

Conference Paper

The Public Private Partnership Model in the Development and Management of Coal-Fired Power Stations (PLTU) in Jenepoto Regency

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Abstract.

Public-private partnership is a form of partnership between the government and the private sector. This study aims to analyze the public-private partnership model adapted to the development and management of coal-fired power stations in Jeneponto Regency, South Sulawesi. The research method uses a qualitative approach to explain research phenomena according to its context. The data sources included primary and secondary data. Data collection consisted of observations, in-depth interviews, and document reviews. The stages of data analysis included data collection, data reduction, data presentation, and conclusion. The results show that the development and management of the Coal-Fired Power Station (PLTU) in Jeneponto Regency uses the lifecycle contract model. The design elements show that the PLTU project consists of two power-generating units. Each unit was designed to deliver a nominal net capacity of not less than 100 MW to the PLN system with a tension of 150 kV. The build element shows that all the PLTU infrastructure and equipments have been built in accordance with the applicable rules and standards. The financing elements of construction and management of the PLTU is the responsibility of the PT. Bosowa Energy assumes responsibility first, followed by PT. PLN Persero will purchase power, while maintenance is a shared responsibility.

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1. Introduction

The government is required to create welfare for the community by fulfilling the needs that are the responsibility of the government itself, but in implementing this, the government experiences limitations, one of which is the limited budget or costs as well as the quality of resources owned by the government. Thus, it is necessary to cooperate with the private sector to realize or fulfill all public or community needs. The private sector needs to assist the government in creating and developing the fulfillment of community needs.

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Therefore, the concept of Public Private Partnership (PPP), commonly referred to as private government cooperation, is an alternative financing mechanism in the procurement of public services. In this case, the government experiences limitations, one of which is the limited budget or costs as well as the quality of the resources owned by the government. Thus, it is necessary to cooperate with the private sector to realize or fulfill all public or community needs. The private sector needs to assist the government in creating and developing the fulfillment of community needs. Therefore,

One form of partnership between the government and private sector is the construction and management of a Coal-Fired Power Station (PLTU). This partnership is conducted to provide energy infrastructure and meet the energy needs of the public. Of the various PLTUs in Indonesia, one is in Jeneponto Regency. PPP involves a State Power Plant (PLN), representing elements of the government with PT. Bosowa Energi as a private sector.

PT. Bosowa Energi is an energy infrastructure that has been realized, one of which is in Jeneponto, this is a company that contributes to providing South Sulawesi's electricity needs with a capacity of 2x125 MW. The need for electricity in South Sulawesi and West Sulawesi continues to increase, as economic growth is higher than the national average, making PT. Bosowa Energi is spurring the construction of the power plant, which in this case is the PLTU. The PLTU Project under the auspices of PT. Bosowa Energi is designed to have a capacity of 2x135 MW (gross capacity) or 2x125 (net capacity).

PT. Bosowa Energi is a subsidiary of Bosowa Energi as a Coal-Fired Power Station (PLTU) is a power plant where electrical energy is generated by a generator that is rotated by a steam turbine that utilizes steam pressure resulting from water evaporation heated by fuel in the combustion chamber (boilers). Coal power plants are the main sources of energy worldwide. The global electricity supply relies on coal-fired power plants.

Public Private Partnership(PPP) in the study of public administration is important in providing services to the community (public services), because with PPP as a study in public administration it can provide quality, effectiveness and efficiency in providing public services. The private sector's involvement in public service matters is because it is considered to have more good resources, and for the public sector, it can lighten the responsibility/burden as well as resource and cost efficiency.

Public-private partnership (PPP) is defined as a contractual agreement between a political body and a private entity, which shares the assets and capabilities of each party in operating a facility or service over a fairly long period of time, namely 20-30 years or more. Through this collaboration, the expertise and assets of the government and

the private sector work together to provide services to the community and carry out cooperation, where the potential risks and benefits in providing services or facilities are shared between the government and the private sector. In this form of PPP cooperation, the government still has authority over companies or private organizations that are invited to work together.

Public–private partnership (PPP) as a public policy has certain objectives to be achieved, namely, closing the financial gap (financial gaps) that occurred due to the insufficiency of the Indonesian Government's budget in financing infrastructure. Adopting a provisioning scheme Public Private Partnership (PPP), or currently better known as the Government Cooperation with Business Entities (PPP) scheme, is the adoption of public policy Toyib and Nugroho, [1].

The reasons for the need for private sector involvement (PPP) in handling public affairs for development and in terms of providing public infrastructure or facilities are the limited budget and resources owned by the government, and private businesses are considered to be faster and more efficient than the government. The efficiency of the private sector, the quality of human resources, and the speed of adoption of technological developments are often the reasons for the need to involve the private sector (PPP) in providing services to the community.

Public Private Partnership has several models of prospective plans that are divided into several models as disclosed by Matraeva et al. [2], including a) Concession Agreement, b) Lifecycle Contracts, c) Project Financing, d) Forfeiting models, e) Attracting NPOs, f) Social Service Provision Contract, g) Service Provision Contract (Outsourcing), and h) Property Lease Agreement.

Based on the Power Purchase Agreement contract document between PT. PLN Persero and PT. Bosowa Energy in the construction and management of the Jeneponto PLTU shows that the public–private partnership model adapted is the lifecycle contract model. As explained by Timchuc Oksana et al. [3], the Russian Federation has not used much foreign experience in implementing life cycle contracts (LCC) or design–build–finance – maintenance (DBFM). LCC are a form of contract used in various countries. This type of contract is defined as a cooperation between the public and private sectors where the private and public sectors enter into a concession contract in carrying out starting from the design (design)- get up (builds)– financing (finance)- maintenance (Maintenance) where the private sector can develop its cooperation/projects in a sustainable manner and is a type of concession (concessions), and in France, this contract is referred to as “partnership contracts” Matraeva et al [2].

Furthermore, it was revealed that the intended design was a partnership project between the government and private sector. How then is the development of cooperative projects? Financing is related to the financial aspects of project development. Maintenance is related to how a manager performs maintenance on a partnered project.

Based on this description, this paper intends to describe and explain the life cycle contract model in a public-private partnership pattern in the development and management of coal-fired power stations (PLTU) Jeneponto Regency. In analyzing this public-private partnership study using the idea of Matraeva et al. [2], which explains that the lifecycle contract has several elements, including design, build, finance, and maintenance.

2. Methods

This study uses a qualitative approach because it is considered relevant to reveal the phenomenon under study according to context. The research strategy used is a case study because it is considered an appropriate strategy for uncovering empirical facts Yin, [4]. The participants in this research included stakeholders from PT. Bosowa Energy and PT. PLN Persero, as a partner party, as stated in the contract power Purchase Agreement between the two parties.

The sources of the research data include primary and secondary data. Data were collected through observations, in-depth interviews, and documents. Observations were made on the PLTU activity and energy supply between PT. Bosowa Energy as an energy service provider as well as a PLTU manager for PT. PLN Persero. Then, in-depth interviews were conducted with partnered stakeholders, namely, PT. Bosowa Energy and PT. PLN Persero. Document search included contract documents and other supporting documents. Data analysis included four stages: data collection, data reduction, data presentation, and drawing conclusions (Miles et al., [5]).

3. Results and Discussion

PT. Bosowa, as the manager of the Coal-Fired Power Station (PLTU), is a company engaged in the Coal-Fired Power Station business, which is widely used because of its high efficiency and ease of obtaining fuel to produce economical electrical energy. A Coal-Fired Power Station (PLTU) is an energy conversion machine that converts chemical energy in fuel into electrical energy. The energy conversion process at PLTU occurs in three stages. First, the chemical energy in the fuel is converted into heat energy in the form of high-pressure high-temperature steam. Second, heat energy (steam) is

converted into mechanical energy in the form of rotation. Third, the mechanical energy is converted into electrical energy.

PT. Bosowa PLTU is a joint venture company between Bosowa Corporation and Sumbergas Sakti Prima which is an Independent Power Producer (IPP). PLTU Jeneponto with coal fuel supplies power to the PLN Selselbar 150 KV network system with a contract period of 30 years. PT. Bosowa PLTU Jeneponto was built on an area of 62.3ha and is integrated with a special port that can accommodate 12,000 DWT barges with an investment value of 3 trillion. The presence of PT Bosowa PLTU Jeneponto helped PT. PLN (Persero) in supplying electricity in Selselbar and assisting the government in reducing fuel subsidies.

The lifecycle contract is one of the models in the public-private partnership approach that focuses on design, build, finance, and maintenance elements Matraeva et al., [2]. It should be understood that the lifecycle contract in the context of a public-private partnership focuses on contractual aspects in public and private partnerships.

Based on the results of research on public-private partnerships in the construction and management of the Jeneponto Coal-Fired Power Station (PLTU), the public-private partnership model used is a lifecycle contract explained as follows.

3.1. Design

Based on the Power Purchase Agreement contract document between PT. PLN Persero as a government entity, and PT. Bosowa Energy, a private company, provided information that the Coal-Fired Power Station (PLTU) Project consists of two power-generating units. Each unit was designed to deliver a nominal net capacity of not less than 100 MW to the PLN system with a voltage of 150 kV. This unit will be financed, designed, built, commissioned, owned, operated, and maintained by the PT. Bosowa Energy. Owner and manager of the PLTU and PT. Bosowa Energy has the right to modify or change the design and parameters of project equipment as long as such modifications or changes result in generator performance that is the same as or better than the performance that would be achieved without such modifications or changes.

3.2. Bulids

Based on the Power Purchase Agreement contract document, PT. Bosowa Energy as a partner of PT. Persero built the Jeneponto Coal-Fired Power Station (PLTU) to build the PLTU infrastructure. The construction and preparation of the PLTU infrastructure

includes Main Plant Equipment, Auxiliary systems, miscellaneous auxiliary systems, electrical systems, Instrumentation And Control Systems, Civil and Site, Balance-of-Plant Equipment, up to the plant design in accordance with applicable standards.

First, the construction of the Main Plant Equipment includes: a) a Steam Generator Unit, which consists of Pulverized Coal Firing, Furnace, Superheater, Reheater, Air and Gas System, Firing System, Furnace Burner Control System, Steam Drum, and Pulverizer; b) turbine generator units; c) Condensing Equipment; d) Boiler Feed Pumps and Motor Drivers; e) aerating feed water heaters and closed heaters; f) Electrostatic Precipitators; and g) chimneys/stacks.

Auxiliary systems consist of a coal handling system, ash handling system, plant water system, fuel oil system, ventilation and air conditioning systems, and fire protection systems. Third, Miscellaneous Auxiliary Systems consist of a Turbine Oil Purification System, Chemical Feed System. The Electrical System includes electrical systems, generators, generator transformers, bus ducts, unit auxiliary transformers, startup/standby transformers, voltage transformers, power supply arrangements to service stations, switchgear, plant DC systems, control and relaying, communication systems, lighting systems, grounding and lightning protection, emergency power supply systems, Uninterruptible Power Supply Systems, and SCADA Systems.

The five Instrumentation And Control System devices include the data acquisition subsystem, closed-loop control subsystem, programmable logic control system, operation console (Unit Control Board), supervision subsystem, historical data storage, retrieval and calculation subsystem, boiler control system, and turbine–generator control system. Sixth, Civil and Site construction consists of Site Development, Major buildings, Seawater Intake And Discharge, Oil Separator, Sanitary, Wastewater Treatment System, Landscaping, Ash Storage Area, Coal Terminal Jetty. Seventh, Balance-of-Plant Equipment includes Turbine Cycle Equipment, Turbine Accessories, Pump Data, Miscellaneous Heat Exchanges, Station Air Compressors, Station Air Receivers, Air Dryers, Water Treatment Equipment, Light Oil Tanks, Ash Handling Systems, Electrostatic Precipitators,

3.3. Financing

PT. Bosowa Energy, as the builder and manager of PLTU Jeneponto, provides and supplies energy to the PT. PLN was sourced from PLTU Jeneponto. In terms of development, the PT. Bosowa Energy is building a PLTU with an investment of approximately 3 trillion. During the operation, the PT PLN Persero will make power purchases every

month to the PT. Bosowa Energy. Below is a summary of the sample calculation for power purchase.

TABLE 1: Monthly capacity and energy payments for November 2012.

	Local Portion (IDR)	Currency Foreign Currency Por- tion (IDR)	Total Rupiah Calcula- tion (Rp)
Component A	0	32,425,920,000	32,425,920,000
Component B	1,847,156,869.57	1,898,507,033.82	3,745,663,903.39
Component C	19,734,105,600.00	0	19,734,105,600.00
Component D	631,432,617.39	648,986,171.80	1,280,418,789.20
Component E	0	0	0
Total (IDR)	22,212,695,086.96	34,973,413,205.63	57,186,108,292.58
Forex. Rate		10,000	
	Rp	US\$	
TOTAL	22,212,695,086.96	3,497,341.32	

Source : Power Purchase Agreement, 2007

A service contract is a form of partnership that focuses more on the role of the government, both in terms of investment and service provision. By contrast, the Build Operates Own model is loosely a form of PPP that focuses on investment and service provision in the private sector, and the government only acts as a facilitator and regulator Kumar and Prasad, [6].

3.4. Maintenance

Based on the Electricity Supply Agreement between the parties, PT. Bosowa Energy must operate, maintain, and repair the PLTU in a manner consistent with observance of good utility practices. PT. Bosowa Energy must place all safety equipment and safety practices required by good utility practices on-site. As long as it is consistent with good utility practices, PT Bosowa Energy, as the seller, must keep accurate records of any accidents or other occurrences at the site, which results in injury to persons or damage to property.

PT Bosowa Energi and PT PLN Persero, respectively, must ensure that their personnel are on duty at the project and delivery center, as the case may be, twenty-four (24) hours a day and seven (7) days a week starting from the moment they are assigned from the first operating unit. The appointment of contractors does not release PT Bosowa Energy from any of its obligations under the contract. The parties must form an implementing committee consisting of four (4) people, two of whom are appointed by PT Bosowa Energi and PT PLN.

Additionally, with respect to pollution, PT. Bosowa Energy must build and operate factories in accordance with established environmental standards. All other legal requirements related to pollution control and environmental standards. A public-private partnership (PPP) is an ongoing agreement between a government and a private sector organization in which the private organization participates in the decision-making and production of public goods or services. This is realized in the partnership in the Jeneponto PLTU project, which involves the government and the private sector.

4. Conclusion

The research results show that the development and management of the Coal-Fired Power Station (PLTU) in Jeneponto Regency uses a Lifecycle Contract as one of the models in a public-private partnership. Design elements based on the Power Purchase Agreement contract document show that the Coal-Fired Power Station (PLTU) Project consists of two power-generating units. Each unit was designed to deliver a nominal net capacity of not less than 100 MW to the PLN network system with a tension of 150 kV. This unit will be financed, designed, built, commissioned, owned, operated, and maintained by the PT. Bosowa Energy. The Build element shows that all Coal-Fired Power Station (PLTU) infrastructure and equipment have been built in accordance with the applicable rules and standards. Financing elements where the construction and management of the Coal-Fired Power Station (PLTU) is the responsibility of the PT. Bosowa Energy, and PT. PLN Persero will purchase power. Maintenance is a shared responsibility.

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