments (Article 60). Further, the Article 61 states that the Central Government's share is the non-tax state revenue from oil and gas sector which part of it can be used by the department (of Energy and Mineral Resources).

CONCEPT OF DEPLETION PREMIUM

Natural resources are the state's asset and should be utilized for the maximum benefit of society. This is the message brought by the Article 33 of Constitution 1945 as a directive of how natural resources be managed. Natural resource, taking Randall's (1) definition, is something in nature that is useful and valuable in the condition in which we find it. Crude oil is a resource because it is useful and valuable (it has a price) at time of discovery, while gasoline is not a resource since it is not discovered from nature but output of refinery process instead.

For renewable resources like forest, a cluster of trees cut today will be renewed or regenerated in the short future. Utilization then should be managed as such that output (production) and input (regeneration) work in balance to maintain the sustainability of the system. When production is to be increased, recuperation is to be sped-up through re-plantation program.

But for non-renewable resources like oil, there is no way to regenerate the extracted oil within our acceptable time span, since the formation of oil takes million years, far beyond human's life. One barrel of oil produced to day will eliminate the opportunity to obtain that one barrel in the future. Strategy to maintain the short-term sustainability is to discover new oil reserve (through exploration) to replace the produced oil. Figure 2 shows a stock and flow model of oil (non-renewable resource) exploitation.

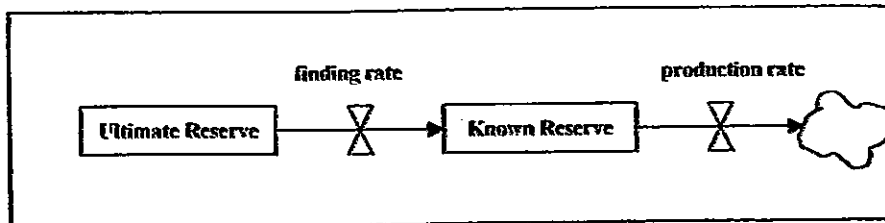


Figure 2. Stock and flow model of non-renewable oil exploitation

The rectangular and “valve-like” symbols represent stock and flow respectively, while “cloud” symbol represents activities beyond our concern. Reserve, an accumulation of resource, may be ultimate which is unknown, or known (potential or proven, depending on the degree of confidence of knowing). Ultimate reserve is never replenished and is depleted by the discovery (through exploration). Its size is unknown, yet we know that it decreases with the finding. The known reserve increases with the discovery and decreases with production. This concludes that the unknown size of ultimate reserve is always declining, while the known size of potential reserve and of proven reserve as well, may rise or shrink, depending on the rates of finding and production. The more oil found, less ultimate reserve remains, so more difficult to find oil in the future. Exploration for oil proceeds with deeper drillings into new unfriendly frontier area and deep sea. Consequently, cost per barrel soars.

Fairness is one among many objectives that economics tries to achieve. It is not fair if today generation enjoys the oil being extracted (at low cost) and leaves the future generation faces oil scarcity (at high cost). The oil user must pay additional cost for the replacement of the oil used. The replacement can be a finding of new oil reserve, or other form of energy at equal amount for the next generation. This user’s cost is called depletion premium, a premium that must be paid due to foregone opportunity for getting the resource in the future.

Harold Hotelling states that user’s cost must increase at the rate of social discount rate; this is known as Hotelling’s rule for the

management of exhaustible (non-renewable) resources. With the assumption of constant production cost, the price path of exhaustible resource can be drawn as shown in Figure 3.

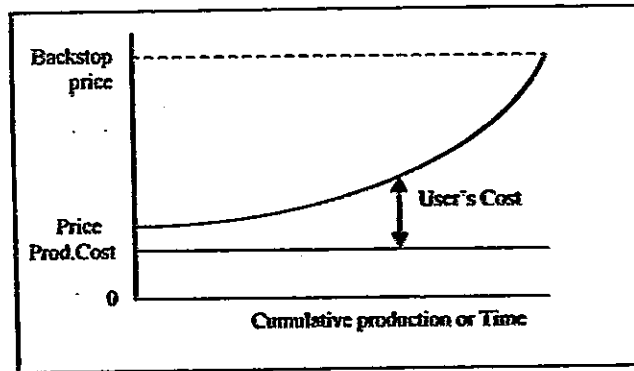


Figure 3. Price path of exhaustible resource according to Hotelling's rule.

Production cost decreases with the invention and employment of new efficient technology and management, but in the other hand the depleting resource makes the finding become more difficult and expensive: remote and frontier area must be explored, and deeper and off-shore wells must be drilled. These two forces work in opposing each other, therefore the balance of them underlies the assumption of constant production cost

According to Hotelling, the user's cost must increase as more resource extracted. This increasing price will reach a level of what is called a backstop price. Backstop price is a price level where the price of exhaustible resource equals the price of its renewable substitute. When oil price keeps increasing to reach a level of equivalent output of photovoltaic energy, say US\$ 100 per BOE (barrel oil equivalent), then oil use will be replaced by photovoltaic energy, which might be the end of oil era.

A simple approach for calculating depletion premium for non-renewable oil resource is proposed. Oil price consists of

production cost that represents value-added in which profit is included, plus depletion premium. Thus,

$$\boxed{P^0 = C^0 + dp} \quad (1)$$

Where : P^0 = oil price at time of extraction
 C^0 = production cost (including profit) of oil at time of extraction
 dp = depletion premium

Depletion premium is not value-added since it is already there and is not contributed by the producer. It must be conveyed to the next generation through investing it to yield the same amount of the oil being exploited today. If investment yield of depletion premium is MARR (minimum attractive rate of return), while production cost escalates at inflation rate (or bank's interest rate), then

$$\boxed{\frac{dp (1 + MARR)}{(1 + inf)} = C^0} \quad (2)$$

or

$$\frac{dp}{P^0} = \frac{(1 + inf)^N}{(1 + MARR)^N + (1 + inf)^N} \quad (3)$$

where: inf = inflation rate
MARR = minimum attractive rate of return
N = time period when investment of DP yields equal amount of oil value

For illustration, if dr equals bank's interest rate of 5%, MARR for oil and gas business is 25% (this high figure is common for high risk upstream oil and gas business), and it is assumed that investment of dp would yield after 10 years, then.

$$\frac{DP}{P^0} = \frac{(1+5\%)^{10}}{(1+25\%)^{10} \times (1+5\%)^{10}} = 0.11$$

If oil price is US\$ 50 per barrel, then the depletion premium is US\$ 5.5 per barrel.

Calculation of depletion premium is really ambiguous, because it is based on massive assumption, and needs information of future condition. Investment yield period (N), on which the value of depletion premium is very much sensitive, is just estimated. Yet depletion premium must be existent for inter-generational equity distribution when economic fairness is to be achieved.

No one may claim the right of depletion premium, therefore it must be conveyed to the next generation. This makes depletion premium have no relationship with profitability of the project; it is levied directly from the revenue no matter losses or profit incurred by the company.

Notwithstanding depletion premium is not recognized in Co-operation Contract, its existence is implicitly embedded in non-tax government receipt. Observing the PSC model shown in Figure 1, FTP, which is allocated directly from revenue before cost recovery, might be considered as depletion premium if it is not subject to split, but wholly allocated to government's receipt.

ILLUSTRATION OF DEPLETION PREMIUM IMPLEMENTATION

Cooperation contract of depletable resource must have a term of depletion premium levied on each unit of resource extracted from the ground, irrespective to whether it is utilized or not, or whether profit is made or not. The present extraction makes the opportunity of extracting that resource in the future is foregone.

For oil and gas, the law requires the cooperation contract recognize that mineral, mining, and economic rights are in the hand of government. This implies that government has full control on oil and gas before the sale point. Production sharing contract is a model to comply perfectly with the law.

ANALYSIS AND DISCUSSION

Introducing the depletion premium in the terms of contract will obviously hurt contractor's cash flow. Even when production is high and oil price is handsome, contractor still raises objection, since depletion premium exertion erodes profit. While big fields are becoming scarce in the country and investment environment has changed into global stage that makes investment so volatile, putting depletion premium term in to contract will drive investors away, unless some incentive be provided to compensate the profit shrink.

Restructuring the split in favour of contractor is one alternative to make compensate. Production sharing is a zero-sum-game between government and contractor. There is no way to make both government and contractor shares increase; to increase one party's share must sacrifice the other party's share. Increasing contractor's share on the "equity to be split" would help improve contractor's cash flow.

Another proposal is to squeeze exploration risk faced by contractor through risk-sharing with government. Government will share cost in the exploration phase, say 20% or 40% of cost. With this, contractor should decrease his MARR (minimum attractive rate of return) from level of what is now commonly applied, i.e. 20 to 30%.

Looking into government side, decreasing share but getting depletion premium will give a slight benefit when production and/or price increase. However, joining in risk sharing in the exploration phase would strengthen government bargaining position and may lead to higher receipt when business goes bullish. However, how government gets money to join facing the risk?

Question of who is responsible for managing the depletion premium fund has a clear answer: government. The fund should be allocated to exploration for new fields, research and development in oil and gas sector, and development of other substitute renewable (energy) resources. Government (Department of Finance) has to “ring-fence” or separates the fund from other budget to insure the availability of fund for investment in energy sector. Under price scenario of US\$ 50 per barrel and US\$ 3 per MSCF (million standard cubic feet) for oil and gas respectively, and current production of 1 million barrels oil per day and 8 BSCF (billion standard cubic feet) gas per day, the 5% depletion premium levied will provide US\$ 1.35 billion available for risk-sharing investment in energy sector. This impressive amount of money is expended by government, not by contractor, so government has strong bargaining position and real control on the management of the business. This is in line with the article 33 of 1945 Constitution.

Current practice of pouring oil and gas revenue into one batch of National Revenue and Budget has been discouraging the participation of national resource in oil and gas sector. Dependence on foreign investment becomes government policy in managing the oil and gas sector. The depletion premium allocation will help grow self-reliance on investment from domestic source; nevertheless, it certainly bites contribution to other economic and social sectors. This will likely be opposed by Department of Finance.

CONCLUSION AND RECOMMENDATION

Depletion premium is levied irrespective of either the oil (or gas) is utilized or not, since the extraction makes the opportunity of extracting it in the future foregone. Government will be responsible in managing the depletion premium fund that should be put back in the energy sector. Risk sharing in exploration will strengthen government’s bargaining position and control in the business.

Depletion premium provides fund to government to manage energy sector to support sustainability the national economic

development. This becomes source of fund in developing renewable energy as well. Self-reliance on the development of energy sector must be established to meet the future energy demand as an independent country. Depletion premium is more internal problem of government, between Ministry of Finance and Ministry of Energy and Mineral Resources. Amendment of Law No.22/2001 is needed to address the depletion premium to be allocated for the interest of development of energy sector.

So far, the term of government does not differentiate central and local government. Role of local governments (Kabupaten, City, and Province Authorities) are growing under era of regional autonomy. Mechanism of implementation of depletion premium in the contract, utilization of fund, and fund sharing between central and local government, to name view problems that will rise, are subject to further research.

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