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Study of Infrastructure Financing with the Using Wealth Alms In The Province of South Sulawesi *(Case Study Road Development Mustafa Dg. Bunga - Muttalib Dg. Narang South Sulawesi Province)*

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Abstract: ***Based on data from the Directorate General of Budget, Ministry of Finance during 2005-2010 the average state budget has sucked for personnel expenditure expenditure (12:17%), transfers to the regions (31.68%) and payments of principal and interest on the debt (10:59%). With the constitutional mandate of the education and health budgets would in turn make the fiscal burden of the government in implementing development. According to the Secretary General of the Ministry of Public Works at the Working Meeting Scope of Public Works in South Sulawesi (Makassar 21 November 2013), asserts that in order to achieve economic growth of 5%, required Infrastructure Fund 5% Gross Regional Domestic Product (GDP), or equivalent to Rp. 2.100 trillion for the period 2010-2014, while the government is only able to prepare Infrastructure Fund Rp. 836 Trillion. Wealth Alms Potential within the scope of South Sulawesi Province according to the results Summary of Board of National Alms South Sulawesi province in 2015, amounts to approximately Rp.3.255.000.000, -. This represents a huge potential as an alternative financing infrastructure in the province of South Sulawesi, in addition alternative to State Budget, Local Government Budget or Foreign Aid Funds. Financing of road infrastructure worth Rp. 4.499.808.000,- with tithe, takes only 1 (one) year, however, loan installment (Tithe Funds) after the road operational (assumed to road users able to pay road rates) or Ability To Pay, the Installment of the loan (Return of Investment) only takes two (2) years.***

Keywords: Financing, Infrastructure, Wealth alms and National Alms Board

1. Introduction

Before the economic crisis, Indonesia has experienced steady economic growth and stable, which is characterized by some improvement in social indicators. But in times of economic crisis, economic growth has decreased and reached its lowest point, and inflation skyrocketed and mecapai value above 70 percent. Entering 1999, the Indonesian economy began to rise, which is characterized by positive economic growth, low inflation rate, and the value of the rupiah against the US dollar is under control. In 2000, the growth rate of the national economy grew 4.9 percent, while after the expected growth of the national economy will continue to grow. To achieve the goals of economic growth, public works infrastructure sector is expected to function as a cog economic importance and strategic to national development.

Based on data from the Directorate General of Budget, Ministry of Finance during 2005-2010 the average state budget has sucked for personnel expenditure expenditure (12:17%), transfers to the regions (31.68%) and payments of principal and interest on the debt (10:59%). With the constitutional mandate of the education and health budgets would in turn make the fiscal burden of the government in implementing development.

Wealth alms potential within the scope of South Sulawesi Province according to the results Summary of Board of National Alms South Sulawesi Province in 2015, amounts to approximately Rp.3.255.000.000, -. This represents a huge potential as an alternative financing infrastructure in the South Sulawesi Province, in addition to State Budget, Local Government Budget, Private or Foreign Aid Funds. Sources of Financing Infrastructure years 2015-2019 (Challenges of Financing / Gap) consists of Strategic Infrastructure Rp. 3,386 trillion and Others Infrastructure Rp. 1.500 trillion, with the composition of the State Budget + Local Government Budget + Loans = 30% or approximately Rp. 1,466 trillion, so there is a difference Funding (Financing Gap) 70% or approximately Rp. 3,420 trillion, consisting of state-owned enterprises (30%) Rp. 1.466 trillion, Off Balance Sheet (20%) Rp. 1,044 trillion and PPP (Public Private Partnership) 20% = Rp. 1,044 trillion.

2. Literature Review

A. Definition of Alms and Wealth Alms

Alms is one of the pillars of Islam, and became one of the principal elements for the enforcement of Islamic law. Therefore, the law of zakat is obligatory (fard) for every Muslim who has fulfilled certain conditions. Alms included in the category of worship (such as prayer, pilgrimage, and fasting) which has been regulated in detail and patents based on the Qur'an and Sunnah, as well as a social charity and

humanitarian community to develop in accordance with the development of mankind. While Wealth Alms, is alms to be paid by each of the Muslims, if they have income more than equal 85 grams fo gold, which is equal to 2,5% of total income for one year at work, or approximately more than 85 x Rp. 500.000,- = Rp. 42.500.000,-

B. Legal Use of Alms For Venture Capital

The existence of the practice of alms as one of the true Islam requires significantly to the welfare of the people. Alms is usually supplied to meet the needs of the underprivileged in order to remain able to perform life.

Indonesian Council of Ulama (MUI) has issued a fatwa that allows the use of alms for venture capital. It was contained in Provision No. 4 Year 2003 on Use of Alms Funds for Investment (Istitsmar).

In a provision that called some of the terms of use alms for venture capital. First, alms should be distributed on the effort is justified by the sharia and regulations. Terms for two, a business that got capital from alms is a business that we believe will give a profit based on the feasibility study. Thirdly, the business should be fostered and overseen by the party which has competence. Fourth, the business should be run by the party that can be trusted. Terms to five, venture capital must be guaranteed by the government and if a loss then the government should replace it. To six, there should be no poor people starving or costs when alms distributed for venture capital. The last requirement, the use of alms funds for venture capital should be limited in time.

C. Wealth Alms Potential in South Sulawesi Province

Wealth Alms potential within the scope of South Sulawesi Province according to the results Summary of National Alms Board South Sulawesi province in 2015, amounts to approximately Rp.3.255.000.000, -. This represents a huge potential as an alternative financing infrastructure in the Province of South Sulawesi, in addition to State Budget, Local Government Budget, or Foreign Aid Funds

Table 1: Wealth Alms Potensial in Province of South Sulawesi

Recapitulation of Thite . Wealth Alms and Profession Alms at South Sulawesi Province

NO.	Province/Municipality/ Regency	Number of Person	PENGUMPULAN		
			Thite	Wealth Alms	Profession Alms
1	2	3	4	5	6
	BAZNAS PROVINSI	900	0	188,831,857	814,000,300
2	BAZNAS KOTA MAKASSAR	2.750	3.791.756.000	1.247.955.200	116.552.800
3	BAZNAS KOTA PARE PARE	180	0	0	88.670.750
4	BAZNAS KOTA PALOPO	58.418	1.507.253.350	106.881.000	170.153.477
5	BAZNAS KAB MAROS	2.929	2.675.000	330.409.000	843.730.370
6	BAZNAS KAB PANGKEP	300,955	4,764,020,000	0	140,090,000
7	BAZNAS KAB BARRU	0	0	0	0
8	BAZNAS KAB SIDRAP	0	0	0	0
9	BAZNAS KAB PINRANG	2.490	112.313.000	546.762.408	364.508.272
10	BAZNAS KAB ENREKANG	0	4.850.000	0	136.845.000
11	BAZNAS KAB TANA TORAJA	22.874	441.901.800	154.855.000	28.000
12	BAZNAS KAB LUWU	0	0	0	0
13	BAZNAS KAB LUWU UTARA	0	0	0	0
14	BAZNAS KAB LUWU TIMUR	107.829	2.697.122.500	720.000	0
15	BAZNAS KAB SOPPENG	157,113	3,066,454,667	341,230,880	0
16	BAZNAS KAB WAJO	0	0	0	0
17	BAZNAS KAB BONE	454,350	10,595,374,100	0	0
18	BAZNAS KAB SINJAI	0	0	0	0
19	BAZNAS KAB BULUKUMBA	207,300	5,096,467,000	0	65,954,741
20	BAZNAS KAB SELAYAR	1,300	0	124,019,000	2,052,460,120
21	BAZNAS KAB BANTAENG	25.365	525.128.000	0	383.872.849
22	BAZNAS KAB JENEPONTO	0	745,139,300	0	66,067,000
23	BAZNAS KAB TAKALAR	0	3,195,337,032	14,000,000	0
24	BAZNAS KAB GOWA	0	0	0	0
			36.568.391.989	3.255.684.345	5.071.599.885

Source: Ministry of Religious Affairs Office of South Sulawesi Province in 2015

D. Alms Distribution

Alms collected will distributed in 8 (eight) category/Group communuty entitled to receive alms (Mustahik Alms), consisting of: Fakir (People who are in the productive age (age over 17 years) who had worked but the results are not enough to meet the needs of everyday life.),Poor (those who are still in their productive age and still have a productive tool but still in shortage.), Amil (people who have a profession collecting and distributing zakat. Muallaf (people entering Islam or those who are weak in faith, and therefore has not issued a charity. Riqab (people who were shackled but persisted with pride Ghoriminn (people who have debts or those in a state of bankruptcy, Sabillilah people which is in a state of preaching and give Islamic education without the support of the Government, and Ibnu Sabil (people who are in the process of studying Islam and the public there is no support from the Government) .

E. Economic Analysis

The different methods in achieving a goal requires an evaluation criteria that can be used as the basis for determining the alternative. In economics techniques, the value of the money is used as a basis and typically the lowest cost is selected. But in other respects, the alternative chosen is usually based on factors that are not quantifiable means sometimes the best alternative selection is not only based on the lowest, but sometimes the decisions taken on the basis of factors that can be calculated.

Some of the key terms that will be used going forward in the economic analysis are as follows: In order to compare
i = compound interest = the amount of the annual interest rate (%).
P = Present Value (present value) = amount of money at this time.

F = Future Value (the value of which will come) = sum of money at the time to come.
A=Annual Payment = annual payments = amount of money paid each year.
n = number of years.
G = Gradient Series = annual inconstant, forming a regular increase or decrease.
Alternatives to existing methods in engineering economic analysis are as follows:

1) The Time Value Of Money

Understanding that a rupiah today will be of higher value than the future is the basic concept in making investment decisions. In general, the financial problems of an investment cover a period of time long enough, so need to be taken into account the effect of the time value of money (Asiyanto, 2005). Relationship value for money will come (future value-FV) the present value (present value PV) is written with the formula:
FV = PV (1 + i) n
Information:mFV = value for money will come
PV = value for money at this time
i = Interest (interest)
n = time

2) Compound Interest

System of compound interest (compound interest), the system of calculation of interest where interest is not only calculated on the original loan, but the calculation is based on the amount of debt the beginning of the period in question, in other words, compound interest (Giatman, 2006).

3) Annuity (Capital Recovery)

In the financial field often required the calculation of the repayment of a debt or periodic installments. This is known as an annuity (capital recovery). The formula used is:

$$A = PV \left[\frac{i(1+i)^{n}}{(1+i)^{n-1}} \right]$$

Information :
A = Annuity (Capital Recovery)
PV = value for money at this time
i = interest
n = time

4) Return on Investment (ROI)

ROI is used to compare the return on investment of between investments that are difficult compared to using monetary value. For example, an investment worth 1000 rupiah which produce interest 50 rupiah obviously give more money than investments worth 100 rupiah that provides interest 20 rupiah. But investing 100 rupiah provide greater ROI. It can be argued that the ROI is used by most companies to compare the results of investments where the money gained or lost (or money has been invested), and it is not easy to do a comparison by using monetary value.

5) Investment Eligility Criteria

In assessing the benefits or not an investment that will be used to make investment decisions, there are several criteria used are: Net Present Value (NPV), Benefit Cost Ratio (BCR), Internal Rate of Return (IRR), Discounted Payback Period (PP) and Bankable.

6) Net Present Value (NPV)

In this method, using a discount factor. All expenditures and receipts (where current spending and revenues is in a different time) should be compared with the comparable value in the sense of time. In this case means shall mendiskonkan values and expenditure into the ratings are comparable (same). Expenditures made during the early (now), while the new reception will be obtained in the days to come, when the value of money now is not the same (higher) than the value of money in the future. Therefore, the amount of revenue estimation it should be given a discount, so the amounts used as the present value (valuation comparable with the expenditure).

The sequence of calculations in this method are:

- Calculate the expected cash flow from the investment will be implemented.
- Finding the present value (present value) of cash flow by multiplying the discount rate / discounted rate specified certain.
- Then the number of current / present value of cash flow over the life of the investment is reduced by the value of the initial investment will generate a Net Present Value (NPV).

Net Present Value of the investment can be obtained by using formula as follows
NPV = PWB = PWC

$$PB = \sum_{t-0}^{n} Cb_t (PB)$$

$$PWC = \sum_{t-0}^{n} Cc_t (FPB)$$

Information
NPV = Net Present Value
PWB = Present Worth of Benefit
PWC = Present Worth of Cost
Cb = Cash flow benefits
Cc = Cash flow cost
n = Age of investment
FPB = present interest factor
t = time period
If the NPV values obtained as follows:
NPV> 0, the project profitable
NPV <0, the project is not viable
NPV = 0 means neutral, or are in the Break Even Point (BEP)

7) Benefit Cost Ratio (BCR)

Methods of calculating the ratio of benefit to cost in an investment project. In private projects, generally in the form pandapatan benefits minus costs beyond the first. For example, for the operation and while the production cost is the cost of the first. (Soeharto, 1997) The formula used is:

$$BCR = \frac{PWB}{PWC}$$

Information:
BCR = ratio of benefits to costs (Benefit Cost Ratio)

PWB = Present Worth of Benefit or the present value of benefits
PWC = Present Worth of Cost
If the BCR values obtained as follows
BCR ≥ 1, a project worth doing
BCR <1, the project is not viable

8) Internal Rate of Return (IRR)

Internal Rate of Return can be searched by trial and error (trial and error) is to find the NPV at a discount rate / level of discount that we like. If the discount rate we choose generated NPV is positive (+), then the IRR to be searched is above the discount rate / level of such discounts, so we're looking to try to find the discount rate that results in NPV = 0 (zero).

But the internal rate of return can be searched by using the formula

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

Information:
IRR = Internal rate of return to be searched
iNPV- = negative interest rates
iNPV + = positive interest rate
NPV- = Net Present Value with negative results
NPV+ = Net Present Value with positive results
This formula is applicable Terms NPV1 (+) and NPV2 (-).
IRR criteria for decision-making is a way comparable
the Minimum Attractive Rate of Return if
IRR> MARR
Investment feasible.
IRR <MARR
Investment is not feasible.

9) Discounted Payback Period (PP)

Methods Pay Back Period is the period required to close the investment expenditure (initial cash investment) by using cash flow, in other words Pay Back Period is the ratio between the initial cash investment with its cash flow that the result is a unit of time. This method has a disadvantage that ignores the time value of money (time value of money).

To overcome one of the weaknesses of the methods Pay Back Period, ie not pay attention to the time value of money, it was attempted to improve the method by changing the incoming cash flow (cash inflow) to the present value of the investment plan is then newly calculated Pay Back Period her , Thus cash flow used yag is cash flow that has been discounted on the basis of interest rate / required rate of return or the opportunity cost (Karaini, 2000).
Formula of Discounted Payback Period is:

$$Discounted\ Pay\ back\ Period = n\ \frac{a - b}{c}\ x\ 12\ bulan$$

Information:
n = the last year in which the cash flows have not been able to cover the initial investment (initial investment)
a = the number of initial investment (total investment)
b = cumulative net cash flow until all n
c = number of net cash flow year-to-n + 1

Based on the method of Discounted Payback Period proposals received is proposed that produces Discounted Pay Back Period is shorter than the maximum stipulated Pay Back (the economic life of the project).

Advantage of Discounted Payback Period methods are:
- Easy to understand
- More prioritize investments that generate cash flows faster
- Assume that the longer the repayment period, the higher the risk
- Accurate enough to measure the value of investments, as compared to some of the cases and for the decision maker.

The disadvantage Discounted Pay Back Period is:
- Ignore of investment receipts or proceeds after the Pay Back Period is reached.

3. Research Methods

a) Research Location

Road development of Mustafa Dg. Bunga - Muttalib Dg. Narang (2.45 Km) is one of the projects of road construction Highways Agency South Sulawesi province Year 2015 road development planning Mustafa Dg. Bunga - Muttalib Dg. Narang (length 2.45 Km, which consists of Segment Mustafa Dg Bunga = 0.95 Km and Segment Muttalib Dg. Narang = 1.50 Km). Location research began on Mustafa Dg Bunga = 0.95 Km towards Muttalib Dg. Narang = 1.50 Km.

Figure 1: Research Study Location

b) Project Cost

The project cost consists of the cost of investment, operation and maintenance costs. Project financing is a fund collection activities of project financing, where the funds can involve the provision of (Bank) are willing to provide loans or other financing sources.

c) Revenue of Operating Jalan Mustafa Dg. Bunga - Muttalib Dg. Narang Road Segment

To calculate the cost of operating revenues Mustafa Dg.Bunga - Muttalib Dg. Narang Segment Road (South Sulawesi), it assumes every Traffic passing deemed able to pay dues Road (Highway) or Ability To Pay (ATP), so the operating income Mustafa Dg.Bunga - Muttalib Dg. Narang Road Segment, is the result of multiplying the Average Daily Traffic (ADT) and Road Fee (Determination of Rates in PP On Toll Road), whose tariff is evaluated every 2 (two) years, in accordance with the level of inflation.And then data traffic (ADT) based Data from the Department of Highways South Sulawesi Province in 2015

Table 1: Rates of Each Class Vehicles

CLASS	Type of Vehicles	Road Rate/ ATP	Road rate length 2,45 Km
Class I	Passenger Car, MPV, Pick Up/Small Truck and Bus	2500	6,250
Class II	Truck with 2 axles	3500	8,750
Class III	Truck with 3 axles	4500	11,250
Class IV	Truck with 4 axles	5500	13,750
Class V	Truck with 5 axles	7000	17,500
Class VI	Motor Cycles	-	-

d) Expenditure of Mustafa Dg.Bunga - Muttalib Dg. Narang Segment Road

Expenditure of Mustafa Dg. Bunga - Muttalib Dg. Narang segment road., consist of investment costs, management and maintenance costs, and earning taxes. The cost of construction includes work preparation and mobilization, earthworks, drainage work, the work of sub-base and base, structure work, pavement work, the work of road facilities, and the work of others. Supervision fee covers the cost of planning and supervision during implementation. The cost of utilities and road equipment are the costs incurred for the provision of supplementary facilities and road facilities.

Operating costs include escalation cost, interest costs during construction and overhead costs. Cost escalation is the resulting cost from the increase in the price at the time of construction. The interest cost is interest on loans paid by the Bank to the contractor through the Certificate Monthly. Overhead costs are costs that must be incurred such as notary fees, management fees and project headquarters, and insurance costs.

As management fees and maintenance is routine costs incurred each year or a period of time to manage the project. Management and maintenance costs consist of the operating costs, routine maintenance costs, replacement costs of equipment and facilities, and the cost of relining. Operating costs are the costs incurred for personnel, administrative costs, and general costs. The earning tax is obtained based on the progressive earning tax under the Earing Tax Act 2001, Article 17, paragraph 7.2. earnings tax provision for the company are the following:

a. 10% for earning between 0 and 50 million
b. 15% earning more than 50 million to 100 million
c. 30% for earning greater than 100 million.

e) Returns of Loans Installment

Returns of loans installment financing by using wealth alms is done by calculating the operating income from net earning. The steps taken to obtain the amount of revenue the net earnings (Ability To Pay), can be explained as follows:

1) The contractor carrying out the construction of the road, after it first entered into an agreement with Bank Lending. The amount of the Bank's loan is for the construction cost plus interest of 11% per year.
2) Once the construction work is finished, roads are take over to Road Management Operator (appointed by the Board of the National Alms at South Sulawesi), which will operate the road. Estimated revenue depends on the volume of traffic in one year and the amount of the road rates are set. For the smooth operation of the operator, issued operational costs and maintenance costs, so that the revenue obtained in the form of gross profit.
3) Road revenue in the form of gross profit, after minus net of earning taxes, the net profit obtained. Total revenue in the form of net profit after conversion to net present value of the future value of money, will be used to repay bank loans lent to the contractor.
4) The debt installment payment system, can be done by the operator to the lender, or through another bank recommended Operator.

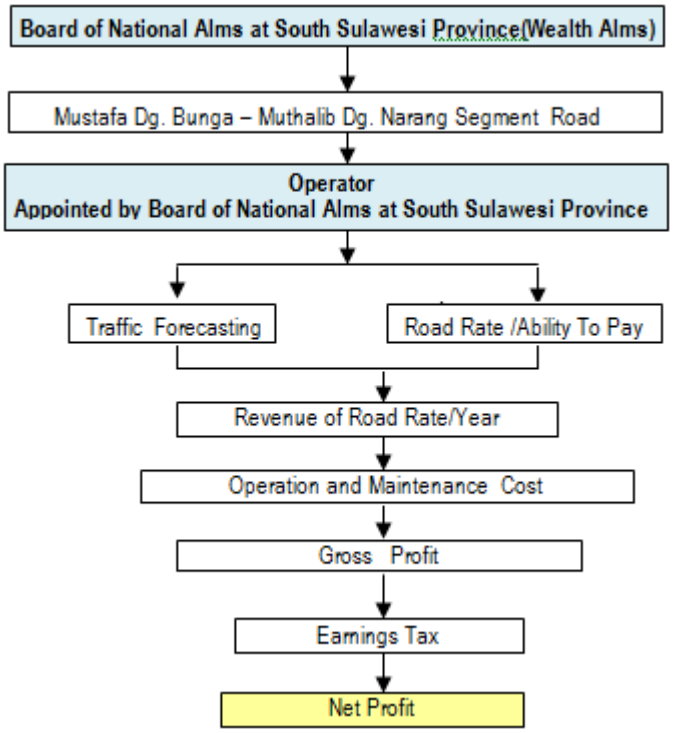

Figure 2

Calculation of Net Revenue for Installment Loans to Board of National Alms at South Sulawesi Province

f) Assumptions Used in Calculation of Installment

In the analysis of the calculation of the amount and duration of installment that will be made to the Bank been appointed Board of National Alms South Sulawesi province, used several assumptions, including the volume of traffic in one year is calculated as follows:

Traffic volume 1 year = volume of daily traffic x n
with:
n = number of days

The calculation of the road rate under Act number 38 of 2004 on the Road, calculated based on ability to pay road users, amount of vehicle operating costs, and investment feasibility. Road rate evaluation can be done every two years based on the effect of inflation. For the Mustafa Dg. Bunga - Muttalib Dg. Narang segment road, the value of annual inflation in 2015-2016 and beyond assumed 5.30%. (South Sulawesi Governor pursuant to Rule No. 37 Year 2016 on Regional Government Work Program of South Sulawesi Province)

Road rate revenue per year, which is used in the calculation of the analysis is the result of multiplying the volume of traffic in a year with road rate, according the length of roads. For 2015 and onwards assumed traffic volume in one year, accounted for 365 days., Thus road revenue for 2015, as follows:
Toll revenues (2015) = Volume of daily traffic x road rates according to length of road x 365
For road revenues in 2016 and the subsequent traffic volume of the year = daily traffic volume, while taking into account the number of Gregory calender 365 days per year.

Other revenue in the form of advertising costs and income other than revenue from road operations, assumed to be 2.5% of the total revenue per year. Operating costs are assumed to increase the fees by 10% per year. While the cost of highway maintenance costs are assumed to rise by 8% per year. For the cost of replacing equipment and road facilities are assumed to be done every five years and the increase in costs is assumed to be 35% of the previous cost. Reoverlaying costs are assumed to be done every five years and increased costs assumed at 7% per year, or 7% x 5 years = 35% for reoverlaying every 5 years. The amount of loans installment by operator to the Bank assumed value by net earning derived from the operation of the road. Appendix calculation can be found in appendix calculation of net revenue.

Table 2: Number of Traffic by Class Vehicles

Class	Type of Vehicles	Number Year 2015
Class I	Passenger Car,Pick Up, Small Truck and Bus	3,706
Class II	Truck with 2 axles	306
Class III	Truck with 3 axles	67
Clas Iv	Truck with 4 axles	-
Class V	Truck with 5 axles	-
	JUMLAH	4,079

Source: Adapted from Department of Highways South Sulawesi Province (On 12 February 2015 survey)

4. Cost Analysis and Institutional Infrastructure Financing Model Using Wealth Alms

A. Infrastructure Financing with using Wealth Alms Mustafa Dg. Bunga - Muttalib Dg. Narang (South Sulawesi) Segment Road

Wealth alms collected will be distributed in 8 (eight) asnaf / Group community entitled to receive of alms (Mustahik Zakat), consisting of: Fakir, Miskin, Amil, Muallaf, Riqab, Ghorimin, Sabilillah, and Ibnu Sabil. Based on the distribution of Alms, then every asna/group f value distribution 1/8 (one-eighth) of the total alms collected. However that may be allocated to the financing of infrastructure, only 6/8 (six-eight), assuming 2 asnaf is mandatory, is Amil and Poor, and 6 other group handled by the Government, appropriate legislation and regulations.

Thus the value of wealth alms that can be allocated to the financing of infrastructure is only 6/8 or 6/8 x Rp. 3.255.000.000 billion, - = Rp. 2.441.250.000,- ,. For the next year is predicted ± 12.50%, according to the Economic Growth in South Sulawesi Year 2015-2016, which is expected to grow 7.70, and (2015) and 7.80% (2016), the source of "Local Government Work Plan of South Sulawesi Province 2016 ".

Table 3: Wealth alms Revenue and Infrastructure Financing Allocation

Number	Total of Wealth Alms Collection 2015	Wealth Alms Collection for Infrastructure Financing 2015	Total Cost for Infrastructure
1	2	3	10
	3,255,000,000	2,441,250,000	2,441,250,000

B. Costs Construction of Mustafa Dg. Bunga - Muttalib Dg. Narang Segment Road (South Sulawesi)

The construction costs of Mustafa Dg. Bunga - Muttalib Dg. Narang segment road (2015) , amount Rp. 4.499.808.000,- assuming annual inflation (after 2015) South Sulawesi Province assumed 5.30% .Required 2 years wealth alms funds for completed construction financing, consist 2015 Rp. 2,441.250.000,- second year (2016) assuming Rp.2.441.250.000,- x 12,50% =Rp. 2.746.400.000,-, the grand total wealth alms for road construction financing = Rp. 5.187.650.000,-

C. Institutional Model for Infrastructure Financing Using Wealth Alms

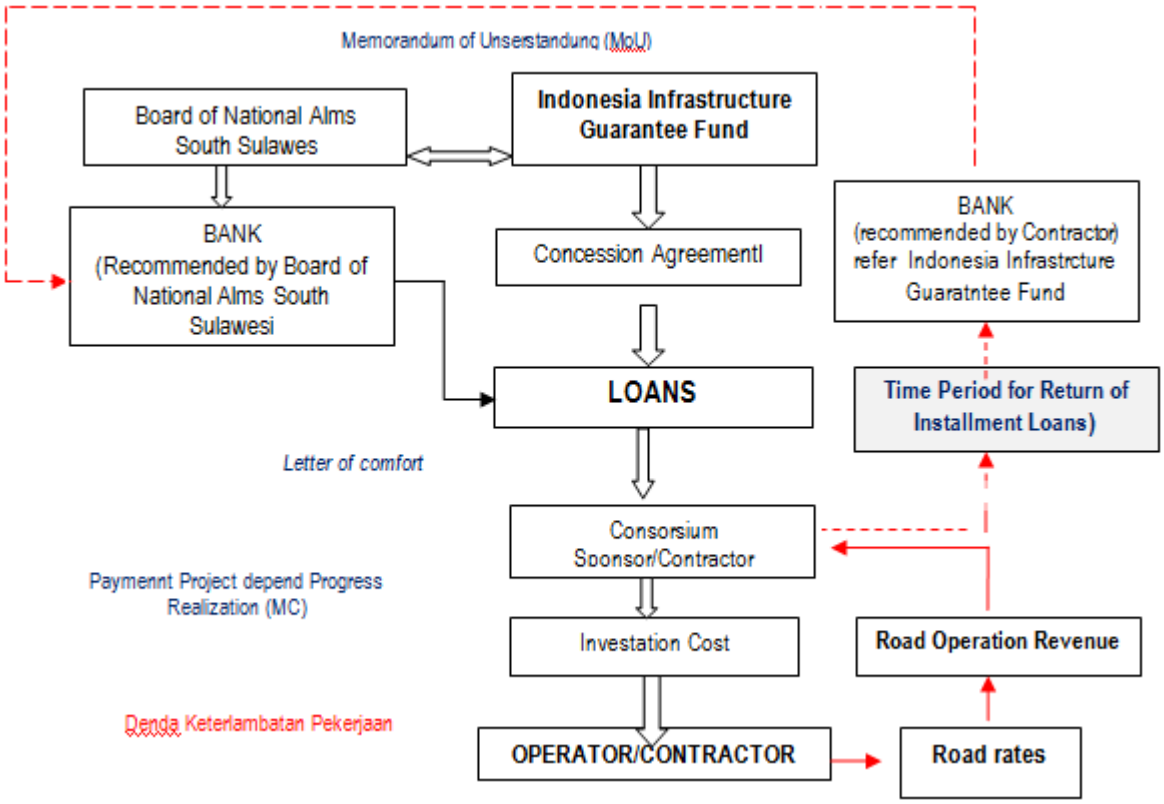

Figure 3: Institutional Model for Infrastruture Financing Using Wealth Alms

D. Calculation of Net Profit

1) Calculation of Daily Traffic Volume becoming Traffic Volume for One Year

- The volume of daily traffic (Class I) = 3.706kend / day
- The volume of daily traffic (Class II) = 306 veh / day
- The volume of daily traffic (Class III) = 67 veh / day
- The volume of daily traffic (Clas IV) = 0 veh / day
- The volume of daily traffic (Class V) = 0 veh / day

The number of days in one year (the Gregorian Calendar) = 365 days

Table 4: Class and Number of Vehicles

Class	Number of Vehicles	Number of Vehicles/Year
Class I	3,706	3,706
Class II	306	111,690
Class III	67	24,455
Class IV	-	-
Class V	-	-
	4,079	139,851

Table 5: Calculation of Traffic Forecasting for Mustafa Dg. Bunga – Muthalib Dg. Narang Road

Year	Volume of Traffic (Vehicles/day)					
	Class I	Class II	Class III	Class IV	Class V	TOTAL
Constructor Phase						
2015	3,706	306	67	-	-	4,079
2016	3,947	326	71	-	-	4,344
Operational Phase						
2017	4,204	347	76	-	-	4,627
2018	4,477	370	81	-	-	4,928
2019	4,768	394	86	-	-	5,248
2020	5,078	420	92	-	-	5,590
2021	5,408	447	98	-	-	5,953
2022	5,760	476	104	-	-	6,340
2023	6,134	507	111	-	-	6,752
2024	6,533	540	118	-	-	7,191
2025	6,958	575	126	-	-	7,659
2026	7,410	612	134	-	-	8,156

Traffic Forecasting growth 6,5% per year, refer Final Report "Ujung Pandang Area Highway Development Study" JICA, 1989

2) Calculation of Road Rates for Mustafa Dg. Bunga – Muthalib Dg. Narang Segment Road ,length = 2,45 Km

Table 6: Road rates for Mustafa Dg. Bunga – Muthalib Dg. Narang Segment Road , length = 2,45 Km (Adjustment of toll rates on some roads, based on the Ministry of Public Works No:277/KPTS/M/2011

Class	Road Rates/AIP	Road Rate Length (2,45 Km)
Class I	2,500	6,125
Class II	3,500	8,575
Class III	4,500	11,025
Class IV	5,500	13,475
Class V	7,000	17,150

The increase in toll rates according to the Law No. 38 of 2004 on Road adjusted for inflation, and can be adjusted every two years. Where the inflation rate being equal to the value of escalation = 5.30% / year

3) Calculation Toll Revenue

(Road rates are used after the increase, adjusted for inflation / escalation) Road revenue is obtained by multiplying the volume of AADT road rate x number of calendar days (according to the Gregorian calendar = 365 days per year).

Table 7: Calculation of Traffic Forecasting

YEAR	VOLUME OF TRAFFIC (VEHICLES/DAY)					VOLU
	CLASS I	CLASS II	CLASSIII	CLASS IV	CLASS V	CLASS I
Construction Phase						
2015	3,706	306	67	-	-	1,352,690
2016	3,947	326	71	-	-	1,440,655
Operasional Phase						
2017	4,204	347	76	-	-	1,534,460
2018	4,477	370	81	-	-	1,634,105
2019	4,768	394	86	-	-	1,740,320
2020	5,078	420	92	-	-	1,853,470
2021	5,408	447	98	-	-	1,973,920
2022	5,760	476	104	-	-	2,102,400
2023	6,134	507	111	-	-	2,238,910
2024	6,533	540	118	-	-	2,384,545
2025	6,958	575	126	-	-	2,539,670

Table 8: Calcullation of Road Revenue (Ability To Pay)

YEAR	VOLUME OF TRAFFIC (VEHICLES/DAY)					VOLUME OF TRAFFIC (VEHICLES/YEAR)				
	CLASS I	CLASS II	CLASSIII	CLASS IV	CLASS V	CLASS I	CLASS II	CLASSIII	CLASS IV	CLASS V
Construction Phase										
2015	3,706	306	67	-	-	1,352,690	111,690	24,455	-	-
2016	3,947	326	71	-	-	1,440,655	118,990	25,915	-	-
Operasional Phase										
2017	4,204	347	76	-	-	1,534,460	126,655	27,740	-	-
2018	4,477	370	81	-	-	1,634,105	135,050	29,565	-	-
2019	4,768	394	86	-	-	1,740,320	143,810	31,390	-	-
2020	5,078	420	92	-	-	1,853,470	153,300	33,580	-	-
2021	5,408	447	98	-	-	1,973,920	163,155	35,770	-	-
2022	5,760	476	104	-	-	2,102,400	173,740	37,960	-	-
2023	6,134	507	111	-	-	2,238,910	185,055	40,515	-	-
2024	6,533	540	118	-	-	2,384,545	197,100	43,070	-	-
2025	6,958	575	126	-	-	2,539,670	209,875	45,990	-	-

Table 9: Calcullation of Road Revenue (Ability To Pay) continued from the table 8

YEAR	Volume OF Traffic (Vehiucles/day)					Road Rates					Road Revenue (Million Rp)					Total
	Class I	Class II	Class III	lass	Class	Class I	Class II	Class III	Class IV	Class V	Class I	Class II	Class III	Class I	Class V	(Million)
Construction Phase																
2015	1,352,690	111,690	20,805	-	-	6,125	8,575	11,025	13,475	17,150					-	
2016	1,440,615	118,950	22,157	-	-	6,791	9,508	12,225	14,941	19,016						
Operasional Phase																
2017	1,534,255	126,682	23,597	-	-	6,791	9,508	12,225	14,941	19,016	10,420	1,204	288	-	-	11,912
2018	1,534,255	134,916	25,131	-	-	7,151	10,012	12,873	15,733	20,024	10,972	1,351	323	-	-	12,646
2019	1,633,982	143,686	26,765	-	-	7,151	10,012	12,873	15,733	20,024	11,685	1,439	345	-	-	13,469
2020	1,633,982	153,026	28,505	-	-	7,530	10,543	13,555	16,567	21,085	12,305	1,613	386	-	-	14,304
2021	1,740,191	162,973	30,358	-	-	7,530	10,543	13,555	16,567	21,085	13,104	1,718	411	-	-	15,233
2022	1,740,191	173,566	32,331	-	-	7,930	11,101	14,273	17,445	22,203	13,799	1,927	461	-	-	16,187
2023	1,853,303	184,848	34,433	-	-	7,930	11,101	14,273	17,445	22,203	14,696	2,052	491	-	-	17,239
2024	1,853,303	196,863	36,671	-	-	8,350	11,690	15,030	18,370	23,379	15,475	2,301	551	-	-	18,327
2025	1,973,768	209,659	39,055	-	-	8,350	11,690	15,030	18,370	23,379	16,481	2,451	587	-	-	19,519

Table 10: Calculation of Road Revenue (Ability To Pay) continued from the table 9

YEAR	Road Rates Revenue (Million Rp)	Others Revenue (Million Rp)	Total Revenue (Million Rp)
Construction Phase			
2015			
2016			
Operasional Phase			
2017	11,912	298	12,210
2018	12,646	316	12,962
2019	13,469	337	13,806
2020	14,304	358	14,662
2021	15,233	381	15,614
2022	16,187	405	16,592
2023	17,239	431	17,670
2024	18,327	458	18,785
2025	19,519	488	20,007
	-	-	-

Table 11: Calculation of Gross Profit (Million Rupiah)

Year	Total Revenue (Million Rp)	Cost of management and Maintenance (Million Rp)				Total Cost of Replacement and Maintenance (Million Rp)	Gross Profit (Million Rp)
		Operasion Cost (Million Rp)	Routine Maintenance (Million Rp)	Replacement of Eqquipment and Others Facilities (Million Rp)	Overlay Cost (Million Rp)		
	A	B	C	D	E	F=B+C+D+E	H=A-F
Construction Phase							
2015							
2016							
Operasional Phase							
2017	12,210	1,221	977	854 2/3	4,013	7,065	5,144
2018	12,962	1,296	1,037	907 1/3	4,013	7,254	5,709
2019	13,806	1,381	1,104	966 2/5	4,013	7,464	6,341
2020	14,662	1,466	1,173	1026 1/3	4,013	7,678	6,983
2021	15,614	1,561	1,249	1093	5,465	9,368	6,246
2022	16,592	1,659	1,327	1161 3/7	5,465	9,613	6,979
2023	17,670	1,767	1,414	1236 8/9	5,465	9,882	7,788
2024	18,785	1,879	1,503	1315	5,465	10,161	8,624
2025	20,007	2,001	1,601	1400 1/2	5,465	10,467	9,540

Table 12: Calculation of Net Profit (Million Rp)

YEAR	Gross Profit (Million Rp)	Earning Tax (Million Rp)	Net Profit (Million Rp)
	A	B	C = A-B
Construction Phase			
2015			
2016			
Operasional Phase			
2017	5,144	1,543	3,601
2018	5,709	1,713	3,996
2019	6,341	1,902	4,439
2020	6,983	2,095	4,888
2021	6,246	1,874	4,372
2022	6,979	2,094	4,885
2023	7,788	2,336	5,451
2024	8,624	2,587	6,037
2025	9,540	2,862	6,678

Table 13: Calculation of the amount and duration of the loan installment

YEAR	COST INVESTMENT (JUTA Rp.)	NET PROFIT (Million Rp)	PRESENT VALUE (i = 11 %) (Million Rp)	Cumulative of Net PROFIT (Million Rp)	*Amount of Installment* (Million Rp)	*Cumulative of Instalment* (Million Rp)	*Amount of Loan* (Million Rp)	*Amount of Loan+ Interest(11%)* (Million Rp)
Construction Phase								
2015	2,441							
2016	2,746							
Total	**5,187**							
Operasional Phase								
2017		3,601	2,923	2,923	*2,923*	*2,923*	2,264	2,513
2018		3,996	2,922	5,845	*2,922*	*5,845*	*(3,580)*	**(3,974)**
2019		4,439	2,924	8,769	*5,847*	*11,691*	*(15,272)*	(16,951)
2020		4,888	2,901	11,670	*5,823*	*17,514*	*(32,786)*	*(36,392)*
2021		4,372	2,337	14,007	*8,184*	*25,698*	*(58,484)*	*(64,917)*
2022		4,885	2,353	16,360	*8,176*	*33,874*	*(92,358)*	*(102,518)*
2023		5,451	2,365	18,725	*10,550*	*44,424*	*(136,782)*	*(151,828)*
2024		6,037	2,360	21,085	*10,536*	*54,960*	*(191,741)*	*(212,833)*
2025		6,678	2,352	23,437	*12,902*	*67,861*	*(259,603)*	*(288,159)*

5. Conclusions and Recommendations

A. Conclusion

- Infrastructure financing by Wealth Alms, as an alternative to infrastructure financing in Indonesia especially in South Sulawesi Province, in addition alternative to the state budget, local government budget and Foreign Aid (Loan).
- Road rate revenue assumed the motorist was able to pay rates road (Ability To Pay).
- Analysis of the financing calculations can be done in two years, with a repayment period (loan installment) of the loan by the Operator (recommended by Board of National Alms South Sulawesi Province) or contractor, it only takes two (2) years after the road operation.

B. Recommended

- Keep matching funds for infrastructure financing, or sharing between State Budget or Local Government Budget and Wealth alms, if infrastructure budget required exceeds Wealth alms Fund that can be collected.
- Should be analyzed as well also risk sharing between Board of National Alms (as Lender) and the Operator or the Contractor as a borrower, so that the allocation of risk can be minimized.

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