

Public-Private Partnership in the Provision of Street Lighting Equipment in Bandung City

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Abstract

As of 2018, Bandung city has approximately 28,000 Street Lighting Equipment (SLE). Government constraints in providing funds to optimize SLE lead to limited government ability to optimize SLE. However, with the opening of the tap of the private sector's involvement policy in managing SLE infrastructure, there is the potential to optimize SLE. The problem in implementing the SLE PPP project is determining a suitable PPP scheme for providing SLE in Bandung. The obstacles include investment development schemes, the SLE database, and weak coordination between stakeholders. This research uses a qualitative approach. Determining the object of the study is carried out utilizing purposeful samples. While data collection techniques by performing observation, interview, documentation tracing, and audiovisual. Test reliability and validity using triangulation techniques. The resulting research concluded that the provision of SLE in the city of Bandung is to involve business entities in designing, building, financing, operating, and maintaining SLE infrastructure assets which will later become investments of the Bandung City Government. Alternatively, in other words, the PPP scheme suitable for the provision of SLE Bandung City is to use the Design-Build-Operate-Maintain (DBOM) type using the available payment return mechanism.

Keywords: Public-Private Partnership, Street Lighting Equipment, Availability Payment, Bandung, DBOM

1. Introduction

As mandated in Paris Agreement Article 4.19, Indonesia formulated a long-term strategy for managing low greenhouse gas emissions by 2050. The Government of Indonesia is committed to reducing voluntary greenhouse gas emissions by 26% until 2020, then increasing to 29% from 2020 – to 2030 and a reduction of 41% for Conditional Reduction in the Business as Usual scenario (BAPPENAS 2017; Kurniadi & Suryadi 2021). One infrastructure supporting emission reduction and energy conservation programs is the Street heating Equipment (SLE). SLE energy conservation is carried out by increasing energy use efficiency and saving 20% of electric power (BAPPENAS, 2019; Sihombing, Santos, & Wibowo, 2021).

SLE energy conservation infrastructure can collaborate with the Public-Private Partnership (PPP) scheme (Delmon, 2011). In SLE, steps that can be taken to improve energy efficiency use include using

energy-efficient lamps, metering (kWh meters), and intelligent lighting systems as an overall SLE status setting and control (Syarafina & Gunarta 2020). Under Regulation of the Minister of Transportation Number 27 of 2018, the lights used in SLE infrastructure at least use a Light Emitting Diode (LED), high-Pressure is charge Lamp, or Low-Pressure Discharge (Pranasari & Ferza 2018). Light bulbs are widely used in some areas, including the city of Bandung, causing electricity consumption to be high (Kurniadi & Suryadi, 2021). In addition, LED lights with dimming capabilities can reduce power usage by up to 50% without sacrificing much of the level of light produced (compared to High-Intensity Discharge lamps). Dimming helps minimize power consumption at certain times, such as midnight, when community activities begin to decrease (Wilhelm, 2009).

Met erization is used to replace the subscription system still used by some light points. Met erization will provide a more precise measurement of the electricity consumption of each lamp unit/pole. Size using met erization can be supported by installing an intelligent lighting system. The interconnection carried out by this system will provide centralized support to control and regulate several indicators, such as solid lighting settings. It recorded electrical power consumption or kilowatt-hour (kWh) meters (in conjunction with met erization), monitored the performance of electronic devices, and centralized remote control. It censored and recorded data on environmental conditions and monitored damage or failure of SLE (DPU Kota Bandung 2002). One thing to note is that in the Regulation of the Minister of Transportation Number 27 of 2018. it is stated that intelligent lighting system applications must be in the form of open-source applications and do not need to use specific software to access it so that integration will be easy.

To meet the SLE's target, we will need USD 359.2 billion in infrastructure investment, and only 73.5% of the investment value will be delivered through State Budget and State-owned Enterprises projects (BAPPENAS 2019). When the infrastructure is weak, the economy runs highly inefficiently such to high logistics costs. Businesses lack competitiveness (because the prices of doing business are high). Furthermore, a high degree of social injustice exists when it is challenging to reach healthcare facilities or for children to run a school. Infrastructure development and macroeconomic development go hand in hand because infrastructure development gives rise to economic expansion through the multiplier effect. In contrast, economic growth increases the need to enlarge existing infrastructure and the flow of goods and people that travel across the economy. When existing infrastructure cannot drink rising economic activity (and new infrastructure is not enough developed), arteries in the human body cause life-causing eating conditions (Darmawan, 2018).

Likewise, the Bandung City Government projects infrastructure needs through a PPP scheme of Rp 60 trillion. To support socio-economic activities and realize sustainable development, the City of Bandung needs to overcome the issue of the financing gap. Band City's government budget is minimal, Rp 7.42 trillion per year, so development financing innovation is required. The strategy was formulated to reduce the financing gap by developing a government non-budget financing collaboration scheme (Kurniadi & Suryadi, 2021).

As a Metropolitan City, Bandung has 37,592 SLE. Based on calculations using Indonesian National Standard Number 7391 of 2008, an additional 36,664 SLE is needed to have a total electricity requirement of 9.18 MW. When replaced with LED lights, the full electrical power will be reduced to 4.8 MW. The cost of electricity for SLE exists before returning LEDs of Rp 27.5 billion per year. After using LEDs, the amount becomes Rp 16 billion per year. So that the City of Bandung can save the budget for operations of Rp 11. 5 billion per year (DPU Kota Bandung 2002).

Meanwhile, in the PPP scheme, construction costs and operating costs are not borne by PJKP because these costs are the responsibility of the Implementing Business Entity. Ppp scheme provides an alternative for PJKP, which has limited finances to build SLE infrastructure. PPP schemes in SLE projects will provide several advantages compared to CGP schemes. (Figure 1). In addition to providing alternative project procurement, the PPP scheme will provide value for money (VfM), which is of positive importance to the CGP scheme with reduced costs for the government. Such as saving electricity usage (because the project is completed faster) and efficiency over operating and maintenance costs. In addition, PPP schemes allow the transfer of risk to private parties (Implementing Business Entities) so that the appropriate parties can manage risks (Asian Development Bank 2018; BAPPENAS 2019).

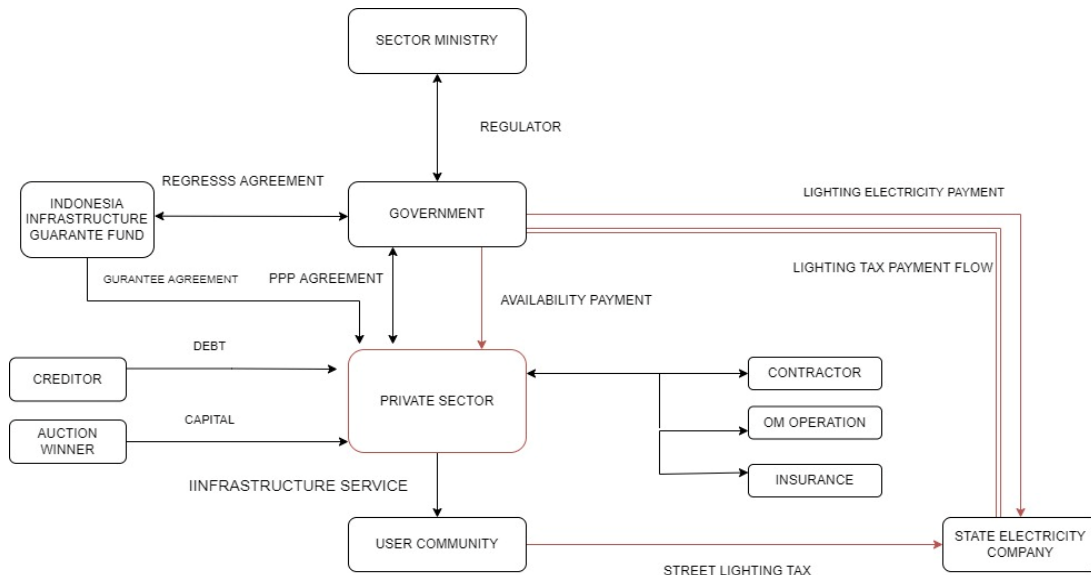


Figure 1. PPP Mechanism in the Provision of Street Lighting Equipment

1.1 Objectives

The problem in implementing the SLE PPP project is determining a suitable PPP scheme for providing SLE in Bandung. The obstacles include investment development schemes, the SLE database, and weak coordination between stakeholders.

2. Literature Review

2.1 Public-Privat Partnership

PPP is a form of government cooperation with business entities in the provision of infrastructure for the public interest by referring to the specifications that have been set before. The Minister/Head of Institutions/Heads of Regions/State-Owned Enterprises/Regional Owned Enterprises partially or wholly uses the resources of business entities concerning risk sharing between the parties (BAPPENAS 2019). This cooperation scheme will bring added value to both parties where development can be accelerated and function as expected to get further economic benefits (Roberts, Lindfield, & Steinberg 2018).

PPP has four characteristics, namely: (1) PPP is a long-term contract; (2) Private investment and project life cycle are essential for the private sector; (3) Innovation in the provision of services carried out by private parties; and (4) There are benefits obtained both from the private sector and from the government (Donahue & Zeckhauser 2011).

Several variants of PPP definitions, including (1) PPP as a management reform in which governance and bureaucratic functions are integrated with professional management; (2) PPP is the cooperation of institutions from the public sector and private sector to achieve specific targets where both parties accept investment risk based on the division of profits and costs they bear; and (3) PPP is a cooperation between government and private sector that produces a product or service in which risks, costs, and benefits are borne together based on the added value it creates (Grimsey & Lewis 2004).

PPP must be seen within the overall context of the public sector. The public sector encourages: (1) Decentralization; (2) Separating responsibility for the purchase of public services from that of their provision; (3) Output or performance-based measurements of public services; (4) Contracting out public services to the private sector; and (5) Privatization of public service (Yescombe and Farquharson 2018). Defines PPP as the agreement between a public entity and a private party, under which: a) the private party undertakes government function for a specific period, b) the private party receives compensation for performing the function, directly or indirectly, c) the private party is liable for the

risk arising from performing the function, and d) the public facilities, land or other resources may be transferred to the private party (Wilhelm, 2009; Calabrese, 2008).

Still related to the discussion on the meaning of PPP, Savas (2000) and Boussabaine (2013) explains it as follows: With Public-Private Partnerships, infrastructure projects are increasingly being built. However, it is not like in general terms in PPP terminology. The government or the state requires intensive capital to create a durable infrastructure using a combination contract model. Namely, Infrastructure facilities financed mainly by the private sector are then operated by private entities under a franchise with long-term contracts or leases. For twenty or 99 years, the development includes development, operation, maintenance, and capital costs. The PPP model is usually characterized by constructing roads, bridges, drinking water projects, pipelines, and electricity generation. However, in its development, the construction of prisons, stadiums, the schools sold, and city development is also built through this method, such as urban economic development projects.

It can be concluded that PPP is the involvement of private parties in their cooperation with the government to take care of the public interest. The form of the association carried out is the cooperation in a mutually agreed contract. In theory, the core of PPP is the continuous interrelationship/synergy (long-term cooperation contract) in the development of projects to improve public services between (1) Government or local government as a regulator; (2) Banking/consortium as funder; and (3) Private Parties as Special Purpose Company responsible for the implementation of a project ranging from design, construction, maintenance, and operations (Dedic. Public-Private Partnersh. Units 2010).

According to Hua (2009) and Vladimir (2011), the reason for cooperation with the private sector in public services is because the inefficiency and incompetence of the government are the results of monopolization in the field of public services.

For this PPP to succeed, according to Noel and Brzeski (2005), it is necessary to pay attention to the following: (1) This cooperation must be strategically important for both parties; (2) This cooperation is complementary rather than complementary; (3) Disclosure of information on both parties; (4) This cooperation should cause a proper integration link even though it is different cultures. Mutual trust is the main thing, and (5) The arrangement must be institutionally able to demonstrate a clear identity and position.

2.2 PPP Financing Type

The type of PPP financing is divided into two types, namely (1) Solicited projects and 2) Unsolicited projects (Roberts, Lindfield, and Steinberg 2018; BAPPENAS 2019; Akbiyikli and Eaton 2005). The Solicited cycle consists of four stages, namely planning, project preparation, transactions, and contract management. Unsolicited project is an infrastructure project initiated by a business entity where the proposal submitted by the business entity must meet the requirements of conformity with the sector master plan and economic and financial feasibility. The business entity has adequate financial capabilities to finance the implementation of the initiated project.

2.3 PPP Funding Sources

2.3.1 User Charge

A user charge scheme is a scheme in a PPP project in which the project gets funding and return on investment derived from levies on user usage of services provided by business entities. Infrastructure projects that are usually implemented using user charge schemes are projects that can more easily generate revenue (revenue), including because of high user estimates so that private business entities can manage demand risk.

2.3.2 Availability Payment

An availability payment scheme is a scheme in PPP projects where the return on investment of business entities comes from periodic payments made by the government to business entities based on the availability of infrastructure services.

2.4 PPP Collaboration Forms

The PPP project scheme must reflect the allocation of risk, the person in charge of financing, and the status of cooperation asset management. The forms of cooperation are broad as follows: (Figure 2).



Source: Dikun, KPBU Lecturer, (2010)

Figure 2. PPP Collaboration Forms

3. Research Methodology

This research uses a qualitative approach. The strategy that will be applied in this research is a case study. Determining objects is done intentionally (purposefully), not randomly, to collect the desired data. (Table 1)

Table 1. Key Informants and Informants

No	Sources of Information	Report	Key Informant
1	Head of Public Works Office		V
2.	Head of DPMPTSP	V	
3.	Head of Bepelting	V	
4.	Head of UPT KPBU Bepelting		V
5.	Head of Investment	V	
6.	Head of Planning DPU		V
7.	Bandung City DPRD	V	
8.	Mayor of Bandung		V
9.	Bandung City Secretary		V
10.	Community Leaders	V	

4. Data Collection Techniques

Data collection strategies include Observation, Interview, Documentation, and Audiovisual material. According to Creswell (2008), eight procedures are often applied in qualitative research, namely: 1) triangulation; 2) members checking; 3) creating solid description; 4) clarifying cases; presenting different (negative) information; 6) using a long time; 7) conducting Q&A with colleagues, and 8) invite an outside auditor.

5. Result and Discussion

5.1 Description of SLE Bandung City

SLE in Bandung city is spread on existing roads with several types of SLE, but on the other hand, there are still roads that do not have SLE, especially environmental roads. The main street in Bandung City already has SLE, both single-arm SLE and double arm SLE. The construction and repair of SLE in 2010 reached 351 SLE points built on protocol roads and housing spread across the city of Bandung. SLE was built in 2011, as many as 480 SLE, and in 2012 made, as many as 300 SLE. SLE development from 2010 to 2012 amounted to 1,131 points. In 2018 there were an additional 26,793 SLE points, bringing the total SLE in Bandung City u018 to 27,924 units spread across six development areas. (Tables 2 - 4)

Table 2. Total SLE Until 2018

No	Region	SLE Type		
		Standard SLE	SLE Environment	Sum
1	Cibeunying	4,548	1,572	6,120

2	Bojonegara	3,880	853	4,733
3	Karees	3,087	1,027	4,114
4	Tegalega	3,450	1,325	4,775
5	Ujungberung	2,518	1,600	4,118
6	Gedebage	3,228	836	4,064
Sum		20,711	7,213	27,924

Source: DPU Kota Bandung, 2018

Many streets in the city of Bandung are still many who do not have SLE. The latest data shows that the road segments already have SLE; 1,532 roads, and roads that do not have SLE reach 1,410 roads. While the road segments already have environmental SLE, as many as 565 streets and roads do not have environmental SLE get 1,051. Most roads that do not yet have SLE are main roads for secondary local roads and neighborhood roads, either in residential areas or villages. (Table 2)

Table 3. Availability of SLE per Street Section in 2018

No	Region	Number of Roads	Ada SLE	Tidak Ada SLE
1	Cibeunying	467	311	156
2	Bojonegara	546	425	121
3	Karees	702	244	458
4	Tegalega	402	150	252
5	Ujungberung	463	205	258
6	Gedebage	362	197	165
Sum		2,942	1,532	1,410

Source: DPU Kota Bandung, 2018

The availability of Environmental SLE per street segment in Bandung City in 2018 is seen below.

Table 4. Availability of Environmental SLE in 2018

No	Region	Number of Neighborhood Streets	SLE Environment	No Environmental SLE
1	Cibeunying	225	113	112
2	Bojonegara	148	57	91
3	Karees	446	93	353
4	Tegalega	195	115	80
5	Ujungberung	195	119	76
6	Gedebage	407	68	339
Sum		1,616	565	1,051

Source: DPU Kota Bandung, 2018

The types and types of SLE lamps that are widely used in the city of Bandung today are:

1. SON lights are widely used in several Bandung City SLEs, such as SLE on Jalan Aceh, Jalan Ambon, Jalan Asep Berlian, Jalan Banceuy, Jalan Katamso, Jalan Antapani, Jalan Arcamanik, Jalan Cicendo, Jalan Cipaganti, Jalan Batununggal, Jalan Ciwastra, Jalan Bumi Penyileukan, Jalan Jupiter, Jalan Kawalayaan, Jalan Kiaracandong, Jalan Braga, Jalan Cihapit, Jalan Cikaso, Jalan Diponegoro, Jalan Citarum, Jalan Venus Barat and many other roads.
2. Environmental SLE lights are widely used on Jalan Cibunut Dalam, Jalan Kebon Pisang, Jalan Muararajeun Kidul, and several other roads.
3. LHE lights are widely used on Jalan Alkateri, Jalan Bengawan, Jalan Nanas, Jalan Sersan Bajuri, Jalan Sawah Kurung, Jalan Banten, Jalan Karawitan, Jalan Taruna Baru, Jalan Guruminda, Jalan Cisaranten Wetan, Jalan Baturaden and several other roads.
4. HPL lights are widely used in several streets in Bandung City such as Jalan Anta Baru, Jalan Mars Raya, Jalan Margahayu Raya Barat, Jalan Riung Saluyu, Jalan Samarinda, Jalan B maldives, Jalan Sederhana, Jalan Kanayakan, Jalan Sekeloa Utara, Jalan Batik Kumeli, Jalan Cisitu Baru, Jalan Cipaku, Jalan Tubagus Ismail, Jalan Sekeloa, Jalan Dr Hatta and several other roads.

5.2 SLE Financial Feasibility Analysis

The financial ability of the Bandung City Government to run the SLE Program is far from the ideal number. The investment needs for the Bandung City SLE Program mentioned the total estimated investment of SLE of Rp 1.5 trillion (scenario 1). (Table 5)

Table 5. FS Analysis

Scenario	1	2	3	4
Investment Scope				
Lamp Replacement	207.409.273.761	207.409.273.761	207.409.273.761	207.409.273.761
Pole Replacement	104.103.379.710	104.103.379.710	104.103.379.710	-
Cable Replacement	251.180.380.472	251.180.380.472	-	-
Construction of a New PJU	184.707.527.312	-	-	-
Construction of a New Pole	199.116.700.002	-	-	-
New Cabling	387.830.639.406	-	-	-
Smart PJU	168.806.400.000	91.196.800.000	91.196.800.000	91.196.800.000
Total Estimated Investment (Rp)	1.503.154.300.663	653.889.833.943	402.709.453.471	298.606.073.761
Number of PJU Installed	52.752	28.499	28.499	28.499
Estimated Annual Income Needs (Rp)	271.250.000.000		78.750.000.000	61.250.000.000
Percentage of Revenue Needs from PPJ	155%	73%	45%	35%
Smart PJU Energy Saving	30%	30%	30%	30%
Estimated Annual O&M Cost (Percentage of Capex)	1%	1%	1%	1%
Period				
Construction (Year)	2	2	2	2
Operational (Year)	18	18	18	18
Investment Feasibility				
NPV (Rp)	375.780.209.509	140.719.854.315	81.616.651.507	61.768.156.752
IRR	15%	15%	15%	15%
Payback Period (Year)	10	8	8	8

5.3 Risk analysis in PPP-SLE

Risk analysis may arise, and mitigation plans can be implemented if these risks occur. The following is a matrix of risk allocation in PPP SLE Bandung City. (Table 6)

Table 6. PPP Risk Analysis SLE Bandung City

No	Risk Categories and Events	Description	City Government	Enterprises	Together	Mitigation Strategies According to Best Practice	Specific Conditions Related to Risk Allocation
I							
LAND RISK							
1	Land cannot be liberated.	Failure of project land acquisition due to the problematic land acquisition process	X			Land legal status and transparent procedures in project land acquisition	The government owns the condition of the land because it uses the RUMIJA area
2	The process of relocating existing activities	Delays and increases in costs due to the complexity of the utility transfer process issue	X			Good communication with affected parties	Relocation of existing PJU that uses poles belonging to other parties (PLN and others) and risks related to existing utilities affected
3	Land status risk	The status of PJU land locations in conflict with the community	X			Support from relevant authorities (BPN, DPKAD, DPU, Dishub, local regional apparatus)	The government should own land status because of RUMIJA.
4	Difficulty in unexpected location conditions	Delay due to uncertainty of location conditions		X		Historical data on land use and soil investigation, and safe structure design	Potential geotechnical risk due to earthquake area
5	Limitations of workspace	Related to the provision of land for workspace during the construction period		X		Good construction methods	If there is a public rejection, the government can help.
6	Construction working space			X		Socialization by the Government	
7	Damage to artifacts and ancient items at the site			X		Historical data on land use and land investigation	Unrelated to artifacts and antiquities at the site
II							
Design Risk, Construction, And Operation Test							
1	The vagueness of output specifications	Delays and increased costs due to unclear output specifications			X	Clarification during the tender process Good design capacity	PJKP output specification refers to best practice
2	Design errors	Cause extra/revision of the design requested by the manager		X		Experienced and good design consultant	They are usually identified during technical operation tests.
3	Late completion of construction	May include the late return of location access.		X		Reliable contractors and standard contractual clauses	The project goes off schedule.

No		Risk Categories and Events	Description	City Government	Enterprises	Together	Mitigation Strategies According to Best Practice	Specific Conditions Related to Risk Allocation
	4	Operating test risk	Estimated time/cost errors in technical operation tests		X		Good coordination of contractors and operators	The operational test is not as expected / not by the original design
III		Risk Sponsor						
	1	Poor subcontractor performance			X		Credible subcontractor selection process	
	2	Default subcontractor			X		Credible subcontractor selection process	
	3	Default BU	Default BU leading to termination/step-in by financier		X		Consortium backed by credible and solid sponsors.	
	4	Project sponsorship default	Default sponsor (or consortium member)		X		PQ process to obtain credible sponsors.	
IV		Financial Risk						
	1	Failure to achieve financial close	They are not achieving financial close due to uncertainty of market conditions.		X		Good coordination with potential lenders	It could also be because the condition's precedence is not met.
	2	Financial structure risk	Inefficiency due to the project's capital structure that is not optimal		X		Consortium backed by credible sponsors/lenders.	
	3	Currency exchange rate risk	Fluctuations (non-extreme) exchange rates		X		Instrument protect value; financing in rupiah.	Can be discussed again with the government if the fluctuations are extreme
	4	Inflation rate risk	Increase (non-extreme) inflation rate against assumptions in life cycle cost		X		Factor indeksasi tariff	Can be discussed again with the government if the fluctuations are extreme
	5	Interest rate risk	Fluctuations (non-extreme) interest rates		X		Binga rate hedging	
	6	Insurance risk (1)	Insurance coverage for certain risks is no longer available on the market.		X		Consulting with insurance specialists/brokers	Especially for the scope of risks related to force majeure
	7	Insurance risks (2)	Substantial increase in premium rate to an initial estimate		X		Consulting with insurance specialists/brokers	
V		Operation Risk						
	1.	Electricity availability				X	The City Government encourages PLN to guarantee the availability of lyrics.	

No	Risk Categories and Events	Description	City Government	Enterprises	Together	Mitigation Strategies According to Best Practice	Specific Conditions Related to Risk Allocation	
	2.	Availability of facilities		X		Reliable contractor		
	3.	Poor or unavailability of service	X	X		Reliable operator; precise output specifications; mutual check between the city and BU	Service is not available due to problems with lights, cables or poles. If the problem is in the Lamp, then it is the responsibility of BU, but if the cable and pole are the responsibility of the City Government.	
	4.	Industrial action		X		Hr policy and good industrial relations	Can be by managing staff, subcontractors, or suppliers	
	5.	Local Social and cultural risks		X		Implementing community development programs that are people-oriented; community empowerment		
	6.	Project management failure		X		Draw up an operations management plan and execute it professionally		
	7.	Project control and monitoring failure			X	Prepare a control and monitoring plan and periodic evaluation of the design and implementation effectiveness.		
	8.	O&M cost hikes		X		Reliable operator; escalation factors in the contract		
	9.	Life cycle cost estimation was an error.		X		Deal/contract with seawall supplier possible		
	10	Traffic accidents or safety issues		X		Third-party liability insurance		
VI		Income Risk						

No	Risk Categories and Events	Description	City Government	Enterprises	Together	Mitigation Strategies According to Best Practice	Specific Conditions Related to Risk Allocation
1	Revenue estimated errors from the initial model	Etimasi income earned from Street Lighting Tax		X		Making an MOU / agreement between PLN, The City Government, and BU	When triggered by Government action, a minimum income guarantee can be considered.
2	The local government cannot afford to pay	Due to user affordability and willingness below the eligibility level			X	Guarantee by the Central Government and other institutions such as PII; Agreement with	The local government cannot allocate PPJ under the agreement.
3	Failure to collect tariff payments	Due to failure / non-optimal rate collection system		X		A tripartite agreement between The City Government, PLN, and BU	
4	Late PPJ admission adjustment	PPJ receipt from PLN is late	X			A tripartite agreement between The City Government, PLN, and BU	
5	PPJ acceptance rate lower than projected	PPJ receipts declined not as initially planned	X			Good operating performance; regulations that support	
6	Miscalculation of estimated tariffs			X		Survey user affordability and willingness yang handal	
VII	Network Connectivity Risks						
1	Network risk	Disavow the City Government's promise not to build competing facilities	X			Good understanding of contracts by the City Government	
VI II	Interface Risk						
1	Interface Risk (1)	Inequality in the quality of government support work and what BU does			X	Repair work by parties whose work quality is lower	
2	Interface Risk (2)	Substantial rework related to differences in standards/service methods used.		X		Agreement of the parties as early as possible on the standards/methods to be applied	
IX	Risk Policy						
1	Foreign currency cannot be converted.	Foreign currency is not available. Or cannot be converted from rupiah	X			- Domestic financing - Offshore financing accounts - Guarantee of the central banks	
2	Foreign currency	Foreign currency cannot be transferred	X			- Domestic financing	

No	Risk Categories and Events	Description	City Government	Enterprises	Together	Mitigation Strategies According to Best Practice	Specific Conditions Related to Risk Allocation
		cannot be repatriated.	to the investor's home country			- Offshore financing accounts - Guarantee of the central banks	
3	Risk ekspropriasi	Nationalization/takeover with compensation (adequate)	X			- Mediation, negotiation - Political Risk Insurance - Government Guarantee	
4	Common regulatory (and tax) changes	It can be considered a business risk.		X			
5	Discriminatory and specific regulatory (and tax) changes	In the form of tax policy by the relevant authorities (central or regional)	X			- Mediation, negotiation - Political Risk Insurance - Government Guarantee	In addition to having an explicit contractual provision, including compensation
6	Delay in obtaining planning approvals	Only if triggered by unilateral/unnatural decisions from the relevant authorities	X			- Explicit provision of the contract, including its compensation	
7	Failure/delay in approval	Hany if triggered by unilateral/unnatural decisions from the relevant authorities	X			- Explicit provision of the contract, including its compensation	Usually related to issues other than planning
X	Risks of Force Majeure						
1	Natural Disasters				X	Insurance, whenever possible	
2	Force majeure politis	Events of war, riots, disturbances of public security			X	Insurance, whenever possible	
3	Extreme weather				X	Insurance, whenever possible	
4	Force majeure berkepanjangan	If it is above 6-12 months, it can interfere with the economic aspects of the affected party (especially bias insurance does not exist)			X	Each party may terminate the PPP contract and trigger early termination	Especially when insurance is not available for specific risks.
XI	Asset Ownership Risk						
1	Risk of falling asset value	Fire or explosion.		X		Insurance	

5.4 Alternative Cooperation Scheme

The cooperation scheme that will be carried out in Bandung city SLE involves private parties to build, care for, and empower/utilize the SLE area, which will later become an investment of the Bandung City government. The mechanism that can be used under the conditions and character of this SLE

project is the Availability Payment mechanism. By the Regulation of the Republic of Indonesia Nomor 190/PMK.08/2015, the Availability Payment mechanism can be implemented for PPP projects that meet the following criteria:

- a. For the provision of economic infrastructure and the provision of social infrastructure that has great benefits for the community as service users.
- b. For the provision of infrastructure as intended in paragraph a, whose return on investment is not obtained from payment by service users to Business Entities; and
- c. For PPP with the procurement of Business Entities is conducted through fair, open, and transparent election stages and pays attention to healthy business competition.

Based on these criteria, the SLE project will be suitable for implementation through the Availability Payment mechanism because payments by users are made through SLE taxes paid not to Business Entities but through electricity bills.

Cooperation with Business Entities is one of the financing models that can be developed. The cooperation model between local governments and private parties is known as PPP. This model is widely used because of the limited investment capital owned by the government. At the same time, infrastructure needs become a basic need that is urgent and needs to be rushed to create increased economic growth and community welfare.

In collaborating with business entities, several things need to be considered, namely:

- 1) Referring to applicable procurement regulations of goods/services
- 2) Pay attention to the procurement of SLE goods/services
 - a. Ensuring the credibility of procurement participants, both the completeness and validity of administrative documents.
 - b. Technical specifications must be clear, detailed, measurable, and verifiable.
 - c. SLE equipment guarantee in the form of clear supporting documents.
 - d. Quality supervision and control mechanisms with third parties or internal staff.
 - e. Warranty and maintenance period as a backup for the certification of system conformity/components promised by the provider of the goods.
 - f. The optimum results and packaging work should be in one work package, namely equipment procurement and installation.
 - g. E-Catalog

In addition to SLE construction, operations and maintenance will also cooperate with business entities. Here are the points of the SLE maintenance mechanism with business entities:

- 1) SLE managers must have detailed data/information about the SLE system, including:
 - a. Predicting the replacement of SLE light ballast
 - b. Set an SLE maintenance schedule
 - c. Open communication media between managers and the community so that SLE complaints will be appropriately handled soon.
 - d. Create a reporting mechanism / SOP for follow-up community complaints.

6. Conclusion

Based on the above research results, it was concluded that the provision of SLE in the City of Bandung is to involve business entities to design, build, finance, operate, and maintain SLE infrastructure assets, which will later become investments in the Bandung City Government. Alternatively, in other words, the PPP scheme that is suitable for the provision of SLE Bandung City is to use the DBOM (Design-Build-Operate-Maintain) type using the availability payment (AP) return on investment mechanism.

SLE infrastructure is one of the essential infrastructures for developing an area. Good lighting by SLE will certainly increase economic flows in the area because economic activity is hardly limited by the time possible. After all, the road can be adequately illuminated, and good visibility on the environment and roads reduces the risk of crime and accidents. With the explanation above, the challenges that can arise in SLE infrastructure projects can be adequately managed so that the project can run efficiently, both from the time and resources needed.

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Biography

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