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Experience of Acquiring Geothermal Concession Areas in Indonesia: Analysis of Pre-Tender Information, Price Cap Policy and Tender Process

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ABSTRACT

Initially, all geothermal concessions in Indonesia were given to Pertamina, as the long arm of the Government. There were two different types of geothermal development in the country: (1) Selling Steam, Pertamina either in cooperation with other companies under a Joint Operation Contract (JOC) or by itself, develops a steam field and sells the steam to PLN, the state owned electric company, as a power producer, and (2) Selling Electricity (as commonly called a "Total Project"), Pertamina again, either in cooperation with other companies under a JOC or by itself, develops both a steam field and the power plant and then sells the electricity to PLN. All of the installed geothermal power plants in Indonesia as seen today were developed under both of the mentioned schemes.

In 2003, the Government of Indonesia issued Geothermal Law No. 27 Year 2003, allowing either state owned companies or private companies to acquire geothermal concessions. This new Geothermal Law delegates authority to local governments (District and Provincial Government) in administering, awarding concessions and supervising the development of geothermal resources in their territory. In accordance with this Geothermal Law, any investor who wishes to acquire a geothermal concession is asked to participate in a tender process. This new Law provides equal rights to all companies in developing a geothermal concession. However, after the issuance of the Geothermal Law in 2003, no new geothermal concessions were awarded to investors, until the issuance of Presidential Decree No. 59/2007 that regulated the tender mechanism and procedures to acquire geothermal concessions. However, no new geothermal power plants were developed under these new regulations, as most of them are still in the process or at the beginning of initial exploration. In addition, geothermal development in the country is still facing several obstacles, such as: entrance of PPA/ESC, how to position PLN in the tender process so as to improve the PPA/ESC signing, enforcement of transparency, ensuring a fair and efficient bidding process; removing potential conflict of interest in the tender process, improving pricing policy as well as the scope and quality of the document in the tender process, etc.

To respond to the controversy over the regulation and to close the capacity gap between supply and demand, the Government announced the 10,000 MW 2nd Power Plant Crash Program, in which geothermal is planned to contribute about 3,600 MW. This additional power plant capacity provides a promising market for developers as well as power plant manufacturers as long as the Government can provide the environment to attract them.

This paper describes first the pros and cons of basic issues related to the tender process in acquiring geothermal concessions in accordance with the mentioned regulations. The experience of participants in the first geothermal concession tender calls which were run in accordance with Presidential Decree No. 14, provides unique information in this paper. Secondly, this paper also discusses the pricing policy for geothermal power as seen from the investor's perspective, the government's perspective and the off-taker's or the buyer's perspective. Thirdly, this paper also discusses other aspects of the tender process that can be improved in order to promote more geothermal energy usage in Indonesia.

1. INTRODUCTION

The first concessions called for tender in accordance with Geothermal Law No. 27 Year 2003 and Presidential Decree No. 59/2007, was held in mid 2008 by the Provincial Government of West Java – Indonesia. There were three concessions which called for tender, namely: Gunung Tangkuban Parahu area, Cisolok – Cisukarame Area and Gunung Tampomas area. Following this tender, there were several other Provincial Governors who planned to tender the geothermal concessions located in their jurisdictions, namely: Jailolo – Northern Maluku, Telaga Ngebel – East Java, Ungaran – Central Java, and Seulawah Agam – Aceh, etc.

From the commercial point of view high capital costs, long development time and relatively smaller sizes compared to other power plant types still remain as major problems in the geothermal power business.

With the intention of encouraging more utilization of geothermal energy for power generation, in the beginning of 2009, the Government launched the Second 10,000 MW Power Plant Crash Program, in addition to the First Power Plant Crash Program, to develop electric power in the period 2009-2014. This second crash program envisions that renewable energy such as geothermal and hydro power, will contribute about 60% of the requirement.

2. GEOTHERMAL REGULATION IN BRIEF

2.1 Geothermal Law No. 27 – 2003

The objective of this Law is to develop geothermal in a sustainable manner in parallel with boosting the national economy.

The law regulates the following major issues:

1. The authority for the issuance of the Concession Permits ("IUP") remains under the government of Indonesia, which is delegated into three levels: District, Provincial and Central Government, depending on the geographical position of the geothermal resources.

2. The maximum of concession area for the purpose of exploration is 200,000 hectares.

3. Acquisition of the geothermal Concession Permits shall be through a tender, based on an initial survey conducted either by the government or by a private company.

4. The Government can assign a private company to conduct an initial study at its own cost, under a "first come, first served" basis.

5. The holder of the Concession Permits has right to conduct exploration for 3 years, feasibility study for 2 years and production for a period of 30 years.

6. Land owners are obligated to give access to the Holder of the Concession Permits to develop geothermal resources in his area as long as the Holder of the Concession area has provided compensation to the Land Owner.

7. The Holder of the Concession Permits can transfer his permits to his affiliated company after obtaining an approval from the government.

2.2 Presidential Decree No. 59 – 2007 – Development of Geothermal Resources and Tender Mechanism

This Presidential Decree in general provides more detailed procedures regarding acquiring a geothermal concession.

This regulation provides procedures for a private company to conduct a preliminary/initial study. The result of the study will be proprietary to the Government of Indonesia. In exchange, that company can participate in the tender process and will be awarded a first right of refusal in the tender process as well as having the right to collect compensation costs against the study that had been done.

The Presidential Decree also provides detailed rules regarding the bidding procedure. However, each legal entity is only limited to have one concession area with maximum area of 200,000 Ha (494,000 acres) for exploration and 10,000 Ha (24,710 acres) for exploitation.

The holder of the Concession Permits is allowed to utilize the geothermal resources for the purpose of generating electricity or producing geothermal steam.

3. TENDER PROCESS

For the purpose of accommodating many different viewpoints and fairness and transparency, Local Government appointed a tender team that consists of representatives from the Department of Energy & Mineral Resources, academic institution, PLN representatives, professionals and associations.

In general, the tender process is divided into two major phases: Prequalification phase and Bid for Electricity Price phase.

3.1 Prequalification phase

In the prequalification phase, the bidder is required to submit administrative documents (legal status of the company and its financial aspects), and a technical proposal that covers the development program of the resources based on the initial study provided in the tender documents. The studies cover the following information:

3.1.1. Basic information from topographical data

This section explains about geothermal manifestations in the concession area that can lead to geothermal resources. The information includes the location of access roads, rivers and streams, farming areas, plantation areas, contours, location of hot springs, fumaroles, steaming grounds, etc.

3.1.2 General geological and geochemical surveys

The general geological surveys provide information about geological maps, lithography, regional geology, river flow patterns, geomorphology analysis, stratigraphy, geological structures, hydrology and simple geothermal model and also geochemical data for water, soil, pH distribution maps, Hg distribution maps.

3.1.3 General geophysical surveys

The general geophysical surveys reports about resistivity, mapping and sounding.

3.1.4 Capacity estimation

Based on those initial study reports, the preliminary capacity estimation is defined.

In addition to the capacity estimation, the tender document also provides information about infrastructure in the concession area and land status to encourage viability of the geothermal prospect.

Referring to those reports, the bidder is requested to propose development programs covering the activities that need to be done in the exploration stages, exploitation stages as well as power plant construction and operation.

In our experience of joining the tender process for three locations, the information provided for Mt. Tangkuban Parahu concession is the most complete information and data compared to other two locations.

3.2 Bid for Electricity Price

The qualified bidder is then invited to offer an electricity price for the related geothermal resources, based on their proposed development program. The winner shall be the one who proposed the lowest electricity price.

4. BASIC ISSUES

Geothermal is a high risk and high capital cost business that consists of upstream risks (exploration and exploitation) to confirm steam reserve and continuity of steam supply, the downstream risks (construction of gathering system and geothermal power plant) and last but not least is regulatory

risks (government act, environment issues, design standard, pricing policy, taxation, land use and autonomy regulation)

In several areas called for a tender, the tender documents mostly summarize information from preliminary studies/reports done in the past by other institutions/companies. The bidder relies on those data in proposing the development plan about the concession.

4.1 Electricity Price

Under Presidential Decree No. 59/2007, a geothermal concession can be called for a tender after an initial study had been conducted either by the Government or a private company appointed by the Government. In order to give a positive signal to investors, on May 9, 2008, the Minister of Energy and Mineral Resources issued Ministerial Decree No. 14 that regulates the maximum electricity price generated from geothermal, through the tender. This Ministerial Decree caps the electricity price based on 80% of electricity production cost in a regional electricity system, where the geothermal resource is located. This Ministerial Decree No. 14 has pros and cons for both the electricity buyer and the investors.

In an electricity system where there are many power plants generating electricity from coal or other cheaper production cost power plants, it will be very difficult for geothermal to compete (less than 80%) against those power plant types. Therefore geothermal potential will never be able to be developed in this kind of electricity system.

Conversely, in an electricity system where there are many power plants generating electricity from diesel plants or more expensive power plant types, investors can take excessive profits even though with similar risks to any other locations.

Considering these issues, on March 29, 2009 the Minister of Energy and Mineral Resources issued a Ministerial Decree No. 5/2009 to replace the Ministerial Decree No. 14.

Furthermore, on December 04, 2009, the Minister of Energy and Mineral Resources issued a Ministerial Decree No. 32/2009 stating that the cap price is cUSD 9.7/kWh.

However, there has still been debate on how to settle the electricity price in the ESC/PPA, as the electricity buyer will only start to negotiate PPA after the Feasibility Study has been completed, while most of the new concession areas are still under initial study stage.

4.2 Data Accuracy and Workability

As some of the tender document is made up of a summary of the reports and studies, (not the original reports or studies), then it has potential to have misinterpretations, unclear explanations, overstated or understated information. Providing original reports and studies can serve a complete understanding, accurate interpretation, clear explanation related to the purpose of each study and report.

In general there is still no qualification standard used by local government in selecting a company to conduct initial study, to maintain the quality and coverage of the study.

4.3 Fairness and Risks to Investors

In a green or brown geothermal field, the investor has major risks: Business scheme, regulatory, technical, operation and maintenance. Those risks will be monetized and reflected into the electricity price. Greater uncertainty of data and information will lead to higher electricity price estimation.

The current regulation also has the potential to cause conflict of interest during the tender process, given the fact that the company, which conducted the study at its own cost, mostly has the intention to acquire the concession, not just merely to recoup the initial study costs that have already been spent. In this situation, no parties can guarantee that the data presented in the tender document will represent all of the information gathered when the initial study was conducted. There is no level playing field in the tender process. In addition, referring to tender experience from several concession areas recently, there are many bidding requirements that are used to protect other parties so they can participate in the tender process. Therefore the current regulation still needs some revision to provide more transparency in the tender process.

5. HOW TO IMPROVE THE TENDER PROCESS

To encourage the development of geothermal power plants in Indonesia and to make the tender process more competitive and workable, some improvements are required.

5.1. Improve Quality of the Tender Documents

The tender document quality shall be improved in certain ways.

5.1.1. Scope of the Study should go up to the Feasibility Stage

To provide more information and minimize misinterpretation of potential reserves and other technical information and data, it would be much better that the tender call for a concession be carried out only after a feasibility study for that concession has been completed.

In the feasibility stage, much basic information regarding the site has already been defined. The depth and variety of the information will also have been included in the tender document. The information resulting from the exploration drilling will be very useful for a developer to estimate the risk and the size of the resource. There is more certainty in terms of capacity, fluid characteristics, depth of the well, etc.

In accommodating the above issues, the Government needs to standardize the content and scope of the feasibility study as a requirement before any concession is called for a tender.

5.1.2. More accurate and up-to-date data

More accurate and up-to-date data can be achieved by conducting preliminary study and exploration using a worldwide reputable company. The information will be more valuable to all parties if the government can provide data survey up to exploration drilling. Exploration drilling can provide underground information related to the estimation of geothermal development, the well depth in general, information about gradient temperatures and isothermal lines at different layers of depths and general information about permeability.

Even though this approach may require a higher cost at the initial stage compared to the current construction of the tender documents, this approach will provide more benefits, such as:

- High value and quality of the tender document will attract more global investors to participate in the tender.

- More accurate data will lead to lower risk that should be taken by bidder and at the end will lead to lower electricity price.

5.1.3. Commercial aspect of the electricity sales

The model of the Power Purchase Agreement (PPA) shall be informed in advance as part of the tender documents, allowing the bidder to assess the risk and comfortability in entering the agreement. This also ensures a clear tender process and risks to bidder, which then can minimize potential disputes between bidder and electricity buyer.

Under the current regulation, a company is limited to have only one geothermal concession, which then will lead to higher overhead costs related to the development and establishment of a special purpose company for every concession.

5.1.4. Long Term Consequences to the Company

The tender process may take only several months to complete, however it will have a long-term commercial consequences to the company. Therefore, data accuracy and completeness will be a must for a company to be able to assess reasonable risks.

5.1.5. Levelized Electricity Price

The tender basically evaluates commercial issues over the period of 30 years. This is a time frame that can lead to high risk to investors besides providing a long-term concession. Under this circumstance, it will be more flexible to both electricity buyer and investor to adopt a price formula/equation rather than a fixed single price that can accommodate all situations within the next 30 years, which is almost impossible.

Not using a single fixed tariff will also provide more a flexible scheme to investors to have staging electricity price, i.e.: i). step-up price, cheaper price in the beginning and more expensive price in late years, or ii). step-down price, more expensive price in the beginning and cheaper price in late years.

Under the above price scheme, price evaluation can be based on a levelized electricity price rather than the single electricity price.

5.1.6. Legal Aspect of the Tender

Other uncertainty risks to the bidder are risks related to compliance of the governmental regulation/permits, such as environmental permits, work permits, and land usage permits. The government as the regulator shall guarantee these permits will not burden the development of the project. The concession area must be clear from any dispute with other permits related for other mining, forestry, etc.

5.2. Improvement to the Tender Process

The tender process can also be improved in certain ways to guarantee the viability of the winner and that the project can be executed on time.

The prequalification criteria shall ensure that the holder of the concession permits will capable to execute the project. The criteria such as financial and technical capabilities shall be clearly stated with minimum threshold values.

In defining the tender mechanism, it is also valuable to learn from other practical tenders conducted in other countries.

5.2.1. No Developer allowed to conduct Study

To respond to the conflict of interest issue during the tender process due to the first refusal right, the Government needs to establish clear regulations that developers will not be permitted to conduct the study. Instead the Government itself should take a bigger role. To cope with the limited capability of the Government to provide funding for conducting the study, it can arrange a Private Partnership Participation or Full Government Support as shown in Figure 1.

Full Government Support can be provided after the government gets soft loan facilities from inter-governmental banks such as: World Bank, ADB, or other types of financial aid from developed countries.

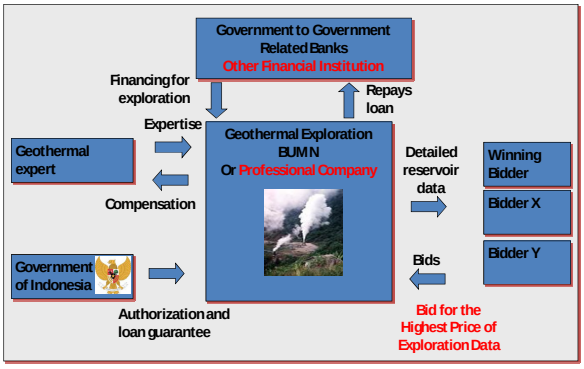

Figure 1: Model Funding Feasibility Costs

An independent team can also be assigned to supervise the tender process to ensure that it is fair and effective, especially to verify data completeness of the tender document as well as to ensure that standard tender procedures are applied.

5.2.2 Electricity Price Base vs. Quality of Development Program and Compensation Costs Base

Currently, the evaluation of the tender refers to the electricity price criterion. Considering that there is still high uncertainty in the exploration and exploitation stages, then the bidder may not have sufficient information to make a decision on the long term (30 years) electricity price. Alternatively, the tender can be based on the qualified development program and schedule, as well as financial capabilities to conduct the exploration and exploitation works timely. In addition the concession permits will be awarded to a company that offers a higher compensation cost against the study that was conducted by government or private company.

6. CAP PRICING POLICY

In accordance to the Ministerial Decree No. 14/2008, the cap price for geothermal power plant is calculated based on percentage of PLN's production costs:

a) To a geothermal power plant with capacity of 10 to 55 MW, the electricity price is capped at 85% of PLN's regional production costs measured at the Medium (70 kV) or High (150 kV) Voltage transmission lines where the geothermal power plant is located.

b) To a geothermal power plant with capacity of more than 55 MW, the electricity price is capped at 80% of PLN's regional production costs measured at the High (150 kV) Voltage transmission line where the geothermal power plant is located.

This cap pricing policy can prevent the development of geothermal resources in a location where there is high contribution from coal-fired power plants, such as in the Java-Bali System, where PLN has relatively low average production costs.

6.1. As Seen by Buyers

The cap pricing policy is to ensure PLN as an off-taker (Buyer) will buy electricity generated by the geothermal power plant relatively cheaper than its own production cost. The cap pricing policy is favorable to PLN in a regional electricity area where there is heavy contribution from coal or other cheaper power plant type. However, the cap pricing is also less favorable to PLN in the regional areas where there is no other power plant types other than oil-based power plants, as the reasonable investment cost to develop geothermal areas in these locations may be far below PLN's production costs.

6.2. As Seen by Investors

The cap pricing policy as seen by investors contradicts that of the electricity buyer. As seen by investors, the cap pricing policy shall be capable of covering the investment costs at reasonable premium. The cap pricing policy is favorable to investors in a regional electricity area where there is low contribution from coal or other cheaper power plant type. However, the cap pricing is very much favorable to investors in a regional area where there is no other power plant types other than oil-based power plants, as the reasonable investment cost to develop geothermal areas in these locations may be far below PLN's production costs.

The cap pricing policy will prevent development of geothermal prospect areas, such as in the Java-Bali system and in South Sumatra System, in which there is high contribution of power generation from coal and hydro.

6.3. As Seen by the Government

The government will see the cap pricing policy as a mechanism to limit the oil and electricity subsidy, but at the same time can still provide flexibility to investors in developing geothermal prospects.

6.4. Issuance of Ministerial Decree No. 5/2009 and Ministerial Decree No. 32/2009

To accommodates pros and cons in over the cap pricing policy between investors and electricity buyers, the government then issued a Ministerial Decree No. 5/2009, in which the electricity price will be based on an investment based approach, as case by case depends on geographical conditions of the concession area. This mechanism is basically more flexible for both investors and buyer, however it can make for long negotiation between them. Finally, the government issued a Ministerial Decree No. 32/2009, stating that the cap price is cUSD 9.7/kWh.

However, as long as there is no clear support from the government to close the gap between the purchasing power of the electricity buyer, as electricity tariff at the end user is still regulated, which is in average still very much lower than cUSD 9.7/kWh, then it will be very difficult for the electricity buyer to have willingness to purchase the electricity from geothermal.

7. OTHER CONSIDERATIONS

7.1. Use of Pipe Lines for Developing Geothermal PP in Indonesia

Referring to the difficulties, risks and capabilities of a company to develop a geothermal power plant, the incumbent developers can still take major roles in developing geothermal power plants in Indonesia. They can expand their capacity at their existing concession or at a new concession.

The Government needs to encourage the incumbent developers to expand their capacity at least at their existing concessions.

7.2. Manufacturer's Participation

Referring to the 10,000 MW 2nd Power Plant Crash Program, in which Geothermal will take an important role, Indonesia will become an attractive market for Geothermal Manufacturers. In this situation, the Government also needs to step in to attract the manufacturers to build factories in Indonesia.

The above arrangement will provide many advantages in the development of geothermal in Indonesia, such as: Manufacturers can have advantages in utilizing cheaper labor costs compared to their home country, it can significantly reduce transportation costs, manufacturer has closer relationship with the market, etc.

7.3. Costs for Infrastructures are accounted as Deductible Taxes

As already known, most geothermal areas are located at remote sites, where there is very limited infrastructure (road, bridges, accommodations, etc). The investor should provide this infrastructure at their own cost in order to be able to develop their site. This situation creates a higher investment cost while in fact the facilities might not be exclusively used by the developers. The community nearby the sites can use the infrastructure for their daily activities including transportation thus improving the local economy. It would therefore be reasonable that all costs related to the provision of local infrastructure could be accounted as deductible from taxes payable by the developer.

The above arrangement can reduce investment cost of up to 5 % - depending on the geographical condition, which then will result in a lower electricity price sold to PLN.

8. CONCLUSION

Based on the above explanations, we can conclude:

1. Acquisition of Concession Permits through a tender mechanism provides equal opportunities to all of players, however, the tender documents and rules must be clearly defined. A tender document that lacks technical data will cause uncertainty in estimating capacity, investment costs, steam characteristics, etc. .

2. Data accuracy, data completeness and credential of the company that conducted the initial study can be valuable tools to improve the quality of the tender document and quality of the tender, leading to attract investors to participate in the tender process. Therefore it will be better to the government to expense more initial cost in preparing the study as it will be rewarded

by a better quality of bid proposal and workability of the project.

3. To avoid potential risk related to conflict of interest, developers should not be permitted to conduct feasibility studies. Instead, the government should take a greater role at this stage. Alternatively, the government can facilitate Private Participation Partnerships to fund the cost of the study. A supervision team can also be assigned to ensure an effective and fair tender process.

4. As an alternative to the tender based on electricity pricing, evaluation of the tender based on quality of the development program can be a good mechanism to be considered.

5. Cap price policy results in pros and cons for both electricity buyer and investors. The cap price is less favorable to investors in areas where the geothermal resources are located in a developed electricity system such as Java-Bali, since the geothermal power plant must compete with lower electricity price power plants (i.e. coal-fired power plants). On the other hand, in remote areas where only diesel fuel power plant is available, the price can be very favorable to the investor, but may be less favorable to the buyer as the investment cost to the investor may be far below PLN's production costs.

6. Issuance of Ministerial decree No. 32/2009 wishes to be able to solve the pricing issues between buyers and sellers, however, government needs to provide financial support to electricity buyer such as geothermal subsidy to make electricity buyer have sufficient purchasing power.

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BIOGRAPHIES

Herman Darnel, was born in Payakumbuh, 15 April 1954. Graduated from Bandung Institute of Technology on Electrical Engineering in 1979; Master degree on Electrical Engineering from University of Manchester Institute of Science & Technology in 1988. Working experience in PLN started as Supervisor of Protection and Telecommunication - Head Office PLN (1979 ~ 1987); Head of PLN Distribution Dispatch, South Sumatera (1987 ~ 1990); Head of PLN Tanjung Karang Branch Office (1990 ~ 1991); Deputy Head of PLN Regional Offices IV (1991~ 1994); Deputy Head of PLN Regional Offices East Java Distribution (1994 ~ 1995); Manager of Planning & Development PLN PJB I (1995 ~ 1998); Director of Development & Commerce PLN PJB I (1998 ~ 2000), Director of Development & Commerce PT. Indonesia Power (2000 ~ 2002), Director of System & HRD (2002 ~ 2003), Director of Transmission and Distribution (2003 ~ 2007)

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