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Optimizing Gas Utilization by Using Multi-destination Contract Term

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Abstract. The unrealized projected demand reflected on Gas Sales Agreement ("GSA") in point-to-point delivery scheme gave potential risk of unutilized volume when the end user is unable to receive and utilize gas delivered as contracted and might trigger Take-or-Pay or advance payment for PT Perusahaan Gas Negara Tbk as seller. The multi-destination scheme mitigates the risk by providing alternative destinations to which the gas can be delivered. This results in an increase of volume of gas delivery and the advanced payment previously paid due to Take-or-Pay shall be entirely taken.

Keyword(s): Commercial; Gas Sales Agreement (GSA); Point-to-point; Multi-destination

1 Introduction

The supply and demand of natural gas between gas buyers and sellers was reflected under a key agreement called Gas Sales and Purchase Agreement ("GSA") which documented the sales and purchase quantity and price of natural gas. Since the natural gas is produced on plateau rate and the firm production rate is required to maintain the economic value of the gas field, it is common that the GSA is made for a long-term period, although in recent years the long-term GSA has been supplemented by spot transactions (Kanai 2011). In most of long-term GSAs, swing or also known as Take-or-Pay ("TOP") clause is introduced in which the gas buyer has the obligation to take the gas delivery or to pay a minimum portion of the agreed-on payment. This term is usually equipped with a make-up or carry forward clause, which allows flexibility to manage year-to-year fluctuations. Therefore, there would be a minimum and maximum withdrawal capacity for every contract year (Edoli et al. 2013).

In Indonesia, natural gas is one of the state's regulated commodities. Hence, to ensure proper management and distribution of the natural gas, in 2016 the government introduced the regulation which mandates all gas contracts to have gas allocation from the government. (Kementerian Energi dan Sumber Daya Mineral (KESDM) 2016). Furthermore, it also prioritised the end-user of natural gas as follows: transportation, household, and small customer; national oil and gas lifting; fertilizer and petrochemical plant; natural gas-based industry; power generation; and industry which utilize natural gas as fuel. This had resulted in most of gas allocations seeming to encourage point-to-point contracts with the gas allocation specifies its end user and location.

Pertamina Gas Negara ("PGN") as Gas Subholding of Pertamina who conduct midstream and downstream gas business and served as buyer on GSA. In natural gas trading, PGN buys gas from several gas producers which then sold to end-users such as to household and commercial customers, industries, fertilizers, power plants and transportation sectors.

To serve industrial gas demand and in anticipation of industrial demand growth in Dumai, Central Sumatra, Indonesia, PGN entered into a point-to-point 5-years GSA in which the natural gas volume ramp-up from 8 BBTUD to 37 BBTUD. As the gas demand was not growing as expected which was reflected on Daily Contracted Quantity ("DCQ") clause on GSA, PGN was accountable to pay the TOP amount and the Gas Make-Up ("GMU") for which PGN has paid under TOP obligation, could be retrieved in subsequent years after the agreed threshold volume has been achieved.

Therefore, the amendment of the GSA was proposed to change the delivery point in GSA from point-to-point deliver specific to industrial demand in Dumai to multi-destination delivery point to electrical and industrial demand in Central Sumatra, Riau Archipelago, South Sumatra and West Java. This optimization has resulted in the recovery of the previously paid take-or-pay payment and the additional demand outside Dumai area served.

2 Methods and Procedure

2.1 Contract Terms

The initial contract terms used for for the Point-to-point Delivery Scheme is simplified as follows:

Table 1. Contract Terms for Point-to-point Delivery Scheme.

Terms	Unit	Value
Natural gas allocation	-	For industrial end users in Dumai and Central Sumatera
DCQ	BBTUD	37
TOP	% of Annual Contract Quantity	90
Make-up period	year after TOP paid	3
Contract period	year	5

The natural gas allocation clearly defined that the natural gas was only allocated for industrial end user in Dumai and Central Sumatera. Hence, it was prohibited to utilise the natural gas to other sector or region. The DCQ itself was set ramping-up to 37 BBTUD to accommodate future demand projections in the region.

As for the multi-destination delivery scheme, there was no alteration to the contract terms in Table 1, except the natural gas allocation. The natural gas allocation was changed from previously industrial end-users in Dumai and Central Sumatera to industrial and electricity end-users in Central Sumatera, Riau Archipelago, South Sumatera, and West Java.

2.2 Procedure

This paper focuses on the impact of the implementation of a multi-destination delivery scheme compared to point-to-point delivery scheme. Therefore, this work requires the amendment the natural gas allocation, which will be obtained by following procedures.

2.2.1 Gas Balance Review

It is necessary to review the current natural gas balance before submitting the GSA amendment proposal because any changes to the supply sources in a region would highly impact other supply contracts. Therefore, an assessment of current natural gas balance, especially in Central Sumatra, Riau Archipelago, South Sumatra, and West Java, was conducted to ensure which region available to take the gas supply. The assessment was done by reviewing the historical gas balance for each region to predict possibility of future imbalance when the multi-destination scheme was introduced. Moreover, the availability of gas infrastructure was also assessed to ensure that the gas could be delivered to prospective delivery points.

2.2.2 Terms Proposal and Amendment

The regulation requires the amendment of the current natural gas allocation before implementing the multi-destination delivery scheme. Therefore, discussion of multi-destination delivery point was then conducted with respective stakeholders such as Directorate General of Oil and Gas, SKK Migas, Cooperation Contract Contractors, and pipeline gas transporters before submitting the formal request for multi-destination delivery scheme to the Minister of Energy and Mineral Resources ("MEMR"). Once the approval from MEMR was released, the current delivery terms on the GSA should be amended to accommodate the implementation multi-destination delivery scheme.

2.2.3 Monitoring and Evaluation

The implementation of multi-destination delivery scheme was being evaluated by comparing the actual amount of make-up gas taken periodically with the amount of make-up gas available due to the TOP. Since the amount of make-up gas taken was linked to the amount of gas deliver to the end user, the additional revenue gained due to the make-up gas taken was also being calculated. This comparison was conducted to give insight into the potential of further development.

3 Results and Discussion

3.1 Point-to-point Delivery Contract Scheme

Gas Sales Agreement with point-to-point delivery also known as dedicated destination is the most common contract scheme applicable in Indonesia. Under this scheme, the gas was delivered only to one customer in one area. Hence, all parties participated in this contract scheme were heavily dependent to each other since any hindrance for each party to deliver or taken would severely impact the other party.

In order to make this GSA beneficial for both buyer and seller, it was essential to precisely project future demand which would be reflected in GSA as Daily Contract Quantity ("DCQ"). The demand projections and gas delivery realization for industrial sector in Dumai over the period of November 2018 – July 2021 before multi-destination delivery contract scheme was implemented was shown in Figure 1.

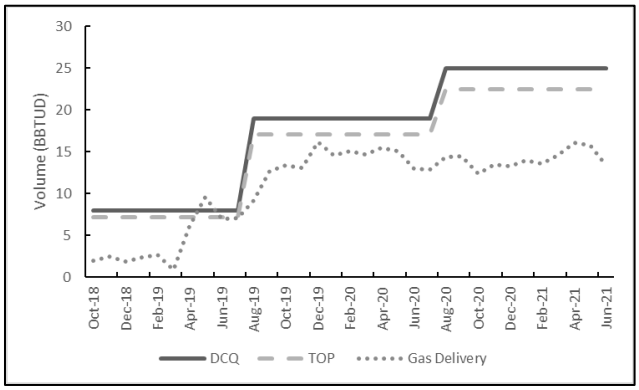

Figure 1. DCQ, TOP vs Gas Delivery with Point-to-point delivery

Since the gas delivery fell below the TOP level, PGN was obliged to pay the total TOP amount of US$ 45.5 million during these contract periods which could be recovered under GMU clause in 3 years after the TOP payment occurred. However, since the contract is due to be expired in December 2023, there are potential risks that the GMU could not be recovered. Therefore, the multi-destination delivery scheme was proposed to maximize the gas delivery under this contract by rerouting gas not only to industrial sector in Dumai but also by adding electricity sector and delivery points to its gas allocations.

3.2 Implementation of Multi-Destination Delivery Contract Scheme

While the gas demand in Central Sumatra and Riau Archipelago was not growing as expected, the other area such as South Sumatra and West Java was experiencing gas shortage as shown in Figure 2 and Figure 3.

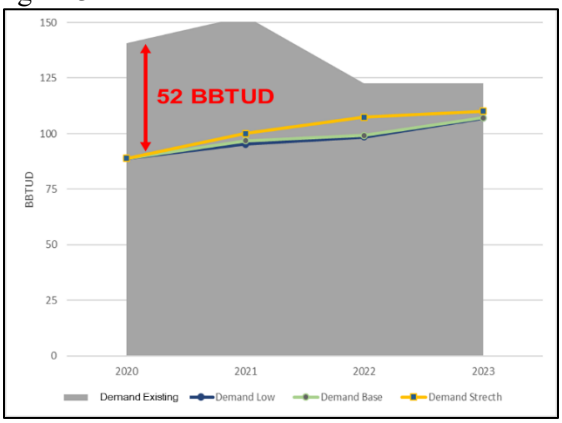

Figure 2. Gas Balance on Central Sumatra and Riau Archipelago

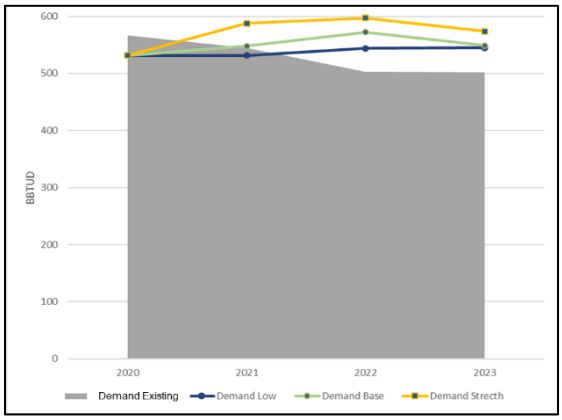

Figure 3. Gas Balance on South Sumatra and West Java

The gas source was already well-connected with three main transmission pipelines which would deliver gas to Riau Archipelago through Grissik-Singapore pipeline, to Central Sumatra through Grissik-Duri Pipeline and to South Sumatra and West Java through SSWJ pipeline as shown in Figure 4.

Figure 4. Transmission Pipeline Surrounding the Gas Source

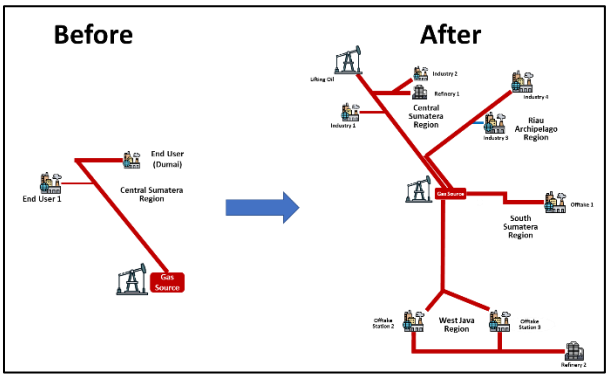

Figure 5. Point-to-point and Multi-destination Delivery Points scheme

With the oversupply and TOP risks occurred in Central Sumatra and Riau Archipelago and gas shortage took place in South Sumatra and West Java area, the gas supply was optimized by changing the point-to-point delivery contract term into multi-destination delivery points as shown in Figure 5.

Multi-destination delivery scheme could be implemented in GSA contract terms which would state that the gas source could be delivered into several area and demand sectors. The multi-destination in this GSA contract was done by expanding the contract delivery scheme from point-to-point delivery only to industrial customers located in Dumai dan Central Sumatera into electricity and industrial customers located in Central Sumatra, Riau Archipelago, South Sumatra and West Java. This expansion required approval by the Ministry of Energy and Mineral Resources by issuing the expansion of allocation letter for the gas source and amendment of respective GSA.

3.3 Economics Analysis

The implementation of multi-destination delivery point made the advanced payment which was previously paid due to delivery below the TOP level could be fully recovered by the end of GSA period in December 2023 as shown at Figure 6.

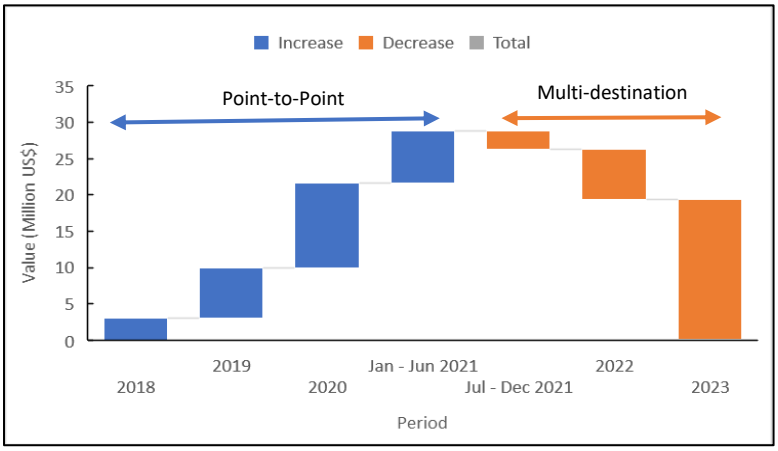

Figure 6. TOP/Advanced Payment and Recovery

On top of the recoverable TOP payment at the end of contract period, the multi-destination contract term will also bring additional revenue of US$119.2 million and margin of $17.2 million from delivering the gas to customers' demand in Riau Archipelago, South Sumatra and West Java and the potential impairment of $129.6 million due to TOP payment could be avoided.

4 Conclusion

A long-term GSA is commonly equipped with Take-or Pay clause to ensure the economic value of gas field operated by the seller. This clause is also embedded with the make-up clause to provide flexibility for the buyer to manage year-to-year demand fluctuations. However, when the natural gas demand was not properly developed as projected, there was a potential risk of the TOP paid become unrecoverable. Furthermore, current regulation which restricted the allocation of natural gas would severely affect the unrecovered TOP payment into sunk cost which heavily impact the buyer. Therefore, an initiative to provide alternative destinations became necessary to mitigate the risk. The multi-destination delivery scheme allowed the gas to be delivered into several destinations and the expansion delivery points of current natural gas allocation was mandatory to permit the implementation of this scheme. Once the expansion gas allocation was approved, the multi-destination scheme could be implemented by amending the delivery point terms in the GSA. By allowing the gas to be delivered into several delivery points, the advance payment would be fully recovered at the end of contract period and provide additional revenue for PGN of US$119.2 million.

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