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INVESTMENT ANALYSIS OF KARANGAGUNG TUBAN FISHING PORT DEVELOPMENT WITH PPP AVAILABILITY PAYMENT FINANCING

Suresta Pradana, Wateno Oetomo, Koespiadi
Faculty of Engineering, Universitas 17 August 1945 Surabaya, Indonesia
Email: Surestapradana@gmail.com, wateno@untag-sby.ac.id, koespiadi65@gmail.com

ABSTRACT
As the largest maritime country, Indonesia holds tremendous potential in fisheries and marine resources, serving as a primary driver for national economic growth. Despite the substantial potential for fishery activities in the Karangagung region, limited infrastructure and government budget constraints hinder the optimization of these activities. This research aims to conduct an investment analysis for the development of a fishery port in Karangagung, utilizing the Government and Business Entity Cooperation (PPP) scheme with Availability Payment financing. The investment analysis methods employed encompass the calculation of Net Present Value (NPV), Internal Rate of Return (IRR), and Benefit Cost Ratio (BCR), considering Availability Payment financing. Additionally, the study will analyze the Life Cycle Cost (LCC) in the development of the Karangagung Fishery Port. Therefore, this research aims to provide a comprehensive overview of both financial and non-financial potential benefits derived from the development of the Karangagung fishery port. Under the Availability Payment scheme, the Project Responsible Party will compensate the Business Entity reasonably for investments, operational costs, and fair profits. They will also be granted permission to provide these services for a specific duration. Upon the conclusion of this period, all assets will become government property. The analysis results indicate that the PPP Availability Payment financing scheme yields a positive NPV, an IRR value of 7.26% with returns in the 24th year, and a BCR value exceeding 1. Hence, this PPP scheme can be deemed feasible for implementation in the Karangagung Fishery Port development project.
Keywords: Infrastructure, Investment Analysis, PPP Availability Payment.

INTRODUCTION

Indonesia is geographically an archipelagic country with two-thirds of the ocean area larger than land(Djunarsjah & Putra, 2021). Indonesia is the largest archipelagic country in the world, consisting of more than 17,504 islands, with 13,466 islands being named. A total of 92 outer islands as the baseline of Indonesia's territorial waters towards the high seas have been registered with the United Nations (UN), with coastlines on almost every island in Indonesia (along 80,791 km), making Indonesia ranks second after Canada as a country that has the longest coastline in the world(Butcher & Elson, 2017). With an area of approximately 2.8 million km2 and 17,508 islands making Indonesia is the largest maritime country. With such a large and broad

scope, of course, Maritime Indonesia contains potential natural marine diversity, both biological and non-biological. Thus, the marine sector should be used as a support for the country's economy.

As the largest maritime country, Indonesia has extraordinary fisheries and marine potential, one of the main capitals driving national economic growth(Manurung, 2014). Based on data from the Food and Agriculture Organization (FAO) Indonesia, the current Sustainable Potential of Indonesia's fish resources is 6.4 million tons per year, with an allowable catch of 5.8 million tons per year (80% of sustainable potential). Such maritime wealth and potential must be managed properly and efficiently. In this management, it is necessary to increase human resources, strengthen sea utilization management, spatial planning of maritime areas, diversify renewable energy sources at sea, modernize maritime technology, increase research and development in the maritime sector, repair, and modernization of fishing and shipping fleets, repair, and modernization of infrastructure, increase capacity and investment in the maritime industry sector, etc(Semenov, 2008).

Increased investment in the maritime sector needs to be developed because the development, development and modernization of maritime infrastructure needs to be supported by continuous investment and funds either from the State Budget or by increasing the participation of the private sector. The limited financial resources of the state budget, which can only finance 40 percent of infrastructure projects, urge the government to look for other alternatives to realize and finance infrastructure investment plans. To meet public infrastructure needs, the Government should ideally carry out infrastructure development using the APBN / APBD. However, public budgets are limited, far compared to the funding needs for infrastructure development(Briceño-Garmendia et al., 2009). The infrastructure development target contained in the Strategic Plan of the Ministry of PUPR for 2020-2024, Indonesia needs at least a total infrastructure investment need of IDR 6,445 trillion with the availability of government fiscal funding only reaching 37 percent of these needs. To overcome this funding gap, the Government of Indonesia needs alternative funding sources from Business and Private Entities(Cashin et al., 2021).

With limited APBN funds, the government must cooperate with private investors to develop infrastructure projects through investment schemes through public private partnerships (Public/Public-private partnerships). Public/Public-private partnerships become a strategy to realize the development, development, and modernization of maritime infrastructure by increasing the role of private investors(Ma et al., 2022).

PPP is an alternative infrastructure financing scheme with a great opportunity to be implemented in Indonesia(Rohman, 2022). The benefit of PPP for the government is accelerating the fulfillment of the provision of basic infrastructure for the community. With a limited state budget, the government can meet infrastructure needs in accordance with predetermined

targets, the quality of infrastructure built will be maintained during the concession period, and the transfer of knowledge from service provider business entities. As for business entities, the financing scheme through PPP is a means of investment, competitive returns, a means of proving the contribution of services to the community and helping the government provide infrastructure with predetermined quality.

A fishing port, as stipulated in Article 1 number 23 of Law Number 31 of 2004 concerning Fisheries, as amended by Law Number 45 of 2009, is a place consisting of land and surrounding waters with certain boundaries as a place for government activities and fishery business system activities used as a place for fishing vessels to dock, anchor, and/or load and unload fish equipped with shipping safety facilities and fisheries support activities(Abildtrup et al., 2013). If these two functions are running well, the fishing port will be useful as a center for marine fisheries industrialization activities which will certainly have an impact on increasing domestic economic growth and poverty alleviation. The existence of fishing ports greatly supports the business of fishermen, managers of fishery products and fish traders to increase economic income and save business costs, besides that fish ports can also be a resting place for fishermen.

East Java is one of the provinces that has abundant fishery resource potential. Tuban Regency, in the northern part of East Java Province, has a fishing village area along 65 km from Bancar District to Palang District. The area has diverse biophysical, social, economic, and cultural characteristics with the potential of marine fisheries resources and brackish water aquaculture. People around coastal areas use marine resources as their main source of livelihood by becoming fishermen. Direct observation of the center of fishermen's activities can provide a much clearer picture of fishermen's activities during the hustle and bustle of city life. The scenery that is often found in fishing villages is the shabby living environment and very simple houses.

Karangagung Fishing Port (PPI) in the coastal area of Tuban Regency, Palang District, which is known as a fishery base in Tuban Regency , even most of the fish production from the PPI Karangagung fishing port has been marketed to all regions in East Java province. This port has functioned with available facilities such as: Pier, TPI (Fish auction place), Fisherman Fuel Station (SPBN), fish drying station, workshop (docking) and other facilities, although the capacity and intensity are not optimal. This can be seen from some problems that occur at the port such as; queues of fishing boats that often occur along the pier in carrying out loading and unloading of catches, this queue occurs because the capacity or length of the dock that is available at the port cannot serve all operating vessels besides that the queue of fishing boats there is silting of seawater due to stones and mud, and the lack of lighting in the area around the port at night greatly interferes with fishermen's activities, Meanwhile, as is known, the landing activity of fishermen's catches mostly occurs at night, which is around 01.00 - 05.00 WIB. Therefore, it is necessary to develop a port to optimize the production of catches at the Karangagung Fish

Landing Port (PPI), such as dredging and dredging results used to increase the length of the pier, this is done because there is no longer a port area available to extend to the side of the pier.

From some of the explanations above, it can be concluded that the Karangagung Fishing Port (PPI) has a very important role for fishermen to support all their activities, so there needs to be attention. In general, to answer the needs of public infrastructure procurement, the Government can use various financing scheme options, including the public budget (APBN / APBD), SOE capital budget, private sector participation (Public Private Partnership) or more familiarly called PPP (Business Entity Government Cooperation) and foreign loans/debt. In this case, the appropriate methodology should be used to choose which financing scheme is most suitable for financing an infrastructure project. This is crucial, not only because of budget constraints but also because effectiveness and efficiency in infrastructure development are highly dependent on the selection of financing schemes. The success of achieving infrastructure development goals is affected by the chosen scheme. Thus, it is hoped that the policies taken will be of high quality and have positive implications for the implementation of the development and operationalization of the Karangagung Fishing Port (PPI) infrastructure project so that it can achieve its goal of serving the needs of the community with the maximum benefit.

The sustainability of the development of an infrastructure project is very important to consider(Kivilä et al., 2017). This research will produce an investment analysis on the development of the Karangagung Fishing Port (PPI) infrastructure project with PPP Availability Payment financing contracts with cash flow analysis methods so that they can be used as additional knowledge in making ideal financing decisions.

RESEARCH METHODS

The research method used in this thesis adopts a quantitative approach with a comparative type of research(Reale, 2014). A quantitative approach is used to analyze numerical data, especially in calculating financing cash flows between the Government and Business Entity Cooperation (PPP) scheme and the State Budget (APBN) in the Karangagung Fishing Port Development (PPI) project.

The research subjects involved related parties in the project, such as the East Java Provincial Government, Tuban Regency Government, and service beneficiaries. The research location is the Karangagung Fishing Port (PPI) in Karangagung Village, Palang District, Tuban Regency, with a research period from September to December 2023.

Data collection techniques are carried out through interviews and literature studies, with primary data obtained from expert sources and related agencies as well as secondary data from Ministerial regulations, Indonesian National Standards (SNI), and related scientific publications. This type of research data consists of primary data and secondary data.

Data analysis is carried out through literature studies to understand previous theories, methods(Bradley et al., 2007), and research related to infrastructure project financing schemes. Identification of investment costs and annual cash flow is carried out to obtain data on the construction, operation, and maintenance costs of PPI Karangagung. Cost analysis according to the development plan and investment analysis of financing schemes are carried out by calculating Net Present Value (NPV), Internal Rate of Return (IRR), Benefit Cost Ratio (BCR), and Payback Period.

The use of comparative methods with quantitative approaches allows researchers to compare the presence of variables in two or more different samples or times, according to the objectives of this study. The results of the cash flow analysis and financial parameters are expected to provide a clear picture of the feasibility of an optimal financing scheme for the development of PPI Karangagung.

RESULTS AND DISCUSSION

Analysis and Interpretation of Results

A. Cost Analysis

1. Investment Cost Calculation

This study uses the calculation of future value to determine the value of project cost needs that will be projected to the investment value of the year of development, namely in 2025. Investment value in 2020 amounted to Rp. 330,334,882,912.00, so to get future value in 2025 with a calculation with an inflation value of 2.56% obtained from Bank Indonesia statistics, the Future value is obtained as follows:

FV = PV x (1+(r x n))

FV = IDR 330,334,882,912.00 x (1+(0.0256 x 5))

= IDR 372,617,747,925.00

The Future Value is Rp. 372,617,747,925.00 (three hundred seventy-two billion six hundred seventeen million seven hundred forty-seven thousand nine hundred twenty-five rupiah) if the construction of the Karangagung Tuban fishing port is carried out in 2025. This value can be used in Investment Analysis from the investor's point of view while from the government's point of view it uses 2 stages of Development so that the Investment value obtained in the table below

Table 1. PPI Karangagung Revenue Identification

ITEMS	COST Th 2020	FV/P,I,n	COST Yr to n

Construction Cost Phase 1 (2025)	222.151.774.876	1,128	250.587.202.060
Construction Cost Phase 2 (2032)	108.183.108.037	1,282	138.647.471.260
Total	330.334.882.912		

2. Value of Operating Costs

The value of Operating Costs in 2020 is Rp. 1,400,664,716.00, so to get a future value in 2025 with a calculation with a single interest calculation of 2.56% as follows:

FV = PV x (1+(r x n))

FV = IDR 1,400,664,716.00 x (1+(0.0256 x 5))

= IDR 1,579,949,799.00

The Future Value is Rp. 1,579,949,799.00 (one billion five hundred seventy-nine million nine hundred forty-nine thousand seven hundred ninety-nine Rupiah) if the construction of PPI Karangagung Tuban is carried out in 2025. This value can also be an assumption used for investment analysis from the point of view of investors and governments.

B. Investment Analysis of APBN/APBD Confectionary Scheme

1. Cash Flow Analysis of conference schemes

The Traditional Contract Scheme is funding that uses Pure APBD Budget Funds allocated by the provincial government or regional governments, or obtained from APBN subsidy assistance which has the potential to cause a financing gap between the funds that can be provided by the Government and the need for funds for the provision of infrastructure needed.

In the form of a Traditional Contract flow there is a clear separation between project owners, contractors, and consultants. Traditional Contract is a form of construction contract where the landowner (Government) fully funds all contractor work from operation to maintenance using available APBD / APBN subsidies, and in Traditional Contracts must be bid (auction) for the selection of service providers every year for up to 25 years which causes a State Budget / APBN Deficit.

It can be described the Traditional Contract Process below:

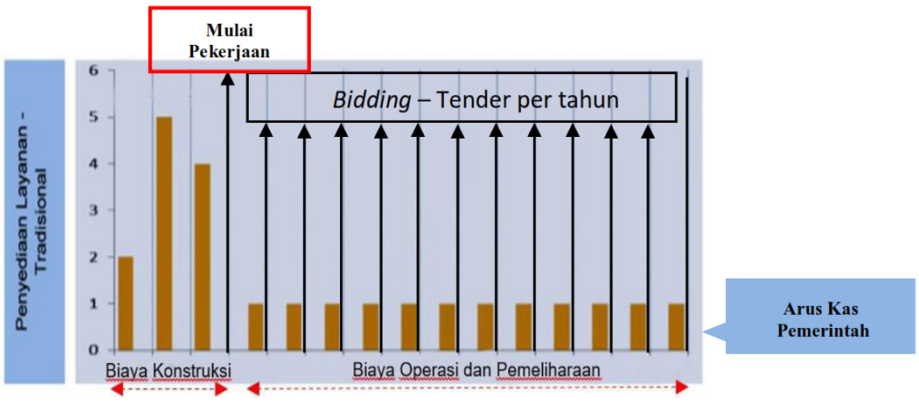

Figure Figure 1. Traditional Contract System Flow Process

Based on the flow picture of the traditional contract system above, it shows that every year a re-tender is carried out to do the work, in construction language it is a MultiYear contract. Then, after the contract ends from the Board of Directors, the government conducts re-bidding or tendering every year which has the potential to experience the risk of delays and limited funds.

Before calculating the Financial Feasibility Analysis, the Cash Flow Projections must first be calculated. Cash Flow i.e. Cash Income minus Cash expenditure. For the value of Cash Inflow, namely the Value of Revenue *(Revenue).* Meanwhile, Cash Out is the RAB (Cost Budget Plan) value needed in the construction of PPI Karangagung Tuban and Port Operational Costs.

0th Year Cash Flow (Year 2025)
Cash Flow = Cash In – Cash Out
Cash In: 0
Cash Out : Investment value of Phase I Rp. 250,587,202,060
0th Year Cash Flow (Year 2025)
= 0 - Rp. 250.587.202.060,-
= - Rp. 250.587.202.060,-

Cash Flow Year 1 (Year 2026)
Cash Flow = Cash In – Cash Out
Cash In: Revenue Value Rp. 19.214.722.000 ,-
Cash Out : Operating Cost Rp. 1.579.949.799,-
Cash Flow Year 1 (Year 2026)
= IDR 19,214,722,000.00 - IDR 1,579,949,799.00
= IDR 17,634,772,201.00

For the 2nd year and subsequent Cash Flows follow the calculation of *Future* Value for Operating Expenses and Revenue Value.

a. NPV (Net Present Value) Calculation

In the calculation of NPV *(Net Present Value),* it will be known that the Investment Analysis will be positive (feasible) or negative (not feasible). Investment feasibility with the Net Present Value method can be said to be successful by measuring, if the NPV is greater than zero (NPV ≥ 0). How to calculate NPV using the current interest rate is 6%, which is as follows:

$$NPV = \sum_{t=i}^{n} \frac{(Bt - Ct)}{(1+i)^t}$$

NPV Calculation of 1st Year Income (Year 2026):

NPV = Rp. 19.214.722.000 - Rp.1.579.949.799 / (1+ 6,00%)^1

= IDR 16,636,577,548.00

NPV Calculation of 2nd Year Income (Year 2027):

NPV = Rp. 20.367.605.320 - Rp.1.615.806.816 / (1+ 6,00%)^2

= IDR 16,689,033,912

The NPV Calculation Results Table can be seen as follows:

Tabel 4. 1 Perhitungan PV Cumulative Skema APBN/APBD

TAHUN Ke	Net Income	Discount Factor	Discounted Cash Flow
0	- 250.587.202.060	**1**	**- 250.587.202.060**
1	17.634.772.201	1,06	**16.636.577.548**
2	18.751.798.504	1,12	**16.689.033.912**
3	19.868.824.807	1,19	**16.682.248.439**
4	20.985.851.110	1,26	**16.622.759.682**
5	22.102.877.414	1,34	**16.516.555.791**
6	- 115.427.567.543	1,42	**- 81.371.880.397**
7	24.336.930.020	1,50	**16.185.448.434**
8	25.453.956.324	1,59	**15.970.127.097**
9	26.570.982.627	1,69	**15.727.323.791**
10	27.688.008.930	1,79	**15.460.839.570**
11	28.805.035.233	1,90	**15.174.133.229**
12	29.922.061.537	2,01	**14.870.347.879**
13	31.039.087.840	2,13	**14.552.335.594**
14	32.156.114.143	2,26	**14.222.680.296**
15	33.273.140.446	2,40	**13.883.718.969**
16	34.390.166.750	2,54	**13.537.561.337**
17	35.507.193.053	2,69	**13.186.108.104**
18	36.624.219.356	2,85	**12.831.067.856**
19	37.741.245.660	3,03	**12.473.972.723**
20	38.858.271.963	3,21	**12.116.192.877**
21	39.975.298.266	3,40	**11.758.949.960**
22	41.092.324.569	3,60	**11.403.329.512**
23	42.209.350.873	3,82	**11.050.292.457**
24	43.326.377.176	4,05	**10.700.685.739**
25	44.443.403.479	4,29	**10.355.252.146**
		NPV	**6.648.460.488**

From the calculation results obtained a positive NPV value, it shows that the project is expected to produce a profitable net financial value. In other words, the project can be considered financially viable, since the present value of the cash inflows exceeds the present value of the cash outflows.

b. IRR (Internal Rate of Return) Calculation

Internal Rate of Return (IRR) is a discount rate that makes the expected present value of benefits (Proceed) equal to the present value of the initial investment cost. To calculate the IRR is formulated as follows:

$$IRR = iNPV_{+} + \frac{NPV_{+}}{(NPV_{+} - NPV_{-})}(iNPV_{-} - iNPV_{+})$$

To determine the feasibility of the investment plan, it is done by comparing IRR with cost of capital. If the IRR is greater than the cost of capital, the investment concerned is feasible to run, otherwise if the IRR is smaller than the required Coc then the investment is considered unfeasible to run. The results of IRR analysis with scenarios are as follows:

To get the Negative NPV Calculation is done by the Trial and error method assuming i = 7% obtained NPV value = - 25,007,303,197.00

$$IRR = 6\% + \frac{6.648.460.488}{6.648.460.488 - 25.007.303.197}(7\%-6\%)$$

IRR = 6% + (0.21) (1%)

IRR = 6.21%

From the calculation of the IRR Value above, it can be seen that the IRR Value is greater than the value of the interest rate used, so this investment is worth running.

c. BCR (Benefit Cost Ratio) Calculation

Benefit cost ratio is the comparison between present value benefit divided by present value cost. The B/C-R output of a project is said to be economically viable when the B/C-R value is greater than one. This method is used to evaluate project feasibility by comparing total benefits to total costs that have been discounted to the base year using the discount rate during the plan year.

$$\text{B/C Ratio} = \frac{\Sigma\ PV\ Benefit}{\Sigma\ PV\ Cost}$$

From the next results, BCR calculations are carried out as follows:

$$BCR = \frac{379.332171.828}{348.328.198.330 + 24.355.513.011} = 1.0178$$

From the calculation results above, the BCR (Benefit-Cost Ratio) value is 1.0178. In this case, a BCR of more than 1 is a positive indicator, indicating that the expected benefits of a project or investment exceed the costs incurred to run the project.

Payback period calculation

The payback period indicates how long it will take for the investment to be "returned" through the cash flow generated by the project or investment. The shorter the payback period, the faster the investment can be returned. This method is generally used to evaluate the level of risk of an investment, although it has limitations in not taking into account the time value of future cash flows and not considering cash flows after the payback period is over. For PP calculation, please see the table below

Table 3. Cumulative PV Calculation

TAHUN Ke	Discounted Cash Flow	PV CUMULATIVE
0	**- 250.587.202.060**	- 250.587.202.060
1	**16.636.577.548**	- 233.950.624.512
2	**16.689.033.912**	- 217.261.590.600
3	**16.682.248.439**	- 200.579.342.160
4	**16.622.759.682**	- 183.956.582.478
5	**16.516.555.791**	- 167.440.026.687
6	**- 81.371.880.397**	- 248.811.907.084
7	**16.185.448.434**	- 232.626.458.650
8	**15.970.127.097**	- 216.656.331.553
9	**15.727.323.791**	- 200.929.007.762
10	**15.460.839.570**	- 185.468.168.192
11	**15.174.133.229**	- 170.294.034.963
12	**14.870.347.879**	- 155.423.687.084
13	**14.552.335.594**	- 140.871.351.490
14	**14.222.680.296**	- 126.648.671.193
15	**13.883.718.969**	- 112.764.952.224
16	**13.537.561.337**	- 99.227.390.887
17	**13.186.108.104**	- 86.041.282.783
18	**12.831.067.856**	- 73.210.214.926
19	**12.473.972.723**	- 60.736.242.203
20	**12.116.192.877**	- 48.620.049.327
21	**11.758.949.960**	- 36.861.099.366
22	**11.403.329.512**	- 25.457.769.854
23	**11.050.292.457**	- 14.407.477.397
24	**10.700.685.739**	- 3.706.791.658
25	**10.355.252.146**	6.648.460.488

Sumber: olahan penulis, 2023

From table 4.10 above, it can be concluded that the payback period for the APBN / APBD scheme is in the last year, namely the 25th year, it can still be said to be feasible from the payback period analysis

C. Investment Analysis of PPP Availability Payment Scheme

1. Cash Flow Analysis of AP PPP scheme

Availability payment is a financing scheme from the Ministry of Finance with two fiscal tools, namely PT Penjaminan Infrastruktur Indonesia (PT PII) as the guarantor of legitimacy and PT Sarana Multi Infrastruktur (PT. SMI) as infrastructure financing (Creditor) using PPP Availability Payment (Service Availability) contracts, PPP Availability Payment is an alternative for the government to ease the burden of financing infrastructure development, where investors fund all work costs with their own capital. The contractor is given the right to operate and maintain. After the contract period is over, the government pays the construction costs in installments according to the time of the agreement.

Figure 2. AP PPP Contract System Flow Process

The process for bidding or tendering is only at the beginning of the process, then the contract runs for up to 25 years without any procurement of the bidding process (tender), and can use the direct selection process (Private Procurement). Service providers must be of high specification and have B2 or B1 certification which indicates that they have experts and are competent so that project completion can be on schedule.

For the availability payment budget, the calculation is taken from the total value of investment costs as well as maintenance and operations divided by the concession period multiplied by a 15% profit in accordance with the regulations of Institution Regulation Number 9 of 2018 concerning Guidelines for the Implementation of Procurement of Goods/Services Through Providers.

For details of calculating the value of Availability Payment that will be paid by the government to providers can be seen below:

$$\text{Annual payment} = \frac{Nilai\ Investasi + O\&M + Keuntungan}{Masa\ Konsesi}$$

$$= \frac{727.483.852.259}{25}$$

= IDR 29,099,354,090

From the results of the annual payment analysis above, the value of government payments to investors amounted to Rp 29,099,354,090 (twenty-nine billion ninety million three hundred fifty-four thousand ninety rupiah).

Through the Availability Payment scheme, the East Java Provincial Government as the Person in Charge of the Cooperation Project (PJPK) will pay Business Entities for investment, operational costs and decent profits based on careful calculations according to the results of feasibility studies and negotiations with Business Entities. Business entities will be given concessions to carry out these services within a certain period of time. After the cooperation period is completed, all assets will become the property of the Government after the 25-year contract period is completed and the final handover process (Final HandOver - FHO). then Financial Control is the process of managing project costs so that the use and expenditure of costs are in accordance with the plan, in the form of a predetermined budget. In order for a cost control to be carried out properly, in addition to the perpetrators must master technical problems and the availability of supporting procedures and devices.

a. NPV (Net Present Value) Calculation of PPP Scheme AP

Tabel 4. 2 Perhitungan NPV Skema KPBU AP

TAHUN Ke	NET INCOME		Discounted Cash Flow
0	**-**	**1**	-
1	**- 9.884.632.090**	1,06	- 9.325.124.614
2	**- 8.731.748.770**	1,12	- 7.771.225.321
3	**- 7.578.865.450**	1,19	- 6.363.361.576
4	**- 6.425.982.130**	1,26	- 5.089.979.726
5	**- 5.273.098.810**	1,34	- 3.940.366.182
6	**- 4.120.215.490**	1,42	- 2.904.589.339
7	**- 2.967.332.170**	1,50	- 1.973.445.368
8	**- 1.814.448.850**	1,59	- 1.138.407.656
9	**- 661.565.530**	1,69	- 391.579.621
10	**491.317.790**	1,79	274.349.288
11	**1.644.201.110**	1,90	866.144.634
12	**2.797.084.430**	2,01	1.390.065.269
13	**3.949.967.750**	2,13	1.851.899.018
14	**5.102.851.070**	2,26	2.256.995.949
15	**6.255.734.390**	2,40	2.610.299.390
16	**7.408.617.710**	2,54	2.916.374.829
17	**8.561.501.030**	2,69	3.179.436.852
18	**9.714.384.350**	2,85	3.403.374.242
19	**10.867.267.670**	3,03	3.591.773.353
20	**12.020.150.990**	3,21	3.747.939.896
21	**13.173.034.310**	3,40	3.874.919.212
22	**14.325.917.630**	3,60	3.975.515.160
23	**15.478.800.950**	3,82	4.052.307.696
24	**16.631.684.270**	4,05	4.107.669.237
25	**17.784.567.590**	4,29	4.143.779.892
		NPV	**7.344.764.516**

In the calculation of NPV *(Net Present Value), it will be* known that the Investment Analysis will be positive (feasible) or negative (not feasible). The feasibility of investment with the Net Present Value method can be said to be successful by measuring, if the NPV is greater than zero (NPV ≥ 0), while the NPV Calculation

From the table above, a positive NPV value is obtained, indicating that the project is expected to generate a profitable net financial value. In other words, the project can be considered financially viable, since the present value of the cash inflows exceeds the present value of the cash outflows.

b. IRR (Internal Rate of Return) Calculation of AP PPP Scheme

To get the Negative NPV Calculation is done by trial and error method assuming i = 8% obtained NPV value = -4,288,344,800

$$IRR = 6\% + \frac{7.344.764.516}{7.344.764.516 - 4.288.344.800\ 7}(8\%-6\%)$$

$$IRR = 6\% + (0.631)(2\%)$$

$$IRR = 7.263\%$$

From the calculation of the IRR Value above, it can be seen that the IRR Value is greater than the value of the interest rate used, so this investment is worth running

a) Calculation of BCR (Benefit Cost Ratio) AP PPP Scheme

Benefit cost ratio is the comparison between present value benefit divided by present value cost. The B/C-R output of a project is said to be economically viable when the B/C-R value is greater than one. This method is used to evaluate project feasibility by comparing total benefits to total costs that have been discounted to the base year using the discount rate during the plan year.

$$\text{B/C Ratio} = \frac{\Sigma\ PV\ Benefit}{\Sigma\ PV\ Cost}$$

The following table of BCR analysis results for conventional contracts with an interest rate of 6%.

Table 5. Calculation of PV benefit and PV Cost of PPP Scheme

TAHUN Ke	PV Annual Payment	PV Revenue
0	-	-
1	27.195.658.028	17.957.684.112
2	25.416.502.830	17.789.855.289
3	23.753.740.963	17.567.129.186
4	22.199.757.909	17.297.406.909
5	20.747.437.298	16.987.790.723
6	19.390.128.316	16.644.654.764
7	18.121.615.249	16.273.709.906
8	16.936.089.018	15.880.063.267
9	15.828.120.577	15.468.272.762
10	14.792.636.053	15.042.397.104
11	13.824.893.508	14.606.041.611
12	12.920.461.222	14.162.400.160
13	12.075.197.404	13.714.293.590
14	11.285.231.219	13.264.204.842
15	10.546.945.064	12.814.311.094
16	9.856.958.004	12.366.513.144
17	9.212.110.284	11.922.462.254
18	8.609.448.864	11.483.584.662
19	8.046.213.891	11.051.103.959
20	7.519.826.067	10.626.061.499
21	7.027.874.829	10.209.335.006
22	6.568.107.316	9.801.655.529
23	6.138.418.053	9.403.622.871
24	5.736.839.302	9.015.719.639
25	5.361.532.058	8.638.324.009
TOTAL	339.111.743.326	339.988.597.891

From the table above, BCR calculations can be further carried out as follows:

$$BCR = \frac{339.988.597.891}{339.111.743.326} = 1.0197$$

From the calculation results above, the BCR (Benefit-Cost Ratio) value is 1.0197. In this case, a BCR of more than 1 is a positive indicator, indicating that the expected benefits of a project or investment exceed the costs incurred to run the project.

c. Payback period calculation

The payback period indicates how long it will take for the investment to be "returned" through the cash flow generated by the project or investment. The shorter the payback period, the faster the investment can be returned. This method is generally used to evaluate the level of risk of an investment, although it has limitations in not taking into account the time value of future cash flows and not considering cash flows after the payback period is over.

For PP calculation, please see the table below:

Table 4. 3 Cumulative PV Calculation of PPP Scheme

TAHUN Ke	Discounted Cash Flow	PV CUMULATUVE
0	-	-
1	- 9.325.124.614	- 9.325.124.614
2	- 7.771.225.321	- 17.096.349.934
3	- 6.363.361.576	- 23.459.711.510
4	- 5.089.979.726	- 28.549.691.235
5	- 3.940.366.182	- 32.490.057.418
6	- 2.904.589.339	- 35.394.646.757
7	- 1.973.445.368	- 37.368.092.125
8	- 1.138.407.656	- 38.506.499.781
9	- 391.579.621	- 38.898.079.402
10	274.349.288	- 38.623.730.114
11	866.144.634	- 37.757.585.481
12	1.390.065.269	- 36.367.520.212
13	1.851.899.018	- 34.515.621.194
14	2.256.995.949	- 32.258.625.245
15	2.610.299.390	- 29.648.325.855
16	2.916.374.829	- 26.731.951.026
17	3.179.436.852	- 23.552.514.174
18	3.403.374.242	- 20.149.139.932
19	3.591.773.353	- 16.557.366.579
20	3.747.939.896	- 12.809.426.683
21	3.874.919.212	- 8.934.507.470
22	3.975.515.160	- 4.958.992.310
23	4.052.307.696	- 906.684.614
24	4.107.669.237	3.200.984.623
25	4.143.779.892	7.344.764.516

From table 4.14 above, it can be concluded that the paaybac period for the APBN / APBD scheme is in the last year, which is the 24th year, it can still be said to be feasible from the payback period analysis.

CONCLUSION

Overall, the analysis of the calculation of needs and investment for the development of the Karangagung Tuban Fishing Port (PPI) produces a positive picture. The Life Cycle Cost, Discount Factor, and Future Value methods show an investment value in 2025 of Rp. 372,617,747,925.00, while the Net Present Value (NPV) method in the APBN/APBD and PPP Availability Payment schemes provides a positive NPV value, a favorable IRR, and a BCR above 1. Although the cost of the PPP Availability Payment Scheme is not too large compared to the Conventional Contract, the analysis results show that the NPV value is positive, the IRR is greater than the plan's discount factor, the BCR is more than 1, and the payback period in the 24th year is approaching the concession period of 25 years. Therefore, it can be concluded that the use of the PPP Availability Payment Scheme remains feasible for handling the development of the Karangagung Tuban Fishing Port.

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