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Public Private Partnership (PPP) with the Availability Payment Scheme in the Development of North Circle Road of Cilegon City

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Abstract: ***Road infrastructure has an important role in the growth of a city, given the fiscal limitations that are owned by local governments and investment in infrastructure development requires a fairly high initial cost, forcing local governments to find alternative funding through Public Private Partnership (PPP), alternative financing solutions other than The government budget is expected to meet the needs of public services and enhance the city's economic growth. One of the warmest PPP schemes at the moment is the Availability Payment (AP) scheme. This study will examine the feasibility of cooperation between the Cilegon city government and Business Entities with the Availability Payment (AP) scheme as an instrument for financing the North Ring road construction project. The method used in this research is a qualitative research method approach with descriptive methods. In obtaining data, researchers used interview research tools with research informants as Cilegon City Government and other parties involved in the collaboration. Researchers also use secondary data from relevant Regional Regulations and other sources of literature such as books and journals. With the realization of PPP Availability Payment (AP) on non-commercial public road projects in Cilegon, it is expected to be a reference for other cities in meeting infrastructure needs***

Keywords: Availability Payment, PPP, AP, Cilegon City

1. Introduction

The world in which we live is always moving and developing, humans as living things are always developing and also in all fields of development, infrastructure development is needed to accelerate economic growth, improve people's welfare, and realize the availability of better public services.

The transportation sector in Indonesia is still faced with a number of challenges. Therefore, serious efforts are needed so that the proposed transportation project can be realized (Prof Danang Parikesit, 2015)[1]according to Danang. Talk infrastructure and transportation cannot be separated from two things. First, infrastructure and transportation must be able to grow the nation's economy. Therefore, infrastructure and transportation must be built at the center of export activities and activities to accelerate economic growth. Second, infrastructure and transportation have the ability to reduce inflation. To reduce inflation, infrastructure development and transportation must be distributed evenly throughout Indonesia. Thus, transportation or logistics costs can be reduced; Danang sees that there is an imbalance in infrastructure and transportation in the country, both between urban and rural areas, as well as between Western and Eastern Indonesia. One reason for the lack of infrastructure and the provision of transportation is the lack of government budgets. Danang considered that the Public Private Partnership (PPP) pattern was actually suitable as a solution to get funding for infrastructure and transportation provision. However, the government cannot give up completely, considering that infrastructure and transportation involve the needs of the wider community.

Roads are land transportation infrastructure that play a very important role in the transportation sector, especially for the continuous distribution of goods and services as well as the movement of people who are considered the most efficient and cheapest. The existence of the highway is needed to support the rate of economic growth, agriculture, social, cultural and other sectors. Therefore, the government today continues to improve and develop infrastructure development, especially roads in the hope that there will no longer be isolated areas and prosperity in each region will increase (Nurrela Arifah Munggarani, 2017)

The construction of the 12.3 km Cilegon North Ring Road is a new road that is used to open new areas / areas on the north side of Cilegon City[2], in addition to its main function as a causeway for movement from east to west parallel to the existing national road and the Tangerang-Merak toll road, this development plan is in accordance with the 2010-2030 Cilegon City spatial planning document and the Vision and Mission of the Development Plan Medium-Term Cilegon City 2016-2021, the land acquisition budget for the 35 hectare road has already been allocated in the 2017 Budget Plan, the cost of constructing a large northern ring road requires creativity from the Cilegon city government to obtain funding other than the Regional Government Budget that can complete the construction of the road, so the writer is interested in examining the Public Private Partnership Scheme (PPP) with the Payment Service Availability Mechanism in the Cilegon City North Ring Road

[1] Prof. Danang Parikesit is Chairperson of the Indonesian Transportation Society (MTI), and Secretary General of the Indonesian Engineers Association (PII) in the Sustaining Partenershep magazine / Media Information on Government Cooperation with Business Entities published in 2015

[2] DPUTR Kota Cilegon, 2014 DED JalanLingkar Utara Kota Cilegon

Development Infrastructure Project.

2. Problem Formulation

The amount of funding needed in the development of the North Ring Road infrastructure of the City of Cilegon and the limited budget of the city government so that it is necessary to utilize the potential of funding outside the regional government budget with the concept of PPP especially the availability of payment mechanisms that attract business entities to invest and how the economic analysis in the implementation. Is there a relationship between the regional fiscal space of the city of Cilegon and the feasibility of developing the North Ring Road of the City of Cilegon with the Availability Payment Scheme and how much the installment costs are feasible and profitable for the local government and business entities?

3. Objectives of the Research

- Know how much the construction costs are during the construction period, Operational and Maintenance Costs during the period of the PPP Cooperation Contract
- Determine the amount of Payment Availability Payment
- Knowing the amount of fiscal space in the city of Cilegon during the period of the PPP contract on the ability of payment Availability Payment

4. Theory Basis

In the 2015-2019 National Medium-Term Development Plan (IDRJMN) document, transportation infrastructure development is prioritized for strengthening national connectivity to balance development between regions and support increased economic growth and national competitiveness. As for building urban mass transportation is one of the additional priority focuses on the railroad and road transportation sector (Pandu Pradhana,2018)[3]. To that end, transportation infrastructure development policies are directed at: 1) building facilities and infrastructure connecting between and leading to economic corridors and areas of economic growth; 2) build facilities and infrastructure that meet global standards and compatibility in regional / global corridors; 3) expanding the reach of infrastructure services to marginal areas through the provision of cheap public transportation, providing accessibility and pioneering activities both land, rail, sea and air transportation; 4) increase the capacity of transportation infrastructure to reduce backlog and bottlenecking of transportation infrastructure capacity; 5) encourage the development of sea transportation, railroad, and crossing transportation to support sea tolls in its realization as a global maritime axis (including the development of Long Distance Ferry (LDF) transportation; and 6) the development of transportation in metropolitan cities to increase mobility for the community through transportation revitalization public and road and rail based mass transportation development.

4.1 Public Private Partnership (PPP)

Called initially as the Private Finance Initiative (PFI) (Kee, James Edwin, 2002), introduced in the UK in 1992 by the government of Prime Minister John Major, is an innovative means of financing social infrastructure by encouraging private capital to invest in infrastructure projects such as hospitals , schools, roads and housing. The previous government, led by Prime Minister Margaret Thatcher (1979 -1989), was originally the sale of a state-owned company in the British Empire in which the United Kingdom had many State-owned companies making privatized state-owned companies (eg British Telecom, British Gas, British Airways, British Petroleum) as a hallmark of market-oriented political philosophy.

PFI is ideologically aligned with the global trend towards privatization of public services and the broader "New Public Management" movement that tries to improve public sector efficiency through the introduction of managerial skills, entrepreneurship, expertise, etc. all drawn from the private sector, which differs from state budgeting in a way traditional, that is, those that depend on government loans or tax revenues to finance infrastructure[4], In the Public Private Partnerships reference Guide published by The World Bank Group 2014 it is explained that PPP can consist of three broad parameters: first, the type of asset management; second, what functions are the responsibility of the private sector; and third, how the contract payment mechanism.

Many PPPs involve new assets often called 'greenfield' projects[5]. For example, the PPP Program in the United Kingdom is called the Private Finance Initiative (PFI), which involves private companies in financing, building and managing new public assets, from schools and hospitals to defense facilities. PPPs can also be used to transfer responsibility for increasing and managing existing assets to private companies, called 'brownfield' projects. In both cases, the main feature of PPPs is that the assets or services provided are determined in terms of output rather than input, which is, defining what is needed, not how it should be done. Furthermore, the reference guide explains the main characteristics of the PPP contract is that the contract 'binds' together the various phases or functions of the project. However, functions that are the responsibility of the private party vary, and can depend on the type of asset and service involved. In general the PPP function can include the following:

1) Design (also called 'engineering' work) - means developing a project from concept and preliminary results requirements for design specifications ready for construction
2) Build, or Rehabilitate when PPP is used for new infrastructure assets, the Government needs the private sector to build assets and install all equipment. If the PPP

[3] Pandu Pradhana, is a Planning Staff at the Directorate of Transportation, Ministry of PPN / Bappenas in the General Portrait of Railroad and Toll Road Transportation in Indonesia Sustaining Partenershep / Media Information on Government Cooperation with Business Entities published in 2015

[4] Kee, James Edwin (2002), Private Finance Initiative—The Theory behind the Practice

[5] The World Bank Group (2014), Public Private Parterships reference Guide

involves existing assets, the private sector may be responsible for rehabilitating or expanding the assets
3) Finance - when a PPP includes building or rehabilitating assets, the private party is usually also required to finance all or part of the required capital expenditure,
4) Maintenance - The PPP contract gives the private sector the responsibility to maintain the infrastructure assets to the standards specified during the contract period. This generally takes into account the matters that have been specified in the PPP contract
5) Operational - the responsibility for operating a private party in a PPP contact can vary greatly, depending on the nature of the underlying assets and related services.

The options for payment mechanisms can depend on the functions of the private party some payment mechanisms are:

- Direct payment mechanisms from service users, such as toll roads, the private sector provides services to users, and generates revenue by charging users for that service. These costs (or tariffs, or tolls) can be supplemented by subsidies paid by the government, which may be performance based (for example, depending on the availability of certain quality services), or output based (for example, payment per user)
- The mechanism of payment from the government, the government is the only source of revenue for the private sector which is commonly referred to as Availability Payment (AP). Government payments can depend on assets or services available in quality-determined contracts ("availability" payments). It could also be a result-based payment for services sent by users, for example, toll road is free for users, but the government pays the fee to the private sector. PPPs offer opportunities for the public sector to benefit from the involvement of the private sector in infrastructure procurement while fulfilling community obligations and maintaining control of potentially important public assets.

Figure 2.1: Changes to the Presidential Regulation on PPP

Different types of PPP are differentiated based on the extent to which the project delivery function is provided by the private sector. The following is a list of the main types of PPP, with each letter related to specifics (Joseph M. Giglio, John H. Friar, 2017). The private sector function will provide:

- DB - Design-Build
- DBM -Design-Build-Maintain
- DBFM - Design-Build-Finance-Maintain
- BOT - Build-Operate-Transfer
- DBOM-Design-Build-Operate Maintain
- DBFOM - Design-Build-Finance-Operate-Maintain

In a report compiled by AECOM Consult, Inc. in 2007 on Case Studies of Public-Private Partnerships for Transportation Projects in the United States, clearly outlining the potential and benefits of PPP, among others.

Stronger Work Relationships

Compared to short-term procurement methods, PPP provides an opportunity for private sector providers to develop long-term relationships and high trust in the Government even with the communities around the project site. There is a greater incentive that will be obtained by the private sector than the mere benefit of recognizing the name of the company by the public if it can ensure that assets are maintained, safe and of high quality during the transfer.

Reduction of financial restrictions

Many projects proposed by public entities are postponed or not run because of limited financial resources, and in particular, the provision of upfront capital. PPP provides benefits in connection with financing by allowing the private sector to finance projects using private funds, in turn, financing and commitment from the private sector often determine the implementation of the project, if only relying on state funds may not be continued due to lack of capital.

Faster manifestation

PPP can accelerate funding in realizing project implementation through the involvement of the private sector which immediately exceeds project costs by avoiding inflation, rising prices, adopting the best construction and new technologies, and the private sector which is often better able to manage the risks of construction delays so as to minimize costs and increase revenue they.

Innovation and expertise

The involvement of the private sector encourages the development of new and creative things for financing, economies of scale, technology development, operations and maintenance. the private sector can also offer risk management expertise during project implementation and operations. Specifically, in financial management expertise during the contract period.

Greater cost efficiency and productivity

The private sector has an incentive to ensure its operations are as efficient as possible. The private sector is often better at managing the use of third party facilities. Private operators will also be motivated to increase productivity and return on assets.

Integration

The potential integration of design, construction, maintenance, and operation provides an incentive for the private sector to optimize spending and maximize innovation to achieve an excellent level of cost efficiency over the life of the asset

More diverse choices

Project sponsors can match specific types of PPP with each

project based on government and private characteristics and capabilities

Increased competition
PPP can also increase competition for how road facilities and services are provided from a functional, organizational, technological perspective involving other private sectors.

Risk management
PPP allows the Government to share project risks with the private sector. In risk sharing the government has the opportunity to share risks that might be more effective if managed by the private sector.

In line with the growing gap between the need for public goods procurement and the availability of government budgets, the model of private involvement in public goods procurement then developed in the world to become a Public PrivatePartnerships (PPP), and was first instituted in Indonesia in 2005 with the issuance of a Presidential Regulation Indonesia Number 67 of 2005 concerning Public Private Partnership in Infrastructure Provision, the Indonesian Presidential Regulation has been amended several times, most recently by Indonesian Presidential Regulation Number 66 of 2013 concerning the Third Amendment to Indonesian Presidential Regulation Number 67 of 2005 and the latest amendment is through Indonesian Presidential Regulation Number 38 of 2015. Since this Indonesian Presidential Regulation was launched, the collaboration which was previously known as Public Private Partnership (KPS) hereinafter referred to as Government and Business Cooperation (PPP). described in the Indonesian Presidential Regulation is cooperation between the government and Business Entities in the Provision of Infrastructure for public use by referring to the specifications previously set by the Minister / Head of Institution / Regional Head / State-Owned Enterprise / Regional-Owned Enterprise, which partially or wholly uses Business Entity resources by taking into account the distribution of risk between the parties.

The objectives of the PPP Scheme Based on Presidential Regulation Number 38 Year 2015 are:
1) Sufficient funding needs in a sustainable manner in Provision of Infrastructure through the mobilization of private funds;
2) Realizing the provision of quality, effective, efficient, targeted, and timely infrastructure;
3) Creating an investment climate that encourages the participation of Business Entities in the Provision of Infrastructure based on sound business principles;
4) Encouraging the use of the principle of users paying for services received, or in certain cases considering the ability to pay users; and / or
5) Provide certainty of return on investment of business entities in the provision of infrastructure through periodic payment mechanisms by the government to business entities.

4.2 Availability Payment (AP)

Available Payment Concessions are basically a contract between the Developer and the Department to provide the highway ("Service") in return for regular payments[6]. The focus is on providing Developers with the long-term availability of the highway as a service and not a physical asset, as will be conveyed by the conventional approach. As such, the concept of "Availability" (and, conversely, "Unavailability") is at the core of the Concession Agreement. In general, Availability is measured based on conditions that must be met by the Developer, and of course, non-compliance with those conditions constitutes Unavailability. U.S Department of Transportation (2016) further explains that the essence of the definition of Availability and Unavailability is certain minimum requirements of the Service ("Availability Requirements" or "Terms of Service") specified in the Concession Agreement. Availability requirements are usually limited to the elements that are most important to the Department and are very important for the provision of services. This section focuses on the concepts and implications of Availability and Unavailability. An Unavailability event usually leads to a reduction or adjustment to the Availability Payment ("Adjustment for Not Available"), thereby reducing the Availability Payment that the Government pays to the Developer. Naturally, the conditions which together form the Availability Requirements vary. As such, the financial implications of the failure of Developers to meet certain requirements are commensurate with the importance of those requirements for the Government.

In the Indonesian Presidential Regulation number 38 of 2015, availability payment is a periodic payment by the Minister / Head of Institution / Regional Head to the Implementing Business Entity for the availability of Infrastructure services in accordance with the quality and / or criteria as specified in the PPP Agreement.

The AIAI Association states that Availability Payment is a periodic payment made to a private sector Concession / Developer by a responsible public sector entity, in return for the availability of public facilities at a predetermined level of service. Payment can be reduced if the facility, or parts thereof, are not available for a certain period of time, or if the facility is not operated and maintained in satisfactory conditions. Calculation of allocation of payment availability payment can be calculated using the following formula:

Payment Formula

$$\text{Availability Patment (AP)} = \frac{Capex + Opex + ROI}{AP\ Return\ Period}$$

AP : The amount of AP annual payment
Duration: Period of PPP operational cooperation in the year
Capex : Capital expenditure (includes debt service, capital goods expenditure, replacement costs)
Opex : Operating expenditure (includes operational and maintenance costs, management costs)
ROI : Return on Investment / rate of return on investment

Periodic Payment Formula AP:

$$MAP = AP - Penalti$$

[6] U.S Department of Transportation (2016), Public-Private Partnership Availability Payment Concessions Model Contract Guide

MAP: The maximum amount of AP periodic payments
AP: The amount of AP annual payment
Penalty: Reduction in payment due to unavailability of service and / or service performance does not meet standards. The amount and criteria for penalties are regulated in the PPP agreement

PPP AP to the Regional Government (APBD)
The basic regulation for implementing the PPP AP scheme by the Regional Government is Regulation of the Minister of Home Affairs Number 96 Year 2016,
Service Availability Payment Funds (AP) is funds allocated in the APBD in the context of implementing Service Availability Payments (AP) for PPP in each Payment budget year
Service availability is a regional expenditure that aims to ensure the availability of quality services to the community continuously, resulting from the provision of infrastructure carried out through PPP and optimizing the value of the APBD (Value for Money) for service provision.

5. Research Methodology

1) Place and time of research
The research locations are the Project Location of the North Ring Road of the City of Cilegon, the Office of the Mayor of Cilegon, the Office of the Planning Board of Cilegon, the Office of Public Works and Spatial Planning of Cilegon, the Office of Archives and Regional Library of Cilegon, the study was conducted in May - October 2018

2) Data collection technique
a) Primary data needed is obtained through direct interviews with experts using questionnaires with research parameter variables based on input data and PPP feasibility study stages, from interviews and questionnaires with experts, input is obtained, the number of experts consists of 3 people consisting of Government, Academics and Practitioners, then proceed again using the same pattern in the form of a questionnaire on research parameters including those that experienced changes and reductions in order to obtain research results.
b) Secondary data obtained through field research, library research, books, references, journals, related regulations and previous research.

3) Analysis Method
a) Descriptive Analysis
Conducted to obtain an overview of the implementation of research from experts through interviews that contain several research parameters based on the feasibility study stages associated with this research.

b) Cost Requirements Analysis
This analysis aims to determine the planned cost of construction, operation and maintenance during the contract period.

c) Analysis of Payments or Revenues
This analysis aims to determine the amount of payment from the Government and revenue for the Business Entity.

d) Financial Feasibility Analysis
This analysis aims to determine the financial aspects of the cost and income needs to be assessed how the description of the feasibility of the investment, there are several methods used to analyze the financial feasibility of an activity or project. These methods include:
- Net Present Value (NPV)
- Internal Rate of Return (IRR)
- Payback Period
- Benefit - Cost Ratio (BCR)
- Profitability Index (PI)

e) Regional Fiscal Analysis
This analysis aims to determine the size of local government payment projections for fiscal space during the cooperation contract period

6. Implementation and Discussion of Research Results

6.1 Implementation

The North Ring Road Development of Cilegon City is located in 4 (four) Districts and 8 (eight) District, namely Cibeber District (Kedaleman Village), Jombang District (Panggungrawi and Gedong Dalem Districts), Purwakarta Districts (Purwakarta Kelurahan and Kota Bumi), and Kecamatans Grogol (Kelurahan Grogol, Rawa Arum and Gerem).

The following is the name of the District passed by the North Ring Road Construction of the City of Cilegon.

Table 6.1: Name of Village that is Passed by Road Construction

No	Village	Sub-District	Information
1	KEDALEMAN	CIBEBER	WIDENING
2	PANGGUNGRAWI	JOMBANG	WIDENING /NEW
3	GEDONG DALEM	JOMBANG	NEW ROADS
4	PURWAKARTA	PURWAKARTA	NEW ROADS
5	KOTA BUMI	PURWAKARTA	WIDENING /NEW
6	GROGOL	GROGOL	NEW ROADS
7	RAWA ARUM	GROGOL	NEW ROADS
8	GEREM	GROGOL	NEW ROADS

Table 6.2: Overview of the 2018 Cilegon City Regional Budget (in rupiah)

Description	*Target*	*Realization*
INCOME	1.821.470.417.126,00	1.630.020.024.950,00
LOCALLY-GENERATED REVENUE	733.418.732.423,00	578.335.346.296,00
Local Tax Revenue	552.399.302.929,00	429.234.596.141,00
Regional Retribution Results	22.159.968.596,00	18.827.127.530,00
Separate Regional Wealth Management Results	18.027.533.084,00	18.027.533.084,00

Others Legitimate Local Original Revenue	140.831.927.814,00	112.246.089.541,00
Consideration Funds	870.570.993.471,00	841.804.102.872,00
Tax Revenue Share / Non Tax Revenue Share	143.894.790.471,00	119.946.085.673,00
General Allocation Fund	598.515.134.000,00	597.861.841.963,00
Special Allocation Funds	128.161.069.000,00	123.996.175.236,00
MISCELLANEOUS REGIONAL INCOME	217.480.691.232,00	209.880.575.782,00
Grant Revenue	38.731.000.000,00	38.349.591.841,00
Tax Sharing Funds from Provinces and Other Local Governments	148.749.691.232,00	141.530.983.941,00
Financial Aid from Provinces or Other Local Governments	30.000.000.000,00	30.000.000.000,00
Regional expenditures	1.974.439.590.060,00	1.590.087.084.842,00
Indirect expenditures	715.814.703.755,00	647.281.763.998,00
Employee Expenditures	656.761.046.539,00	597.044.773.746,00
Grant Expenditures	46.457.000.000,00	43.287.073.044,00
Social Assistance Expenditures	10.683.260.000,00	6.036.520.000,00
Expenditures of Financial Assistance to Provinces / Regencies / Cities, Village Governments and Political Parties	913.397.216,00	913.397.208,00
Unexpected Expenditures	1.000.000.000,00	0,00
Direct Expenditure	1.258.624.886.305,00	942.805.320.844,00
Employee Expenditures	138.689.199.600,00	124.439.367.311,00
Expenditures of Goods and Services	575.645.327.007,00	513.729.333.931,00
Capital Expenditures	544.290.359.698,00	304.636.619.602,00
Regional financing	152.969.172.934,00	152.969.174.734,00
Admission of regional financing	158.969.172.934,00	158.969.172.934,00
Remaining Over Budget Calculation for Previous Fiscal Year	158.969.172.934,00	158.969.172.934,00
Regional financing expenditure	6.000.000.000,00	5.999.998.200,00
Equity Participation (Investment) Regional Government	6.000.000.000,00	5.999.998.200,00

Fiscal Space

Fiscal space is a concept to measure the flexibility of local governments in allocating APBD to finance activities that are regional priorities. The greater the fiscal space that a region has, the greater the flexibility the local government will have to allocate its expenditure to activities that are a regional priority, such as regional infrastructure development.

The regional fiscal space is obtained by calculating the total Regional Revenue less the grant income, the revenue that has been determined (earmarked), namely; DAK, Special Autonomy Funds and Adjustment Funds, as well as Emergency Funds, and binding expenditures, namely; Employee expenditure and interest expenditure, and then divided by total income.

The above fiscal space measurement method requires complete, accurate and detailed data, which is clearly very difficult to fulfill, especially in developing countries (Robert A. Simanjuntak, 2003). Therefore, fiscal capacity is often measured by using several variables or other indicators, one of which is by using the Gross Regional Domestic Product (GRDP) indicator. Here the fiscal capacity of the region concerned is measured by multiplying its GRDP to the ratio of revenue to standard GDP (standard income / personal income ratio), where the standard ratio here can be the national average or the average of several regional groups. The main weakness of this method is that GRDP indicators tend to ignore the fact that different economic structures between regions can have a significant impact on the ability of regions to collect revenue. For example, with the same per capita GRDP, regions with a more dominant agricultural sector can have lower tax revenue potential than other regions dominated by manufacturing and services sectors. For the calculation of the Fiscal Space Projection of Cilegon City Up to 2046, is reduced by employee spending, (Revenue-Dak-Otsus-Bankeu) [Revenue - Special allocation funds - Special autonomy - Financial assistance] uses linear regression with a free variable of Gross Regional Domestic Product (PDRB) data Cilegon city from 2010-2018 and PDRB Projection up to 2046 using Trend

Table 6.3: Fiscal Space Projection (in rupiah)

Year	GRDP (in million)	Revenue - dak -otsus-bankeu (in million)	Employee Expenditures (in million)	% e to c	Fiscal Space (in million)
a	b	c	d	e	f
Histories (realization)					
2010	44.676,53	630.611			
2011	47.633,32	737.705	346.847	47	390.859
2012	51.300,21	958.042	402.032	42	556.01
2013	54.732,93	985.742	441.831	45	543.911
2014	57.261,92	1.059.942	481.045	45	578.896
2015	59.982,73	1.280.345	538.985	42	741.36
2016	63.014,42	1.396.469	562.503	40	833.966
2017	66.534,36	1.496.380	562.944	38	933.436
2018	69.069,41	1.437.674	597.045	42	840.629
Projection					
2019	72.028,37	1.652.985	703.993	43	948.993

2020	74.987,32	1.761.013	750.001	43	1.011.012
2021	77.946,28	1.869.040	796.009	43	1.073.031
2022	80.905,23	1.977.067	842.017	43	1.135.051
2023	83.864,19	2.085.094	888.024	43	1.197.070
2024	86.823,14	2.193.122	934.032	43	1.259.089
2025	89.782,10	2.301.149	980.04	43	1.321.109
2026	92.741,06	2.409.176	1.026.048	43	1.383.128
2027	95.700,01	2.517.204	1.072.056	43	1.445.148
2028	98.658,97	2.625.231	1.118.064	43	1.507.167
2029	101.617,92	2.733.258	1.164.072	43	1.569.186
2030	104.576,88	2.841.286	1.210.080	43	1.631.206
2031	107.535,83	2.949.313	1.256.088	43	1.693.225
2032	110.494,79	3.057.340	1.302.096	43	1.755.244
2033	113.453,75	3.165.367	1.348.104	43	1.817.264
2034	116.412,70	3.273.395	1.394.112	43	1.879.283
2035	119.371,66	3.381.422	1.440.120	43	1.941.302
2036	122.330,61	3.489.449	1.486.128	43	2.003.322
2037	125.289,57	3.597.477	1.532.135	43	2.065.341
2038	128.248,52	3.705.504	1.578.143	43	2.127.361
2039	131.207,48	3.813.531	1.624.151	43	2.189.380
2040	134.166,43	3.921.559	1.670.159	43	2.251.399
2041	137.125,39	4.029.586	1.716.167	43	2.313.419
2042	140.084,35	4.137.613	1.762.175	43	2.375.438
2043	143.043,30	4.245.640	1.808.183	43	2.437.457
2044	146.002,26	4.353.668	1.854.191	43	2.499.477
2045	148.961,21	4.461.695	1.900.199	43	2.561.496
2046	151.920,17	4.569.722	1.946.207	43	2.623.516

The cost of the construction phase of the construction of the ring road north of the city of Cilegon is divided into three stages, namely the first year of preparation and engineering, the second and third years are the physical construction,
(In millions)

Table 6.4: Construction Cost Budget Plan

No	Job Description	Volume	Unit	Unit Price	Amount
	CONSTRUCTION FEE				
1	Land acquisition		m2	-	-
2	General / Preparation	1	Package	606	606,36
3	Drainage	1	Package	33.303	33.303,38
4	Earthwork	1	Package	260.667	260.667,48
5	Widening Pavement and Shoulders	1	Package	1.042	1.041,51
6	Grained Pavement and Cement Concrete Pavement	1	Package	153.880	153.879,73
7	Structure	1	Package	55.190	55.190,14
8	Return of Conditions and Minor Works	1	Package	26.934	26.934,24
	OTHER FEES				
1	Licensing	0,10%		531.623	531,62
2	FS Annalisa Financial	0,08%		531.623	425,30
3	Review DED	0,18%		531.623	956,92
4	Construction Management	0,12%		531.623	627,31
5	Management of Activities	0,02%		531.623	95,69
	Total number				534.259,68
	10% Value Added Tax				53.425,97
	Total				587.685,65

At the construction stage, the costs incurred in addition to the construction costs themselves are tax costs and others to support road construction. All construction phase costs are investment costs for the physical construction of the road. These construction costs include construction costs and other costs. The physical construction cost of IDR. 531,623 million which is planned to be carried out in the second year is targeted to progress at 60% and in the third year up to the final progress of 100%. While other costs are carried out in the first year which are expenses for consulting, licensing and managerial costs for project management.

After the road is completed, the next stage is the operational phase of the road. Operational and maintenance costs are incurred in the context of carrying out post-road construction activities and ensuring that service availability is always excellent. Operational costs consist of personnel costs, namely employee salaries and non-personnel as operational support costs.

Table 6.5: Operating costs

a. Personnel Fees						
No	Description	Person/ month	Unit	Cost Per Unit	1 Month Total Cost	Total 1 Year Cost
1	Head of Management		1	18.0	18.0	216.0
2	Engineer		1	12.0	12.0	1440
3	Administration staff		1	8.0.	8.0	96.0
4	Technical Staff		4	6.0	24.0	288.0
5	Security force		4	4.0	16.0	192.0
6	Cleaning staff		2	3.5	7.0	84.0
	TOTAL		13		23.0	276.0
b. Non Personnel Fees						
No	Description	amount	Unit	Cost Per Unit	1 Month Total Cost	Total 1 Year Cost
1	Office rent	Month	1	3.0	3.0	36.0
2	Office Operations	Month	1	10.0	10.0	120.0
3	Insurance / Health Costs	Month	13	0.5	6.5	78.0
4	Cost of Increasing HR	Month	1	1.0	1.0	12.0
5	Business trip	Month	1	2.0	2.0	24.0
	Total				22.5	342.0

	Personnel Fees			23.0	276.0
	Non Personnel Fees			22.5	342.0
	Total Operating Costs			45.5	618.0
	Total Cost + 10% VAT			50.05	679.8

In maintaining the performance of road pavement in order to be able to provide services until the end of pre-planned life, several damage repairs in the form of road maintenance are needed. Ministerial regulation PU Number 13 / PRT / M / 2011 states that routine road maintenance is the activity of caring for and repairing damages that occur on roads with good service conditions.

In this study, the assumption of maintenance costs consists of routine maintenance in the first and second years and periodic maintenance costs in the third year, the cost of routine maintenance is taken 5% of the construction cost of the top layer Concrete Pavement Concrete, which amounts to IDR 121,164 million, then the maintenance costs Routine is IDR 6,058 million / year in the first and second years after the construction period or routine maintenance period

Table 6.6: Pavement costs

Job description	Cost IDR. (Million)
Pavement Concrete Pavement Cost for the upper layer	121.164
Class A Aggregate Foundation Layer	10.338
Drainage	33.303
Structure / Bridge	55.190
Total	164.806

Periodic maintenance costs are taken 10% from 164,806 Million. Some components of the construction costs are shown in the table below, which is IDR. 16,481 million. Then the costs of construction, operation and maintenance are

Table 6.7: Construction, Operational and Maintenance Costs

Cost Description	Cost IDR. (Million)	Cost + 10% VAT IDR (Million)
Construction Costs	534.259	587.865
Operating Costs - Annual	618	679
Routine Maintenance Costs	6.058	6.058
Periodic Maintenance Costs	16.481	16.481

6.2 Calculation of Payment Availability Payment

Payment Formula

$$\text{Availability Patment (AP)} = \frac{Capex + Opex + ROI}{AP\ Return\ Period}$$

MAP = AP - Penalty
Capex = Capital Expenditure / Capital Expenditure consists of Construction Costs and Periodic Maintenance Costs
Opex = Operational Expenditure / consists of Operational Costs and Routine Maintenance Costs
ROI = Return on Investment / Return on Investment

PV0 Capex = IDR 611,415 million
PV0 Opex = IDR. 37,151 Million

ROI[7] = 10% (611,415 + 37,151)
= IDR 64,856 Million

6.3 Financial feasibility analysis

The financial feasibility calculation is done with a planning period of 25 years using several assumptions namely Inflation of 6% (Source: BPS and BI, processed from Bolasalju.com research, inflation for the last ten years from 2009-2018 is 5.94%), for the assumption of the interest rate on loans investment is 11% (BPS data on average Investment Loan Interest for 2018 is 10.35%), for the discount rate using the assumption of 12.5%

Based on the simulation results of the AP calculation, it was concluded that the construction of the northern ring road of the city of Cilegon with an installment payment of IDR. 94,131.42 Million / year for 25 years was considered "DECENT" with the following description:

Table 6.8: Investment Feasibility

No	Criteria	The calculation results	Interpretation
1	NPV (Million)	IDR. 64.856	WORTH it in accordance with the specified ROI that is equal to 10%
2	Gross B/C	1,10	WORTH> 1
3	Net B/C	1,11	WORTH> 1
4	Profitability Ratio	1,11	WORTH> 1
5	IRR	14,02%	WORTH> against 12.5% Discount Factor
6	Pay Back (year)	8,35	WORTH Investment returns are below the economic age
7	BEP (year)	18,16	WORTH Investment returns are below the economic age

Based on the above calculation results the NPV obtained is positive IDR 64,856 million in accordance with the ROI value set at 10% of the CAPEX and OPEX Costs, an IRR value of 14.02% is expected to be attractive for Business Entities in investing in the North Ring Road project Cilegon City

6.4 Sensitivity Analysis

The analysis is carried out to determine the effect of changing parameters to the changes in the analysis of the simulation in generating profits. By conducting a sensitivity analysis, the possible consequences of these changes can be known and anticipated in advance. From the results of interviews with the authorities in the Government of the city of Cilegon it can be concluded that the ability to finance payments that are routine, especially for AP installment

[7]ROI is taken at 10% as is generally the market advantage of construction services, the actual amount of profit on the work contract is an agreement between the two parties taking into account the explanation of article 66 Paragraph (8) of Indonesian Presidential Regulation 70/2012 and Perka LKPP 14/2012 regarding Indonesian Presidential Regulation 70/2012 technical guidelines stating that " profit and overhead costs deemed reasonable for the Provider to a maximum of 15% (fifteen percent) "

payments, are around 5-6% of the Fiscal Space ratio, so that sensitivity analyzes are carried out with different schemes, namely:

1) Scenario 1: the AP plate payment scenario in accordance with the specified calculation, which is IDR. 94,131.42 Million / Year
2) Scenario 2: ie AP payment scenarios are around 5-6% of the Fiscal Space of the City of Cilegon and gradually there is an increase every 5 years namely
3) Years 1 - 5 IDR. 70,000 Million, 10th-10th years IDR. 100,000,000 Million, 11th-15th years IDR 110,000 Million, 16th-20th years IDR 120,000 Million and from 16th to 25th years amounting to IDR.130,000 Million
4) Scenario 3: Namely AP payments increase by 5 billion each year starting from year 1 of the payment of IDR. 60,000 Million Up to the 25th year of IDR. 180,000 Million

Table 6.9: Sensitivity analysis

		Scenario 1		Scenario 2		Scenario 3	
Year	Fiscal Space Projection	AP Payment (IDR)	% of fiscal space	AP Payment (IDR)	% of fiscal space	AP Payment (IDR)	% of fiscal space
2019	948.993	Construction Period					
2020	1.011.012						
2021	1.073.031						
2022	1.135.051	94.131	8,3%	70.000	6,2%	60.000	5,3%
2023	1.197.070	94.131	7,9%	70.000	5,8%	65.000	5,4%
2024	1.259.089	94.131	7,5%	70.000	5,6%	70.000	5,6%
2025	1.321.109	94.131	7,1%	70.000	5,3%	75.000	5,7%
2026	1.383.128	94.131	6,8%	70.000	5,1%	80.000	5,8%
2027	1.445.148	94.131	6,5%	100.000	6,9%	85.000	5,9%
2028	1.507.167	94.131	6,2%	100.000	6,6%	90.000	6,0%
2029	1.569.186	94.131	6,0%	100.000	6,4%	95.000	6,1%
2030	1.631.206	94.131	5,8%	100.000	6,1%	100.000	6,1%
2031	1.693.225	94.131	5,6%	100.000	5,9%	105.000	6,2%
2032	1.755.244	94.131	5,4%	110.000	6,3%	110.000	6,3%
2033	1.817.264	94.131	5,2%	110.000	6,1%	115.000	6,3%
2034	1.879.283	94.131	5,0%	110.000	5,9%	120.000	6,4%
2035	1.941.302	94.131	4,8%	110.000	5,7%	125.000	6,4%
2036	2.003.322	94.131	4,7%	110.000	5,5%	130.000	6,5%
2037	2.065.341	94.131	4,6%	120.000	5,8%	135.000	6,5%
2038	2.127.361	94.131	4,4%	120.000	5,6%	140.000	6,6%
2039	2.189.380	94.131	4,3%	120.000	5,5%	145.000	6,6%
2040	2.251.399	94.131	4,2%	120.000	5,3%	150.000	6,7%
2041	2.313.419	94.131	4,1%	120.000	5,2%	155.000	6,7%
2042	2.375.438	94.131	4,0%	130.000	5,5%	160.000	6,7%
2043	2.437.457	94.131	3,9%	130.000	5,3%	165.000	6,8%
2044	2.499.477	94.131	3,8%	130.000	5,2%	170.000	6,8%
2045	2.561.496	94.131	3,7%	130.000	5,1%	175.000	6,8%
2046	2.623.516	94.131	3,6%	130.000	5,0%	180.000	6,9%
	DiscountFactor	12,5%		12,5%		12,5%	
	NPV (Million) =	64.856		35.781		56.710	
	Gross B/C	1,10		1,06		1,09	
	NetB/C	1,11		1,06		1,10	
	Profitability Ratio	1,11		1,06		1,10	
	IRR	14,02%		13,22%		13,55%	
	Pay Back (Year)	8,35		9,56		9,87	
	BEP (Year)	18,16		20,00		20,00	

7. Results and Discussion

7.1 Conclusion

Based on the results of processing and analysis, the following conclusions can be drawn:

1) Total Investment Costs for the North Ring Road Construction of Cilegon City is IDR. 534,623 million, Operational Costs 618,000 Million / Year, Routine Maintenance Costs IDR. 6,058 Periodic Maintenance Costs IDR. 16,481 Million
2) The 25-year Contract Period with 12.5% Discount interest means the obligation to pay the Regional Government of the City of Cilegon is IDR 94,131.42 Million / year
3) The details of the financial feasibility of the PPP AP for the North Ring Road Development of the City of Cilegon are as follows:
   a) Based on the Net Present Value calculation, a positive value of IDR. 64,856 million was obtained
   b) Based on the calculation of the Benefit-Cost Ratio, the value> 1 is 1.10
   c) Based on the Internal Rate of Return (IRR) calculation, values> 12, 50% are equal to 14.02%
   d) Based on the payback period calculation, the return occurs within 8 years 4 months 6 days which are still within the age of the 25-year plan

e) Based on the NPV calculation, NPV = 0 at 18 years 1 month 28 days is still within the planned age of 25 years

4) The results of the sensitivity analysis are as follows
   a) Based on the calculation of fixed payments of IDR. 94,131.42 Million / year The percentage of the Regional Fiscal Projection is 8.3% down in the first year down to 3.6% in the last year
   b) Based on the calculation of the payment of a periodic increase every five years the amount of the percentage of the regional fiscal projection can be maintained at around 5-6% max 6.9% in the 6th year and a minimum of 5.0% in the 25th installment year
   c) Based on the calculation of the payment of a periodic increase every one year

The benefits obtained by the Government of the City of Cilegon with the construction of the north level road are: the simultaneous realization of various programs in the Mid-term Regional Government Plan of the City of Cilegon in 2016-2021; the development of new development areas along North Ring Road corridor

8. Suggestion

1) PPP AP development of the North Ring Road of the city of Cilegon can be realized by cooperating with Business Entities that have social characteristics and prioritizing the interests and progress of the Nation as a form of CSR responsibility because of the results of financial analysis although positive but very minimal
2) A joint venture is formed consisting of all industrial companies domiciled in the city of Cilegon to become the PPP AP Operator Company as a part of advancing the city of Cilegon
3) The Local Government of Cilegon City must further enhance creativity and human resources in finding non-AP infrastructure funding sources

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