Ministry of Public Works
Directorate General of Highways

Study Report

On

Planning the Road Preservation Fund

In

The Republic of Indonesia

Final Report

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The following foreign exchange rates are applied in this study.
USD$1.00 = 0.010 Indonesia Rupia
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Notice:
Please be notified that description of the articles of laws, acts, decrees, and other legislative documents in this report does not follow the official translation.

Research on the assistance of planning the Road Preservation Fund
Final Report

TABLE OF CONTENTS

Acronyms

Summary

CHAPTER 1 Outline of the Study 1-1
1.1 Background and purpose 1-1
1.2 Study issues 1-2
1.3 Study flow 1-3
1.4 Study team organizations 1-4
1.5 Summary of the study 1-5
CHAPTER 2 Study on Institutional Issues 2-1
2.1 Current status of road management in Indonesia 2-1
2.2 Road funding system in Japan 2-33
2.3 Views of road preservation fund in Indonesia 2-38
2.4 Recommendations on institutional issues 2-45
CHAPTER 3 Study on Financial Issues 3-1
3.1 Framework of the study 3-1
3.2 Descriptions of the simulation model 3-2
3.3 Demand side analysis 3-7
3.4 Supply side analysis 3-8
3.5 Recommendation on financial issues 3-12
CHAPTER 4 Study on Operational Issues 4-1
4.1 Framework on analysis for operational issues 4-1
4.2 Operational framework for national road in Indonesia 4-2
4.3 Operational framework for road preservation in Japan 4-4
4.4 Standard for road preservation 4-29
4.5 Recommendation on operational issues 4-31
CHAPTER 5 Recommendations 5-1
5.1 Overall scenario 5-1
5.2 Transition stage 5-2
5.3 Permanent stage 5-5
5.4 Execution of pilot project 5-7
5.5 Superiority of road preservation fund 5-8

Reference 2-1

Related issues of DAK and HIBAH

Reference 2-2

Related laws on road management in Indonesia

Reference 2-3

Related laws on road preservation in Japan

Reference 2-4

Related laws on the establishment of organization for road preservation in Japan

Reference 4-1

Overview of the operational framework in Indonesia

Reference 4-2

Japanese cases of defect in managing roads

LIST OF TABLES

Table 1.1 Timetable of workshop 1-7
Table 2.1 District boundary of each BALAI 2-2
Table 2.2 Regional government revenue(2009) 2-15
Table 2.3 Taxes associated to road users 2-21
Table 2.4 Luxury taxes associated to cars 2-21
Table 2.5 Highest tax rates 2-22
Table 2.6 Distribution of province taxes 2-22
Table 2.7 Outline based on law no 38 (2004) 2-25
Table 2.8 Guideline of minimum standard of service determination based on minister of settlement and regional infrastructure decree no 534 / KPTS / M 2001 2-26
Table 2.9 Minimum service standard of toll road 2-28
Table 2.10 The legal frame work of earmarked account for road development in Japan 2-34
Table 2.11 Examples of authorizing the allocation of tax revenue to earmarked account and the tax ratio for road development in national and local 2-34
Table 2.12 Administration, source of expenses 2-36
Table 2.13 Special rules and subsidies applied for restoration from disaster 2-37
Table 2.14 Possible new taxes for the future road preservation and development 2-43
Table 3.1 Summary of simulation target 3-2
Table 3.2 Summary of unit prices 3-4
Table 3.3 Summary of “Demand Side Analysis” 3-7
Table 3.4 Summary of simulation cases in “Supply side analysis” 3-9
Table 3.5 Summary of the simulation 3-12
Table 4.1 Coverage of BALAI 4-3
Table 4.2 Type of roads classified by the road act in Japan 4-4
Table 4.3 The number of vehicles for road preservation work deployed 4-15
Table 4.4 Administration and outsourcing for road maintenance operations 4-16
Table 4.5 National Highway Offices across the nation and a length of road expansions in each area 4-18
Table 4.6 Duties of each section of Public Works Division 4-21
Table 4.7 The interval of road preservation work in Japan 4-27
Table 4.8 The organization for preservation management of national road 4-28
Table 4.9 Items of standard for road preservation (Case in foreign countries) 4-30
Table 5.1 Recommendations in the transition stage 1 & 2 5-2
Table 5.2 Recommendations in the permanent stage 5-5
Table 5.3 Road preservation fund 5-8

LIST OF CHARTS

Chart 1.1 Implementation strategy for RPF....1-2
Chart 1.2 Study flow....1-3
Chart 1.3 Study team members....1-4
Chart 1.4 Relations with associated parties....1-4
Chart 1.5 Workshop at Jakarta (29 April, 2010)....1-8
Chart 2.1 Organization structure for road management of national road in Indonesia....2-1
Chart 2.2 The picture of BALAI 4....2-2
Chart 2.3 The picture of SKPD (Dinas BINA MARGA Provinci Jawa Barat)....2-4
Chart 2.4 The picture of PPK (PPK Bandung Dan Purwakarta)....2-5
Chart 2.5 Organization structure under Balai （in case of Balai4）(present)....2-6
Chart 2.6 Road length for each road....2-6
Chart 2.7 Budget for national road....2-9
Chart 2.8 Budget comparison for preservation and development (national roads)....2-9
Chart 2.9 The budget of national road for each province per Balai in 2009....2-10
Chart 2.10 Budget of preservation works for provincial road in 2009....2-11
Chart 2.11 Budget of preservation works for kapubaten / municipal road in 2009....2-12
Chart 2.12 Funding resources of national roads in 2010....2-13
Chart 2.13 Revenue structure of regional governments....2-14
Chart 2.14 Budget flow(provincial government)....2-16
Chart 2.15 Budget flow (kabupaten government)....2-16
Chart 2.16 Budget flow example (Lampung)....2-17
Chart 2.17 Budget flow example (Sulawesi Utara)....2-17
Chart 2.18 Overview of legal system in Indonesia....2-23
Chart 2.19 The overview of legal system of Indonesia's road ministration....2-24
Chart 2.20 Budget decision and execution processes....2-31
Chart 2.21 Road management in Japan (Flow of budget)....2-33
Chart 2.22 Revenue for road development in national government as of 2008....2-35
Chart 2.23 Revenues for road development in local government as of 2008....2-35
Chart 2.24 Budgeting process....2-37
Chart 2.25 Implementation of 'Board' (transition stage 1)....2-39
Chart 2.26 Implementation of 'Board' (transition stage 2)....2-39
Chart 2.27 Implementation of 'Board' (permanent stage)....2-40
Chart 2.28 Structure of Board and RPF Unit....2-41
Chart 2.29 PDCA cycle and RPF Unit....2-42
Chart 2.30 The US study for new funds of road preservations....2-44
Chart 2.31 Issue of road preservation work in the budgeting and implementation process

before introducing RPF 2-46
Chart 2.32 Improvement of road preservation work in the budgeting and implementation process after introducing RPF 2-46
Chart 3.1 Framework of the study on financial issues 3-1
Chart 3.2 Current conditions for road pavement and bridges 3-3
Chart 3.3 Pavement deterioration of National and Provincial road (with routine maintenance) 3-5
Chart 3.4 Deterioration on National bridges (with routine and periodical maintenance) 3-5
Chart 3.5 Image of simulation result for pavement 3-6
Chart 3.6 Future maintenance cost based on “Demand side analysis” 3-7
Chart 3.7 Budget for road development and preservation（national road） 3-9
Chart 3.8 Future road condition based on “Pessimistic Case” 3-10
Chart 3.9 Future road condition based on “Moderate Case” 3-11
Chart 3.10 Future road condition based on “Optimistic Case” 3-11
Chart 3.11 Extracts from ‘road statistics’ in Japan 3-14
Chart 4.1 Framework on analysis for operational issues 4-1
Chart 4.2 Average length of national road per PPK for preservation work 4-3
Chart 4.3 Length of roads classified by road act in Japan 4-6
Chart 4.4 Organizations for preservation of designated national roads in Japan 4-7
Chart 4.5 The jurisdiction area of each regional development bureau 4-8
Chart 4.6 Organization chart of the road bureau 4-9
Chart 4.7 Kanto regional development bureau 4-10
Chart 4.8 Tokyo National Highway Office 4-11
Chart 4.9 The Jurisdiction section of each site branch 4-11
Chart 4.10 Roles of Tokyo National Highway Office 4-12
Chart 4.11 An example of the organizational structure of national highway office 4-13
Chart 4.12 The jurisdiction section of each site branch 4-14
Chart 4.13 Examples of vehicles for road preservation work deployed in Kagoshima National Highway Office 4-15
Chart 4.14 The budget for work in Kagoshima National Highway Office 4-15
Chart 4.15 Overview of preservation work by site branch office 4-16
Chart 4.16 The legal framework to be authorized the duties in each organization 4-19
Chart 4.17 A typical structure of road administration in a prefecture 4-20
Chart 4.18 Overview of preservation work of designated national highways 4-22
Chart 4.19 Overview of patrol work 4-22
Chart 4.20 Examples of obstacles to be detected and removed by patrol work 4-23
Chart 4.21 Monitoring road condition by closed-circuit television (CCTV) system 4-23
Chart 4.22 The number of cases in which obstacles are detected by a patrol (2004) 4-24

Chart 4.23 Cleaning in nighttime work 4-25
Chart 4.24 Weeding on the slope 4-25
Chart 4.25 Pruning the trees in right of way 4-25
Chart 4.26 Scenes of inspection work for bridge 4-25
Chart 4.27 Inspection of occurrence of cavities behind lining by radar 4-26
Chart 4.28 Inspection of occurrence of cavities behind lining by boring 4-26
Chart 4.29 Inspection of occurrence of cracks by viewing 4-26
Chart 4.30 Inspection of condition of lining by hammerin 4-26
Chart 4.31 Aims and Objectives to establish standards for road preservation 4-29
Chart 5.1 Overall scenario of the RPF implementation 5-1
Chart 5.2 PDCA cycle and role of ‘Board’ for national roads in the transition stage 2 5-3
Chart 5.3 PDCA cycle and role of ‘Board’ for sub-national roads 5-4
Chart 5.4 PDCA cycle and role of ‘RPF Unit’ for national roads in the permanent stage 5-6
Chart 5.5 PDCA cycle and role of ‘RPF Unit’ for sub-national road in the permanent stage 5-6

ACRONYMS

APBD	The budget of the Income and Expenses of the Area
APBN	The budget of the Income and Expenses of national
BMN	State Property
CCTV	closed-circuit television
DAK	Special Block Grant
DAU	Block Grant
DIP	The Budget Planning
HIBAH	The Grant
IRMS	Integrated Road Management System
Kepmen	Ministerial Decree
Keppres	Presidential Decree
MLIT	Ministry of Land, Infrastructure, Transport and Tourism
NPHD	The text of the agreement of the regional grant
NPPH	The text of the Continuation Agreement of the Grant
PDCA	Plan, Do, Check, Action
Perpu	Regulation of the replacement Law
PP	Goverenment Regulation
PPK	The Implementation Unit
PU	Department of Public Works
RAB	budget plan
RPF	Road Preservation Fund
Satker	The Work Unit
SKPD	Working Unit apparatus of Regional Government
SNVT	Certain Non Vertical Working Unit
TA	year budget
TAP,MPR	Decree of People's Consultative Assembly
UU	Law
UUD	State Constitution

SUMMARY

1. Toward an Implementation of Road Preservation Fund

1.1 Implementation strategy

In accordance with the instructions by BINA MARGA, the study team followed to the implementation strategy for RPF as shown in Chart 1.1. RPF will be realized in permanent stage after conducting the pilot study in transition stage.

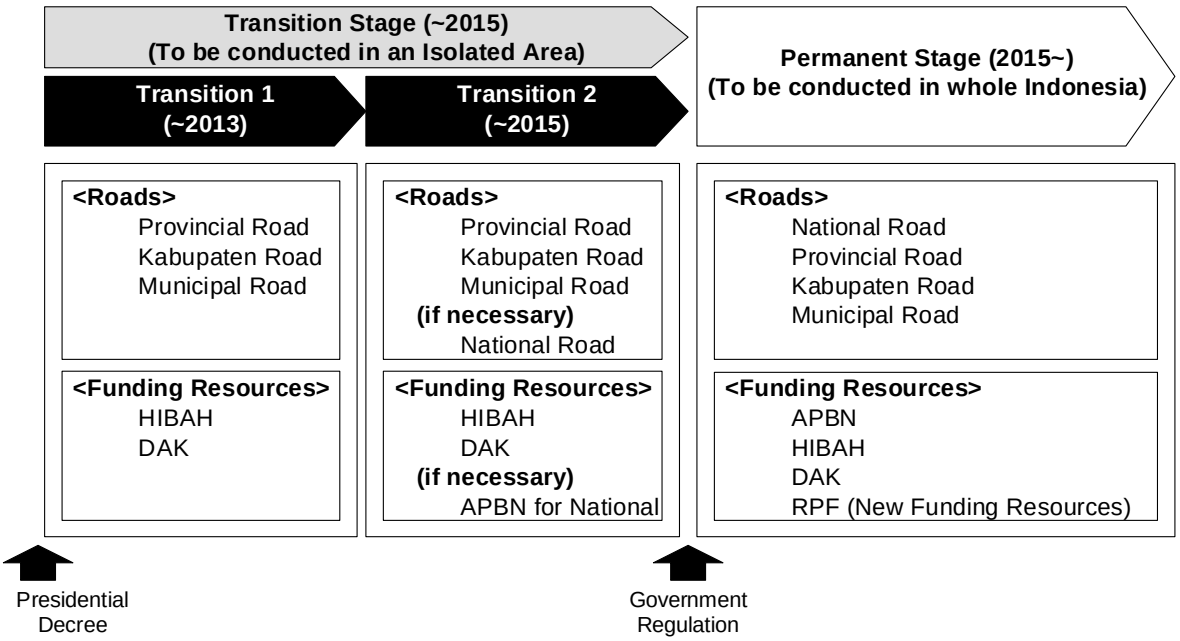


Chart 1.1 Implementation strategy for RPF

1.2 Study issues

The study team focused on the three issues which become references for the draft of presidential decree on institutional issue, and for that of government regulation on financial and operational issues.

- **Institutional Issues**
  - Administrative system to supervise or monitor the budget allocation and proper execution of road preservation works through independent 'Board'
  - Current and future possible funding resources to be applied for road preservation works.
  - Necessary items of works to be conducted in transition stage and permanent stage toward the implementation of RPF
- **Financial Issues**
  - Demand and supply analysis comparing the budget and the roughly simulated future preservation costs for national and sub-national roads.
  - Rough simulation of the future road conditions under the budget constraints
  - Rough amounts of gasoline charges to cover the future budget shortage.
- **Operational Issues**
  - Implications from the road operational and organizational systems in Japan
  - Minimum standard of road conditions referring the cases of other countries

2. Institutional Issues

2.1 Transition stage 1

In the transition stage 1, BINA MARGA should set up 'Board' inside the existing organization in order to monitor and grasp the current budget allocation and its actual use for road preservation work for sub-national roads at a selected province. Chart 2.1 shows budget flow and role of 'Board' in the transition stage 1.

BINA MARGA is able to clarify issues and challenges to be solved toward the permanent stage, in which whole roads in Indonesia will be managed under the newly implemented RPF.

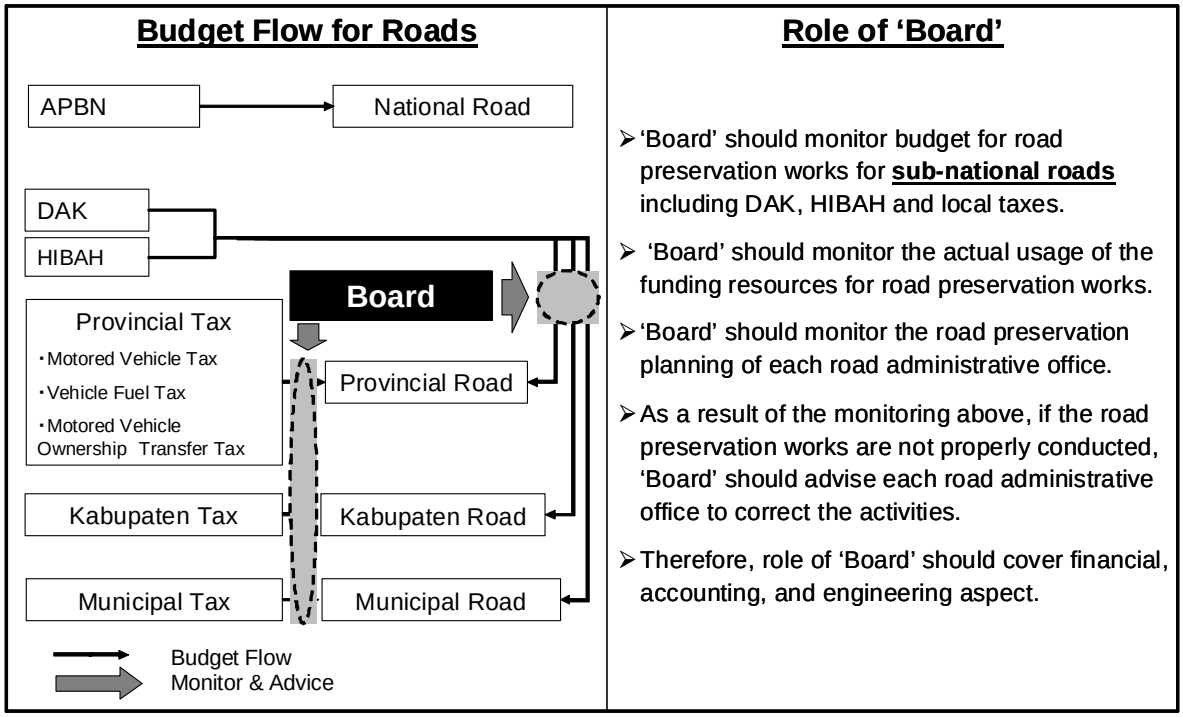


Chart 2.1 Implementation of 'Board' (transition stage 1)

2.2 Transition stage 2 (optional)

In the transition stage 2, 'Board' will monitor and grasp the current budget allocation and its actual use for road preservation work for national roads in addition to sub-national roads, if necessary. Chart 2.2 shows budget flow and role of 'Board' in the transition stage 2.

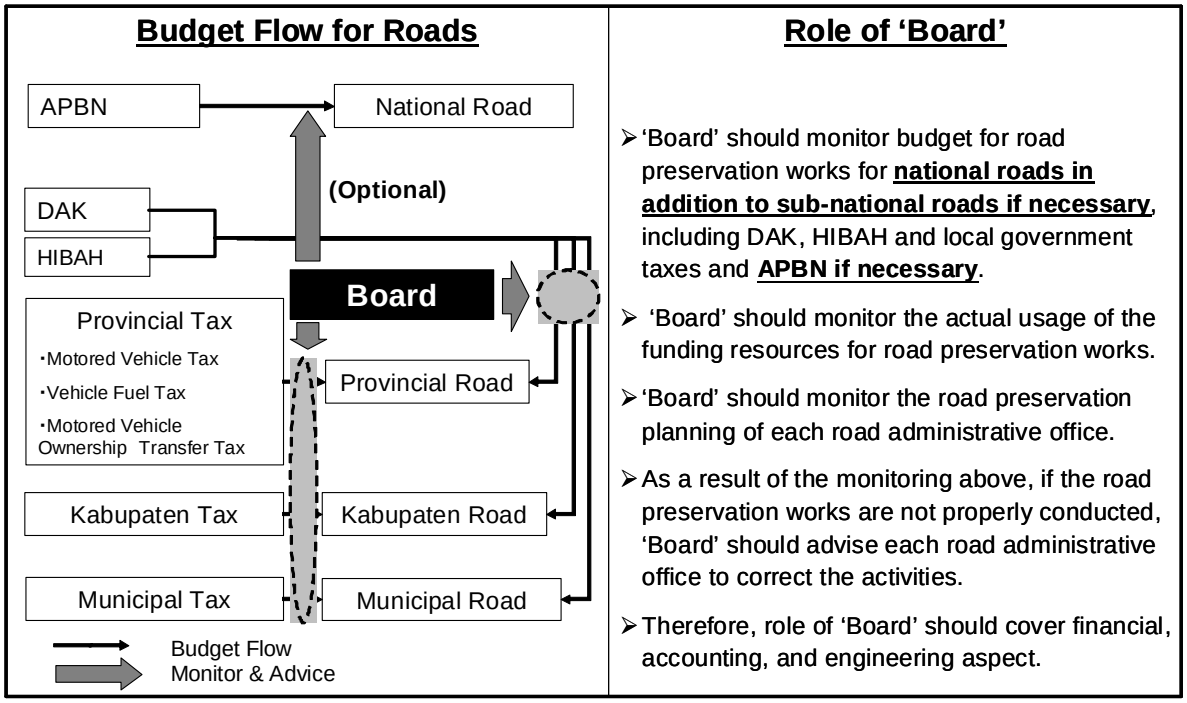


Chart 2.2 Implementation of 'Board' (transition stage 2)

2.3 Permanent stage

'Road Preservation Fund' (RPF) is newly introduced in the permanent stage. RPF should be functioned as a wallet of funding resources which is independently secured of the national budget. Through the use of RPF, the road preservation works could be conducted efficiently, effectively, flexibly, continuingly, and appropriately.

RPF should be applied together with some incentives and responsibilities of the road administrators. In Indonesia, for example, it should be studied to introduce such system that RPF would be only provided if the road administrators increase the distribution of APBN or APBD to road preservations at more than a certain level.

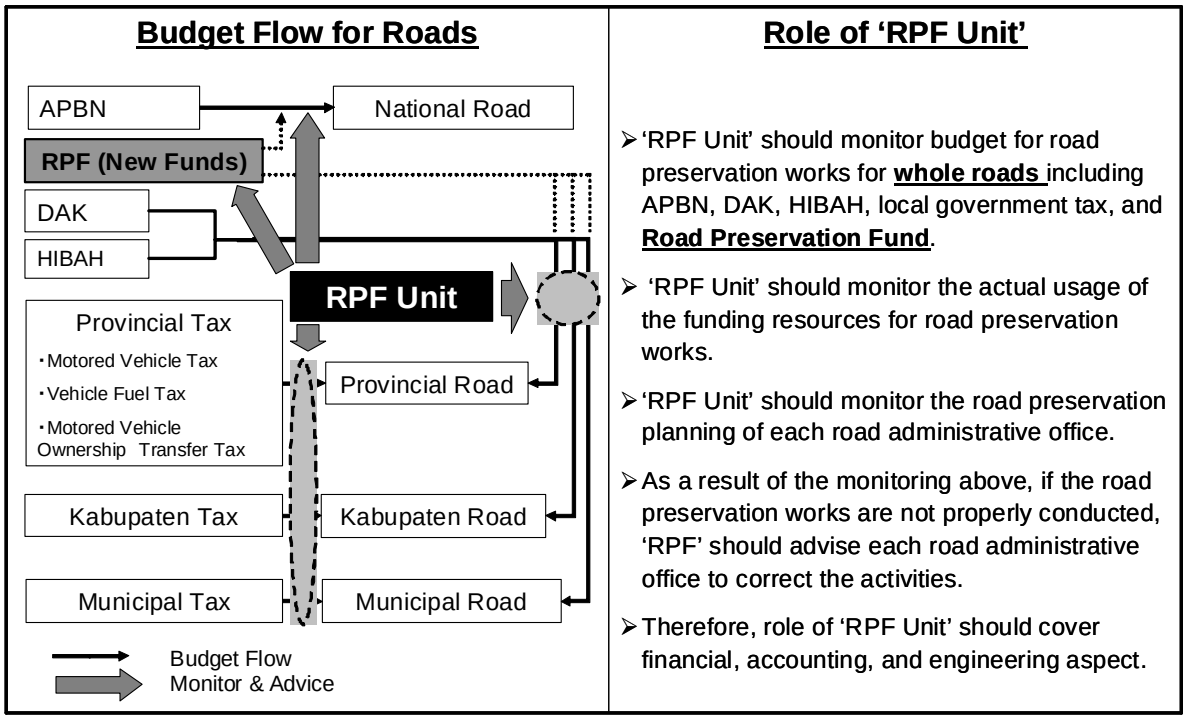


Chart 2.3 Implementation of 'Board' (permanent stage)

2.4 Structure of 'Board' and 'RPF Unit'

Chart 2.4 shows the structure of 'Board' or 'RPF Unit' in the transition stage and permanent stage respectively.

In the transition stage 1, 'Board' should monitor the activities of road preservation works for sub-national roads at a selected province including preservation planning and execution, and proper use of the existing funding resources.

In the transition stage 2, if necessary, the coverage of monitoring by 'Board' should be extended to national roads optionally.

In the permanent stage, 'Board' should be organized as 'RPF Unit', which will monitor use and allocation of the newly implemented RPF at central level. Since whole roads in Indonesia should be managed under the RPF, 'Board' for each 33 province should also be set up at SKPD level under the control of 'RPF Unit'.

As for the organization of 'Board' or 'RPF Unit', it is recommended that the members should be odd numbers which include secretariat and experts of finance, budgeting, road preservations coming from BINA MARGA, MOT, MOF, Academia, and etc.

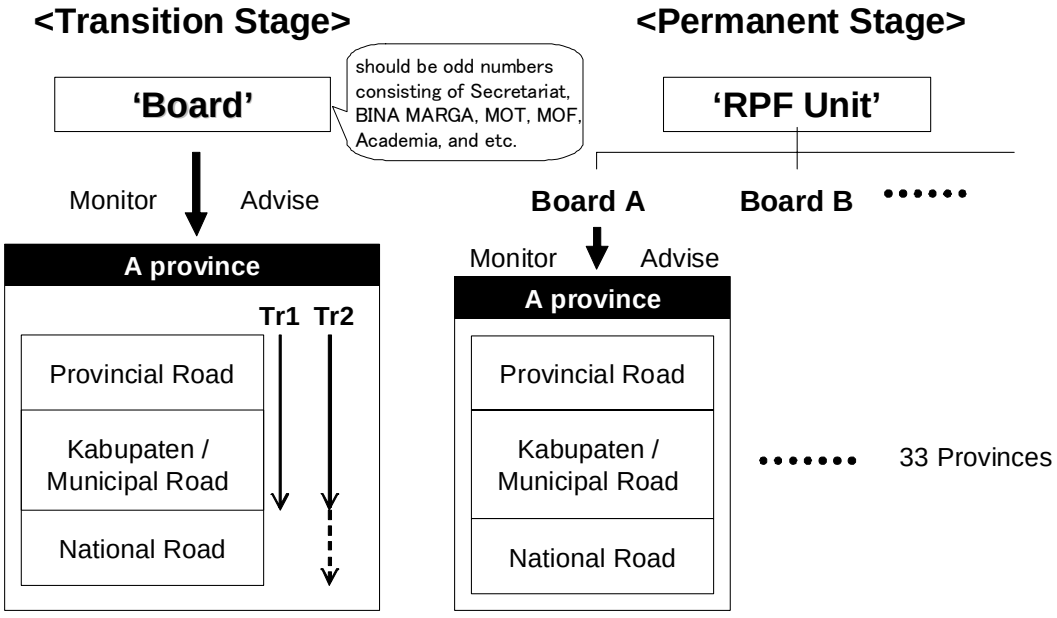


Chart 2.4 Structure of Board and RPF Unit

2.5 Pilot project in the transition stage

It is obvious that quite a lot of tasks and studies have to be conducted toward the implementation of RPF in Indonesia. Therefore, it is very effective and useful to execute the pilot project in a certain province in order to understand the challenges and problems in actual basis.

In the pilot project, the following issues should be clarified at least.

- ✓ Future preservation costs for national and sub-national roads
- ✓ Future revenues or funding resources for the road preservation works
- ✓ Gaps between the above, and any possibilities of additional funding resources
- ✓ To what extent the Board is able to monitor and understand the current operation and expense for the road preservations
- ✓ Items to be stated on the guideline or manual for Road Preservation Fund Unit

Regarding the selection of the province for the pilot project, it is favorable that the province would meet the following conditions.

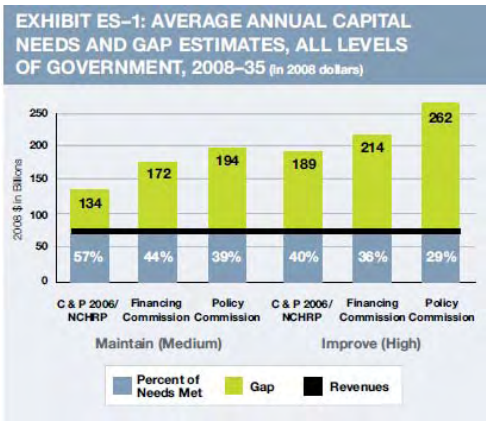
- ✓ Budget for road preservation is in around average level among the provinces.
- ✓ Budget for preservation and development is well balanced.
- ✓ Budget for national / provincial / kabupaten / municipal roads is well balanced.
- ✓ Road conditions are at a moderate level and not so heavily damaged.
- ✓ Road networks are not so large, and isolated from the other provinces
- ✓ Traffic volumes at a certain level are secured.

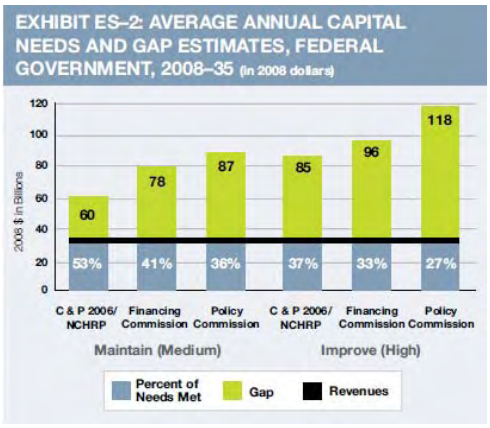
Considering the above issues, it is recommended that Bali province should be one of the candidates for the pilot project.

2.6 New funds for RPF

Considering the new funding resources for road preservation works, it is helpful to reference the study result of the United States. Chart 2.5 shows how is the gap between the required level and the predicted one with regard to the preservation costs of National roads in the United States, which was estimated by several institutions in the US.

Freight-Related Charges、Tolling and Mileage-Based User Fees would be one of the possible candidates of the new fund resources in Indonesia. In order to implement this, detailed study should be conducted to clarify the volume of funding resources which will be obtained from the ways, and to collect the related data to calculate the volumes.





Paying by the Gallon : Motor Fuel Taxes	
<Strength> ✓ Short-term and Medium-term Revenue Potential ✓ Historical Basis for Tax ✓ Flexible Use of Funds ✓ Administrative Costs/Ease ✓ Ability to Charge for Negative Environmental Impacts ✓ Particularly Carbon Dioxide Emissions ✓ User Pay/Benefit Correlation	**<Weakness>** ✓Unsustainable in the Long Term ✓Declining Public/Political Support for Increases ✓Weak Promotion of Efficient Use and Investment ✓Charging for Negative System Impact ✓Regressive Taxation ✓Compliance Considerations
Paying for the Ton : Freight-Related Charges	
Customs Duties and Fees, Freight Waybill Tax, Weight-Distance Tax, Container Tax, Harbor Maintenance Tax	
Paying by the Mile : Tolling and Mileage-Based User Fees	
<Strength> ✓ Sending Accurate Market Signals to System Users ✓ Shifting some vehicle trips from peak to off-peak periods ✓ Reducing total vehicle trips and trip distances ✓ Increasing mode shift ✓ Improving reliability ✓ Reducing commercial services travel time ✓ Impacts on System Investment ✓ Environmental Benefits ✓ Benefits for Transit,	**<Weakness>** ✓Public and Political Opposition to Tolling and Pricing ✓Challenges to Setting Efficient Tolls and Road Prices ✓Mobility Impacts ✓Balkanization of National Network ✓Route Diversion ✓Adverse Freight Industry Impacts ✓Social Equity Concerns ✓Rural Equity Concerns ✓Double Taxation Arguments ✓Tolling and Pricing Deployment and Administration Costs ✓Privacy Concerns ✓Scaling the Technology

Resource: "Paying Our Way – A new Framework for Transportation Finance" (The National Surface Transportation Infrastructure Financing Commission, 26 February, 2009)

Chart 2.5 The US study for new funds of road preservations

3. Financial Issues

3.1 Demand side analysis

In order to conduct demand side analysis for road preservation works, the study team roughly estimated and simulated the future preservation costs under a number of assumptions as follows;.

- The simulation covers the pavement of national, provincial, kabupaten/municipal roads and the bridges of national road.
- The existing unstable road pavement and unstable bridges in 2010 will be rehabilitated in good conditions by 2015 before RPF is implemented.
- Maintenance or rehabilitation is applied for unstable conditions at specified intervals.
  - ✓ Pavement

    Routine maintenance : To be conducted every year regardless of the road conditions

    Periodical maintenance : To be conducted every 5 years
  - ✓ Bridge

    Routine maintenance : To be conducted every year regardless of the bridge conditions

    Periodical maintenance : To be conducted every 10 years

    Rehabilitation : To be conducted every 100 years (if periodical maintenance is properly conducted)

    : To be conducted every 55 years (if periodical maintenance is not properly conducted)
- Initial condition of the roads and bridges comes from IRMS and BINA MARGA data
- Unit price of routine and periodical maintenance is estimated based on the data of West Jawa province as shown in Table 3.1.

Table 3.1 Summary of unit prices for simulation

			National road	Provincial Road	Kabupaten Road Municipal Road
Pavement		Ratio between road paved by asphalt and "lapen" road (not paved road)	90%:10%	60%:40%	60%:40%
	Unit Prices	Routine (paved)	53.8 million Rp/km	36.1 million Rp/km (67% of National rd)	26.9 million Rp/km (50% of National rd)
		Routine ("lapen")	37.6 million Rp/km	25.2 million Rp/km (67% of National rd)	18.8 million Rp/km (50% of National rd)
		Periodical (paved)	1560.0 million Rp/km	1044.5 million Rp/km (67% of National rd)	779.5 million Rp/km (50% of National rd)
		Periodical ("lapen")	978.3 million Rp/km	655.4 million Rp/km (67% of National rd)	489.1 million Rp/km (50% of National rd)
Bridges	Unit Prices	Routine	15.0 million Rp/m	Not available	Not available
		Periodical	15.0 million Rp/m	Not available	Not available
		Rehabilitation	50.0 million Rp/m		

Chart3.1 shows the image of the future cost simulation for road pavements. Up to 2015, all the existing unstable pavements will be rehabilitated, and once the RPF is implemented in 2015, only routine and periodical maintenance will be continued.

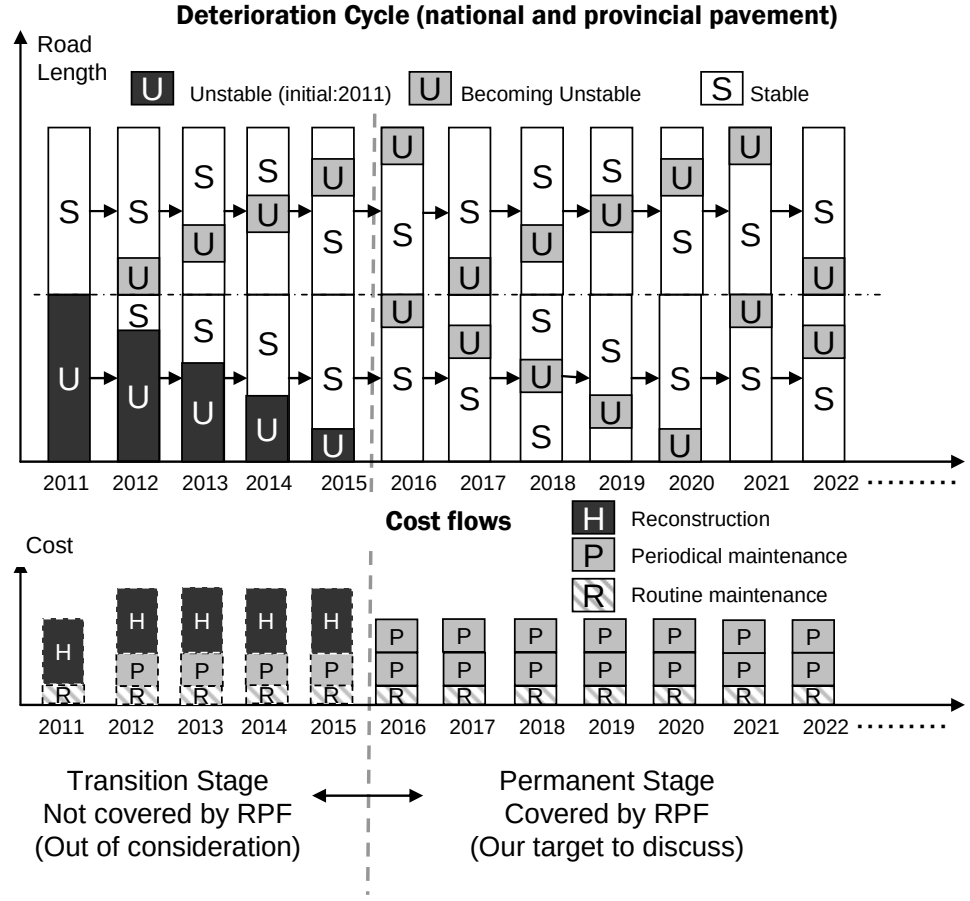


Chart 3.1 Image of simulation result for pavement

Chart 3.2 is the result of the simulation showing that around 59.6 trillion Rp / year in average will be required for the future road preservations.

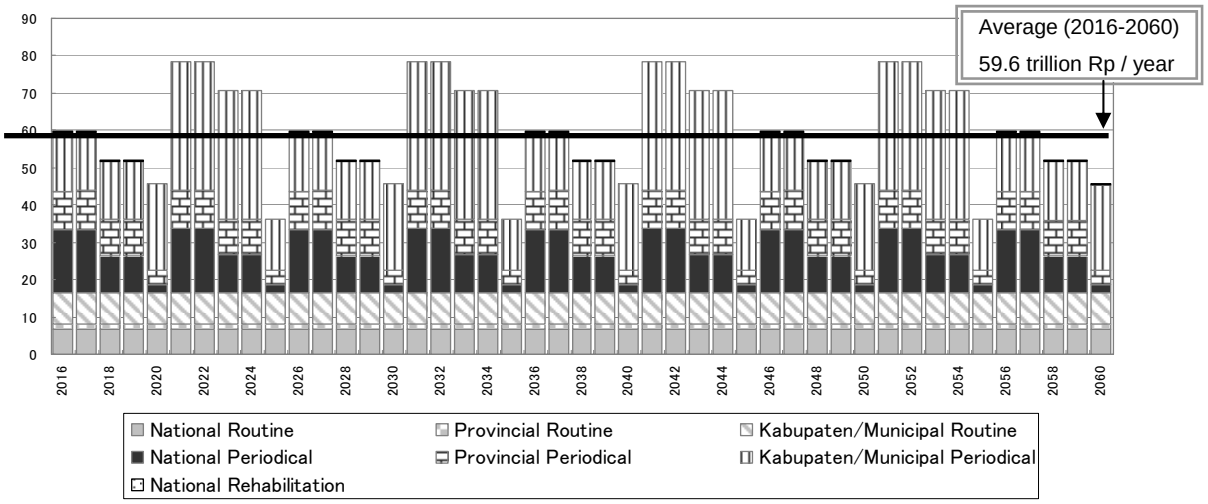


Chart 3.2 Future maintenance cost based on “Demand side analysis”

Table3.2 Summary of “Demand Side Analysis”

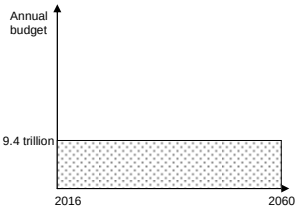
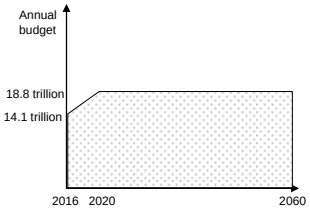
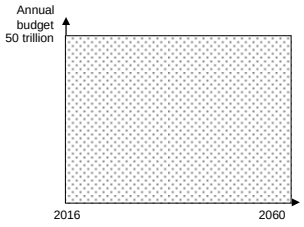
	Routine Maintenance	Periodical Maintenance Rehabilitation			Total (Average)
		Max	Min	Average	
National road Pavement	1.9	16.5	1.7	10.7	12.6
Provincial road Pavement	1.6	10.3	3.8	8.7	10.3
Kabupaten / Municipal Road Pavement	8.5	34.5	13.7	23.1	31.6
National road Bridges	4.7	0.1	0.1	0.1	5.2
Total	16.6	61.8	6.6	21.0	59.6

(Unit: trillion Rp)

3.2 Supply side analysis

In order to conduct supply side analysis for road preservation works, the future road conditions have been roughly simulated under the budget constraints. Three cases of the budget constraints are taken into account; ‘Pessimistic Case’, ‘Moderate Case’ and ‘Optimistic Case’, as shown in Table 3.3.

Table 3.3 Three cases of the budget constraints

Case	Pessimistic Case	Moderate Case	Optimistic Case
Abstract	● Total budget will stay 9.4 trillion RP per year, the amount of which is the budget of 2010	● Total budget will be raised by 10% annually up to 2020 based on the expected GDP growth, and will stay after 2020	● Total budget will be raised up to 50 trillion Rp, which means about 40 trillion Rp is added after RPF is introduced in 2016.
Budget flow image			
Budget Allocation	● Budget allocation between all road pavement and national bridges is 90%:10%, which is based on simulation of the demand side analysis.		
	● Budget allocation between each road pavement is as follows; National: Provincial: Kabupaten/ Municipal = 50%: 25%: 25%; based on the current allocation.		● Budget allocation between each road pavement is as follows; National: Provincial: Kabupaten/ Municipal = 20%: 20%: 60%

In ‘Pessimistic Case’ and ‘Moderate Case’, conditions of municipal and kabupaten roads become extremely bad as shown in Chart3.3 and Chart 3.4. ‘Optimistic Case’ as shown in Chart 3.5, additional funding resources must be secured to keep the pavement and bridges in good conditions.

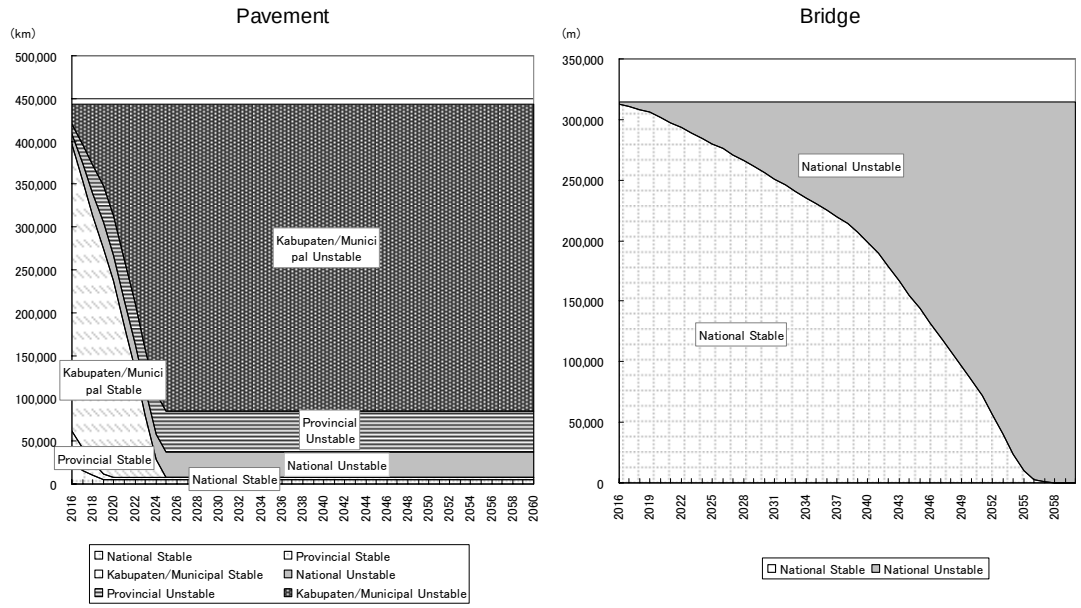


Chart 3.3 Pavement and bridges condition in “Pessimistic Case”

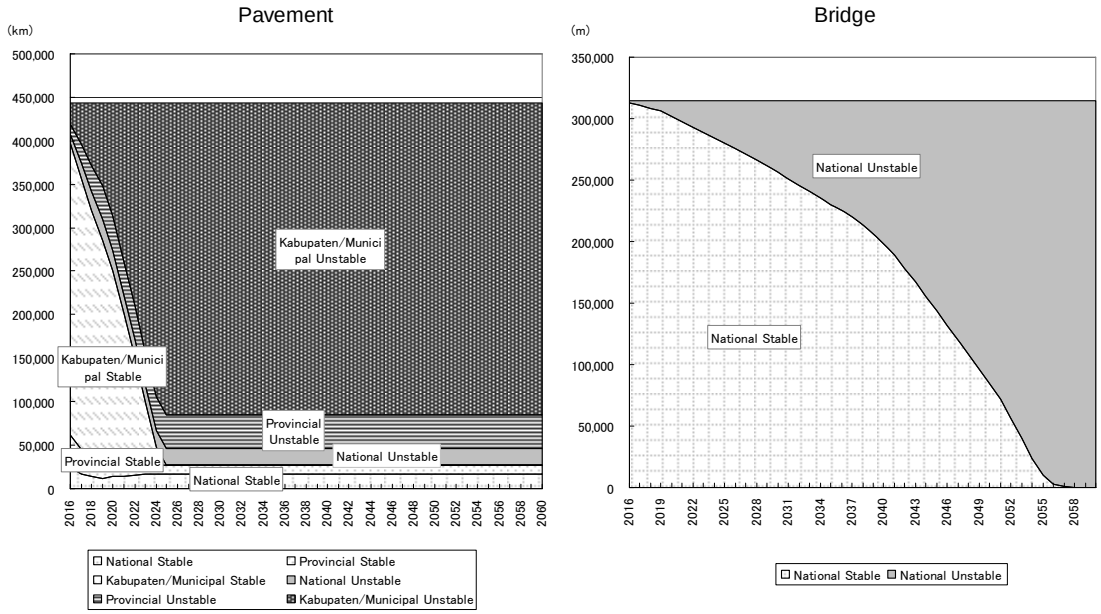


Chart 3.4 Pavement and bridges condition in “Moderate case”

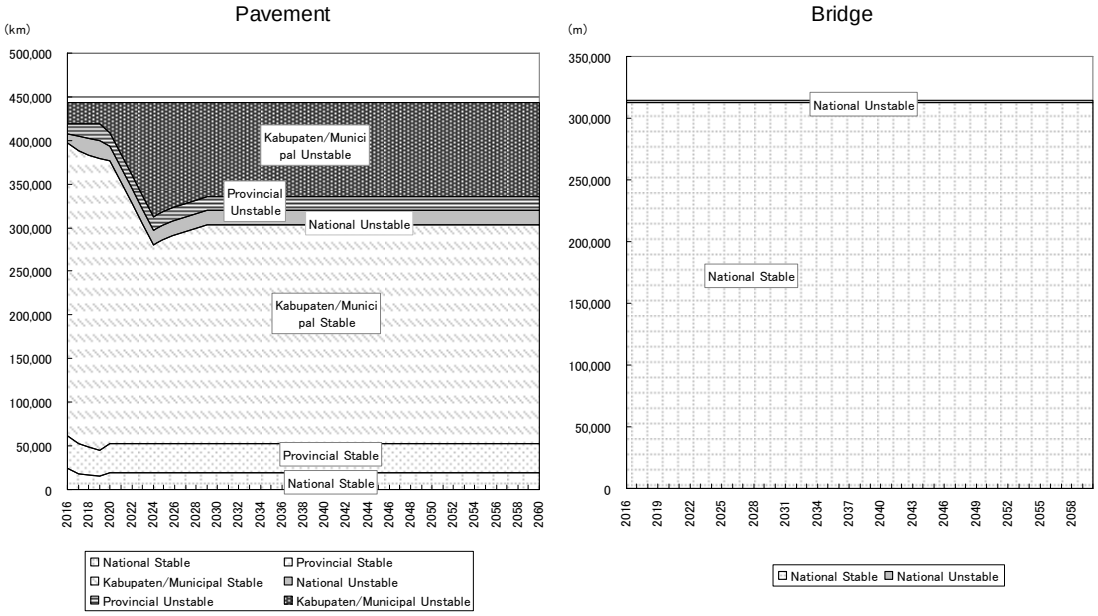


Chart 3.5 Pavement and bridges condition in optimistic case

3.3 Conclusion

There exists a wide gap between the demand; requisite future preservation costs (59.6 trillion Rp /year) and the supply; current budget for road preservations (9.4 trillion Rp /year), and therefore, additional funding resources like DAK, HIBAH, and newly implemented RPF should be secured.

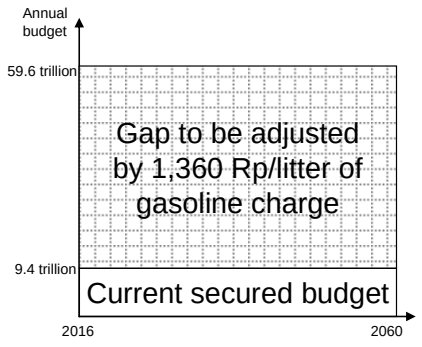
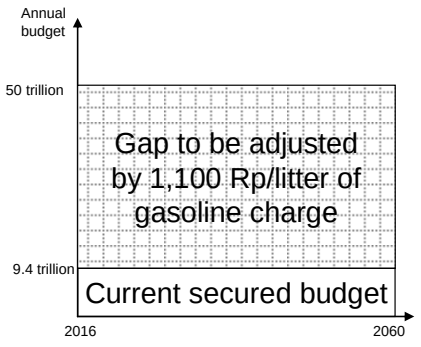
The following simple calculation provides an answer for the question; 'If the gap between the demand and supply is adjusted by increase of the current gasoline charge, how much the additional gasoline charge per litter is going to be?'

$$\text{Gasoline Charge (Rp/litter)} = \frac{\text{Additional Maintenance Cost (Rp/year)}}{\text{Annual amount of Gasoline Consumption (litter/year)}}$$

$$= \frac{\text{Total Maintenance Cost (Rp/year)} - \text{Current Maintenance Cost (Rp/year)}}{\text{Annual amount of Gasoline Consumption (litter/year)}}$$

Since the volume of the current gasoline consumption per year is around 36.9 billion litter in Indonesia based on the data from BINA MARGA, the additional gasoline charge will be calculated around 1,100-1,400 Rp per litter.

Table3.4 Scale of gasoline charge for road preservation

	Fully meet the Demands	Optimistic Case
Additional Gasoline Charge	1,360 Rp / litter =(59.6 Rp/year – 9.4 Rp/ year) / 36.9 billion litter/year	1,100 Rp / litter =(50 Rp/year – 9.4 Rp/ year) / 36.9 billion litter/year
Image		

It has to be mentioned that much more concise and detailed data should be collected and applied for more accurate simulations, since the simulation is conducted under limited data resources and numbers of assumptions.

4. Operational Issues

4.1 Comparative studies

It is found that almost the same organization is arranged for road preservation works in Indonesia and Japan as shown in Table 4.1. However, activities and responsibilities of each department, division, and working unit are strictly determined by the government regulation in Japan, and on the other hand, the duties of BALAI, SNVT and PPK for road preservation works are not authorized by legal framework in Indonesia in contrast.

It is recommended that the road preservation works in Indonesia should be conducted under strong and systematic hierarchy determined by the regulations such as in Japan.

Table 4.1 Comparisons between Indonesia and Japan (national road)

		Indonesia	Japan
Organization	National	**BINA MARGA**	**Road Bureau** -Policy Making, Budgeting etc
	Regional	**BALAI** (10 Bureaus in the Nation)	**Road Division of Regional Development Bureau** (10 Bureaus) -Preservation Plan, Budget Control etc
		SNVT (84 Offices)	**National Highway Office** (88 Offices) -Management of Preservation work etc
		PPK (302 Offices for Preservation work)	**Site Branch Office** (268 Offices) -Preservation work, Patrol etc
Total Length of National Road		**35,283km**	**22,787km** (Designated Section only)
Coverage of site branch office for road preservation		**119 km/PPK**	**Approximately 60km/Site Branch Office** (excl. Hokkaido and Okinawa)
Average Construction Length per a contract for road preservation work etc.		**2-4 km/contract** (Including contract for preservation and development)	**Approximately 10km/contract** (Including contract for routine maintenance, periodical maintenance and development)
Total Number of Staffs for National Road Management		**Approximately 6,000** -Technical staffs (46%), Non Technical staffs (41%), Other (13%) -High school graduated below (65%)	**Approximately 8,000** -Technical staffs (67%), Non Technical staffs (33%)
Average number of staffs for road preservation work per Site Branch Office		—	**5 staffs per Site Branch Office**

Source: BINA MARGA and MLIT

4.2 Minimum standard for road conditions

Minimum standard for road conditions in Indonesia are stipulated in the regulations; however, the standard is based on the physical road conditions. It should be considered to prepare the activity based standard referring to the cases of other countries as follows.

Table 4.2 Items of standard for road preservation (case in foreign countries)

	Item	Example of standards (Reference)
Indiana Toll Road (United States) 	・ International roughness index	・ *The average shall not exceed 150 in/mi*
	・ Depth of rutting	・ *The average shall not exceed 3/8" in a one mile segment*
	・ Friction on pavement	・ *Friction below 30 shall require investigation by public*
	・ Duration between finding failures and reaction/repair for the failures	・ *e.g. Temporary repair for pothole: 24hours, and permanent repair for that: 1 month*
	・ Frequency of cleaning on the face and structure of bridge	・ *Mainline (not required on regular basis); clean-up of spills only, and bridges: once yearly*
Highway Agencies (United kingdom) 	・ Response to an emergency	・ *Attend site within 1.5 hours max*
	・ Carriageway, footway and cycle way free from standing waters, snow and ices, obstructions, potholes, cracks, ruts and irregularities, hazardous ironwork, damaged or defective curbs, edgings and pre-formed channels	・ *Adequate operation should be done within 24 hours. Adequate repair should be done within 6 months.*
	・ Functional drainage system maintained so that hazards are avoided, contamination is prevented and the system remains structurally sound.	・ *Adequate operation should be done within 24 hours. Adequate repair should be done within 6 months.*
New South Wales (Australia) 	・ Pothole/delamination	・ *Max depth within 600mm etc.*
	・ Edge break, edge rut, edge scour	・ *Edge break encroaching into way must not reach 200 max etc.*
	・ Rutting, Bleeding ,Flushing, stripping and raveling	・ *Rutting height/depth must not reach within 75mm max etc.*
	・ Shoving, Bump, depressions and abrupt discontinuities	・ *Height/depth or depression must not reach within 75mm etc*
	・ Cracks condition	・ *When width of a crack reaches 100m or plate size of crocodile cracking reaches 100mm, investigate should be required etc.*
	・ Joints condition	・ *When height /depth of joint stepping reaches 25mm, investigate should be required etc.*
	・ Unsealed pavement failures	・ *Adequate investigate should be required when any failure (ex. potholes) is found.*
	・ Concrete slab stability	・ *Adequate investigate should be required when any failure is found.*
	・ Shoulder grade	・ *Adequate investigate should be required when any failure is found*

5. Conclusions and Recommendations

5.1 PDCA cycle and role of 'Board' or 'RPF Unit'

As a result, overall role of the 'Board', or 'RPF Unit' is described in the following diagram with PDCA cycle for road preservation work. The 'Board' or 'RPF Unit' will take monitoring and advice to various activities such as appropriate budget allocation and distribution, relevant preservation work planning, and etc. Also, the 'RPF Unit' in the permanent stage will provide incentive measures of RPF distribution or flexible use of RPF to road administrators.

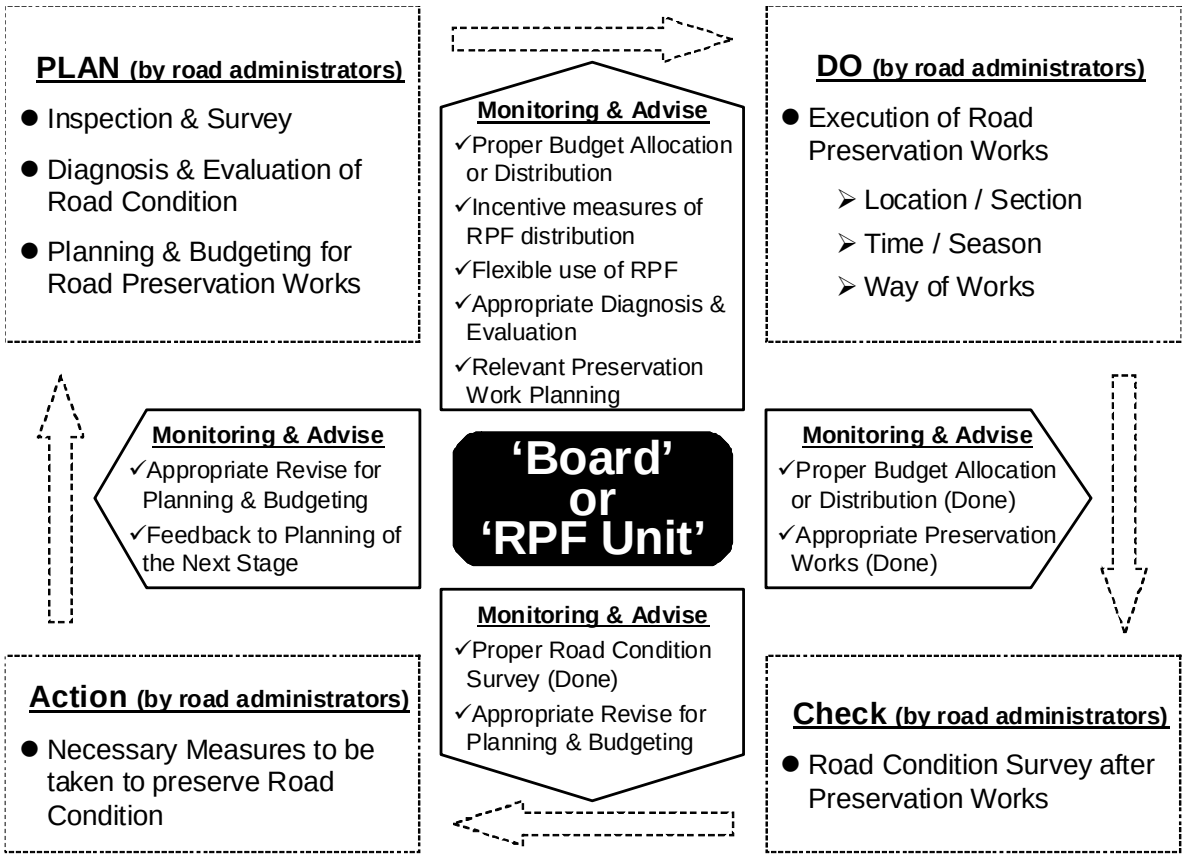


Chart 5.1 PDCA cycle and role of 'Board' or 'RPF Unit'

5.2 Transition stage (1 & 2)

Table 5.1 shows recommendations on three issues in the transition stage.

The main scope in the transition stage should be the implementation of 'Board'. While utilizing the existing funds, BINA MARGA should set up 'Board' inside the existing organization, establish PDCA cycle of the monitoring, and provide the 'Board' with a manual to check the cycle. Sub-national road administrative office, and BALAI or SNVT if necessary, should take responsibility for the execution of PDCA cycle.

Concerning the financial and operational issues, it is important to collect more data for the permanent stage, and to regulate the strong and systematic hierarchy with clarifying the role and responsibility of SNVT and local government office respectively.

Table 5.1 Recommendations in the transition stage 1 & 2

<table>
<tr><th>Issues</th><th>For National Road (if necessary)</th><th>For Sub National Road</th></tr>
<tr><td rowspan="4">Institution</td><td colspan="2"><u>BINA MARGA should concentrate on its suitability for Presidential Decree</u> which will be revised in a soon time</td></tr>
<tr><td><u>◆Utilization of Existing funding (APBN etc)</u></td><td><u>◆Utilization of Existing funding (HIBAH, DAK, Local Tax)</u></td></tr>
<tr><td colspan="2"><u>◆Implementation of Board</u>
-BINA MARGA should set up <u>independent 'Board'</u> in order to monitor and grasp the current budget allocation and actual use for road preservation works as described earlier under PDCA cycle.
◆"Role of Existing Organizations"
-<u>BINA MARGA should establish the PDCA Cycle</u> and <u>Road preservation management under PDCA cycle should be executed by Road Administrator</u> like BALAI and SNVT. So <u>BINA MARGA should train the Road Administrator for the implementation of PDCA cycle</u>.
-<u>BINA MARGA should also provide the 'Board' with a manual</u> to check the proper use of road fund.</td></tr>
<tr><td>-<u>BALAI should have accountability of road preservation to 'Board'</u> based on the report submitted by SNVT and also <u>direct SNVT</u> based on 'Board's decision.
-<u>SNVT should make the request of budget, the implementation plan and the report etc for road preservation work</u>.
-<u>PPK should manage road preservation work</u> as site branch office.</td><td>-<u>Sub-national Road Administrative Office should have accountability of Sub National road preservation to 'Board', including the allocation of Local Tax, DAK and HIBAH to road preservation.</u>
-<u>BALAI should give technical assistance to road administrator in provincial, district and island</u> to implement road preservation under PDCA cycle.</td></tr>
<tr><td>Finance</td><td colspan="2">We propose to <u>collect more data including length and bridge length of sub-national road</u> because we have to improve the amount solely for road preservation.</td></tr>
<tr><td rowspan="2">Operation (implementation of Road Preservation)</td><td colspan="2">Road preservation works in Indonesia <u>should be conducted under their strong and systematic hierarchy determined by the regulation.</u></td></tr>
<tr><td><u>The Role and responsibilities of SNVT</u>, which is supposed to be functioned as national highway office in Japan, <u>should be clarified to carry out the proper preservation works.</u></td><td><u>The Role and responsibilities of Sub-national Road Administrator should be clarified to carry out the proper preservation works for Sub National Road.</u></td></tr>
</table>

Chart 5.2 shows PDCA Cycle and role of 'Board' for national roads in the transition stage 2 (optional). BINA MARGA, BALAI, SNVT, and PPK should perform their own works with PDCA cycle, and 'Board' should monitor and advise the roles and activities of each party.

As shown in the Chart 5.2, it is obvious that SNVT should take the major responsibility for road preservation works. SNVT is responsible for reporting the allocation and execution of APBN to road preservation works, and responsible for submitting actual work plan for road preservations to 'Board' through BALAI. 'Board' should monitor and check the report or submission, judge the appropriateness of the activities of SNVT, and then advise SNVT through BALAI to improve the road preservation management. 'Board' should also advice MOF and BINA MARGA to secure the budget for road preservation from APBN.

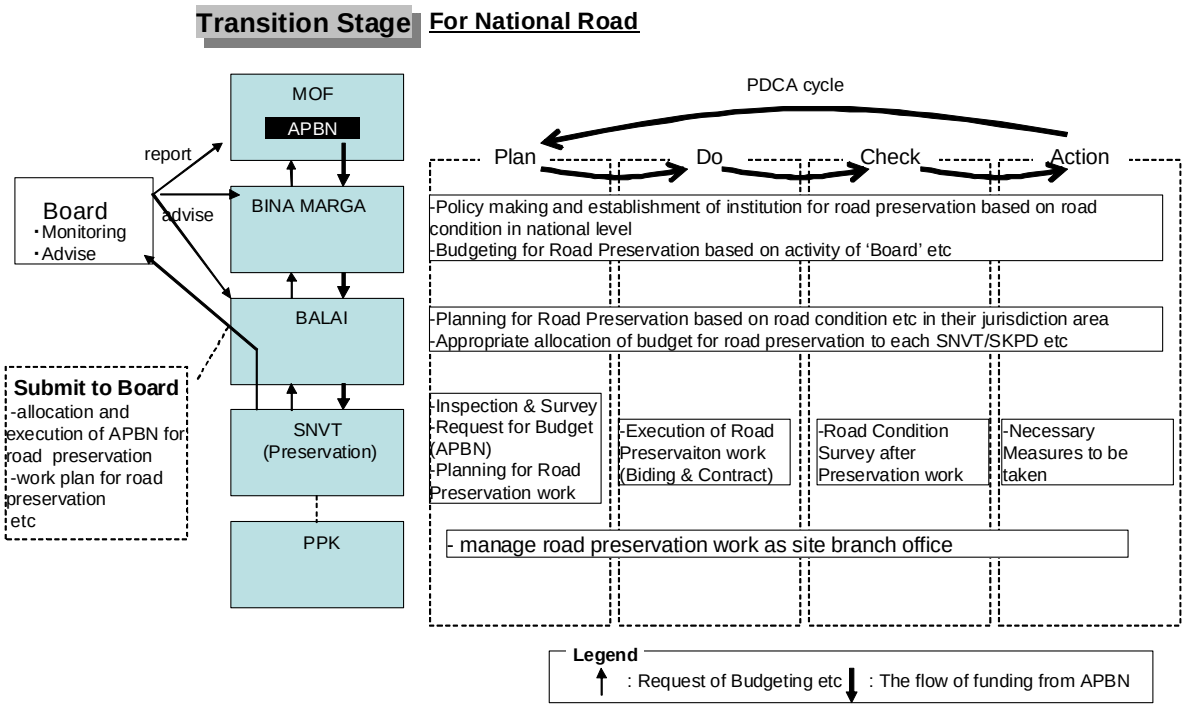


Chart 5.2 PDCA cycle and role of 'Board' for national roads in the transition stage 2 (optional)

Chart 5.3 shows PDCA cycle and role of 'Board' for sub-national roads in the transition stage 1 & 2. Sub-national Road Administrative Office should take the major responsibility of road preservation management with PDCA cycle, and 'Board' should monitor and advise their roles and activities. The sub-national road administrative office should report the allocation and execution of Provincial Tax, DAK and HIBAH, and work plan for road preservation to 'Board'. BALAI should provide technical assistance for the provincial office.

'Board' should monitor and check the allocation and execution of APBD, Local Taxes, DAK and HIBAH to the road preservation works. 'Board' should also monitor the actual work plan of the sub-national road administrative offices and advice them to do necessary amendment. Furthermore, 'Board' should advice the administrative offices, MOF and BINA MARGA to secure the budget for road preservation.

As for the use of DAK or HIBAH, it is recommended that 'Board' should assist the sub-national road administrative office to apply these financial supports to MOF as necessary.

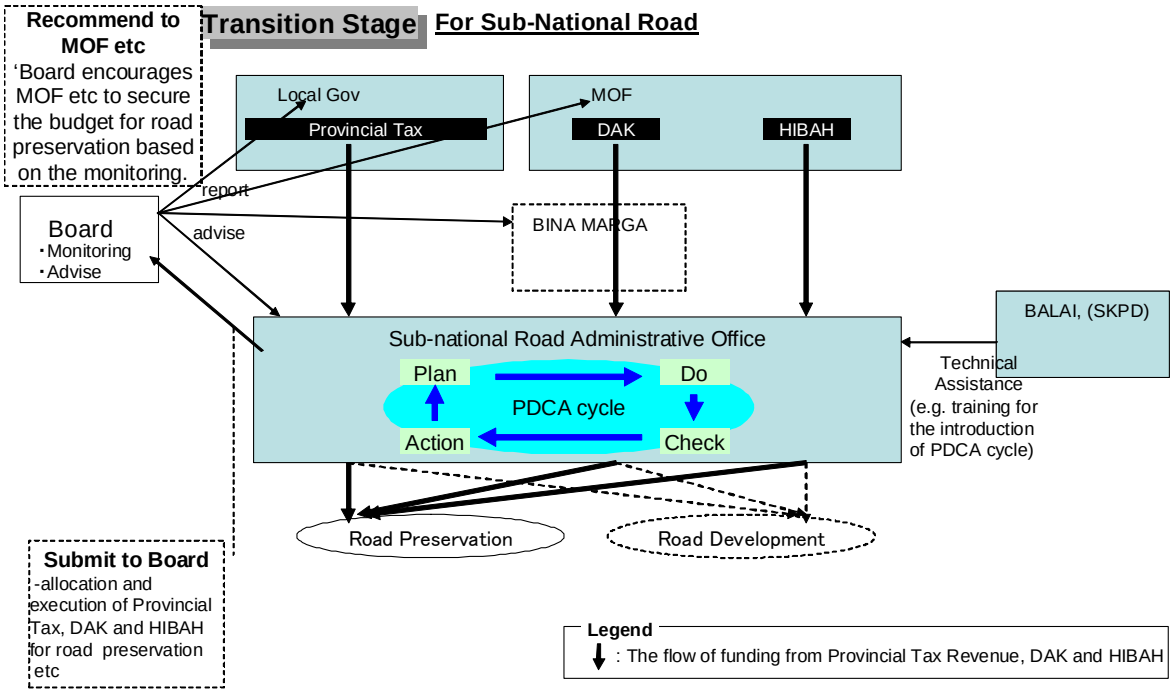


Chart 5.3 PDCA cycle and role of 'Board' for sub-national roads
in the transition stage 1 & 2

5.3 Permanent stage

Table 5.2 shows recommendations on three issues in the permanent stage.

The main scope in the permanent stage should be the implementation of 'Road Preservation Fund' (RPF). RPF should be independent of national or local budget or account. 'RPF Unit' should monitor appropriate distribution of RPF to national and sub-national roads. Also, 'RPF Unit' should provide some incentives with road administrators to use RPF. BINA MARGA should establish and manage the incentive system together with RPF funding schemes concretely.

Table 5.2 Recommendations in the permanent stage

<table>
<tr><th>Issues</th><th>For National Road</th><th>For Sub National Road</th></tr>
<tr><td rowspan="4">Institution</td><td>◆Existing funding (APBN etc) <u>& RPF</u>
-RPF should be functioned as a wallet of funding resources which is <u>independent of national budget</u></td><td>◆Existing funding (HIBAH, DAK, Local Tax) <u>& RPF</u>
-RPF should be functioned as a wallet of funding resources which is <u>independent of national and local budget</u></td></tr>
<tr><td colspan="2">◆Implementation of RPF Unit
-<u>The function of 'Board' will be added to monitoring and advise for RPF and execution</u> in permanent stage. Board should monitor whether RPF could provide incentive to regional government for preservation works.
-Especially, '<u>RPF Unit' should monitor appropriate distribution of RPF to National and Sub National Road</u>, and <u>whether RPF could provide incentive to regional government for preservation work</u>.
◆"Role of Existing Organizations"
-<u>BINA MARGA should establish and manage a system to provide some incentive</u> for preservation works of National and Sub National Road to solve the problems with inefficient preservation works.</td></tr>
<tr><td>◆Role of BALAI and SNVT/SKPD
-Basically, They should have the responsibility as mentioned in Transition stage, however it is important for SKVT/SKPD to have accountability for the allocation and execution of APBN and RPF to road preservation in order to provide them incentives.</td><td>◆Role of Sub-national Road Administrative Office and BALAI
-Basically, they should have the responsibility as mentioned in the Transition stage, however it is important for Sub-national Road Administrative Office to have accountability for the allocation and execution of Local Tax, APBD and RPF to road preservation in order to provide Sub-national Road incentives.</td></tr>
<tr><td>Finance</td><td colspan="2">BINA MARGA should establish RPF funding schemes concretely (e.g. Introduction of New Tax and New tariff) .</td></tr>
<tr><td>Operation (implementation of Road Preservation)</td><td colspan="2">Minimum standard of road condition to be observed by road administrator should be examined and established in accordance with the legal framework in Indonesia.</td></tr>
</table>

As shown in Chart 5.4 and Chart 5.5, 'RPF Unit' in the permanent stage should advise BINA MARGA to provide incentive funding from RPF to SNVT based on the monitoring for national roads. 'RPF Unit' should also monitor whether RPF could provide incentives to improve road preservation based on the SNVT submission. The same rules and systems should be applied for sub-national roads.

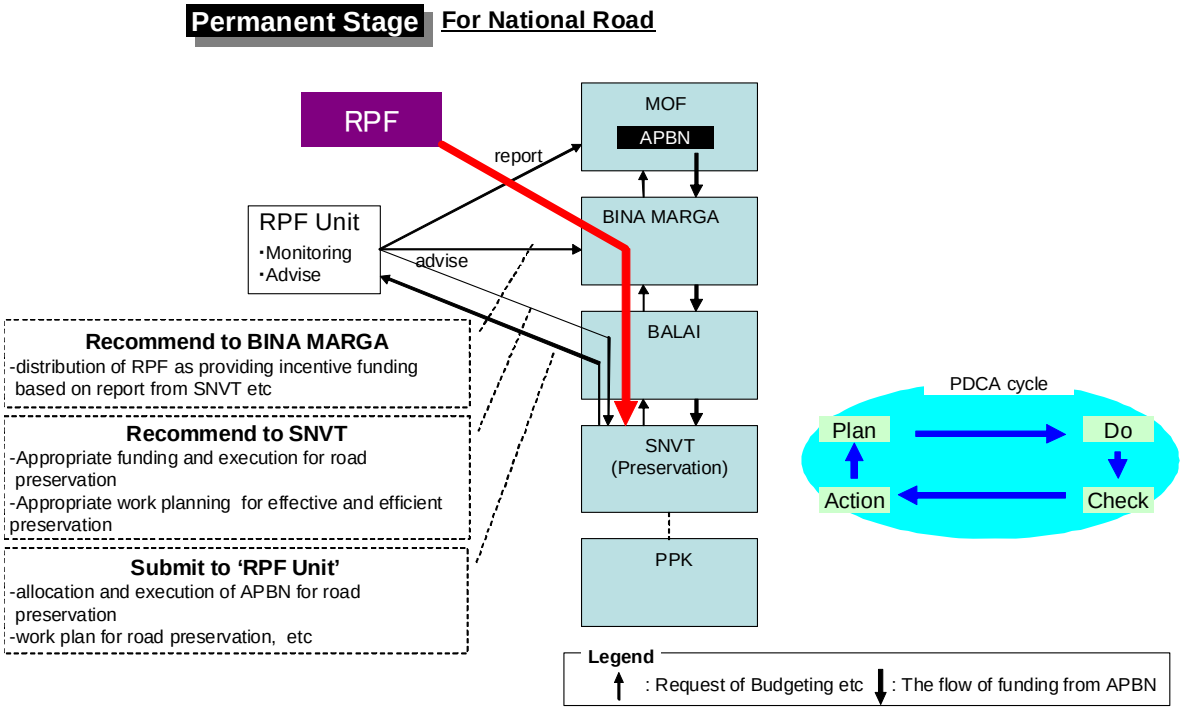


Chart 5.4 PDCA cycle and role of 'RPF Unit' for national roads in the permanent stage

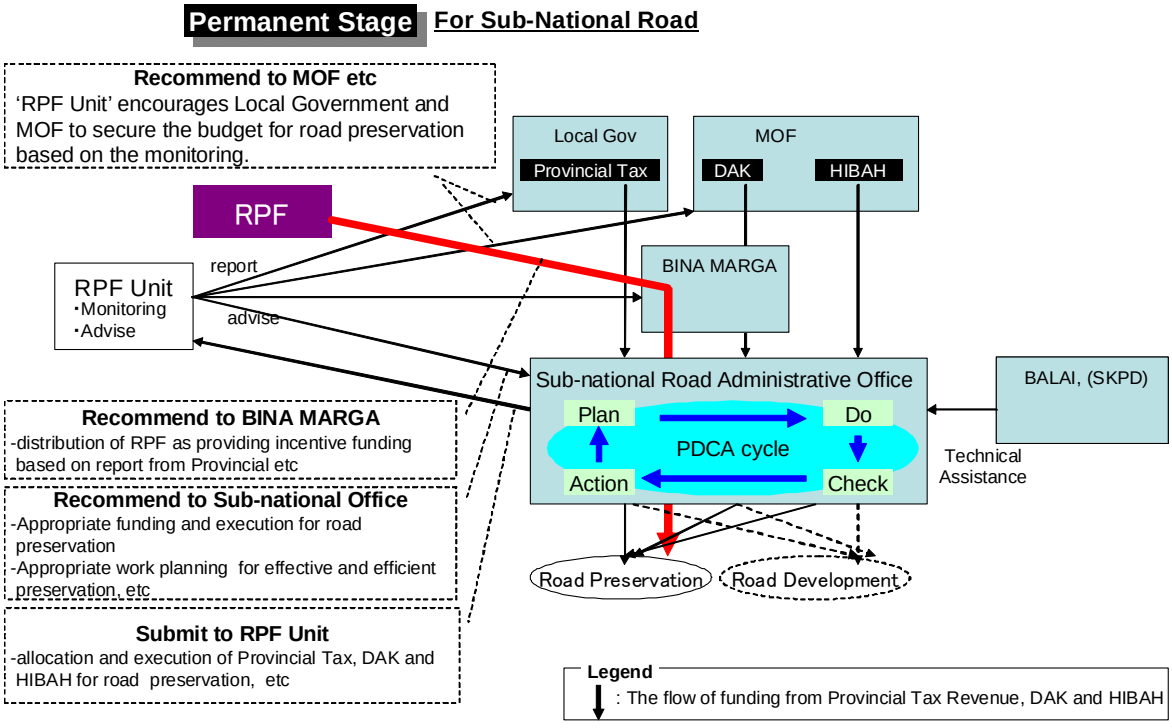


Chart 5.5 PDCA cycle and role of 'RPF Unit' for sub-national road in the permanent stage

CHAPTER 1 Outline of the Study

1.1 Background and purpose

For developed countries experiencing the growth and aging of road stock, it is one of the most major policy issues to preserve and manage road infrastructures. In the Republic of Indonesia holding thousands of islands and vast extended roads, there exist numerous national roads and regional roads which are in unfavorable conditions. Thus, it is extremely important for Indonesia to preserve and manage these road infrastructures properly in addition to ensuring safety on the roads in order to underpin the country's economic growth sustainability.

Currently, the Republic of Indonesia considers introducing 'Road Preservation Fund' to set aside the expenditures necessary for the implementation of road preservation management. For Indonesia where the expenditures for the road maintenance and preservation management have been contributed by the general account budget, it will be greatly helpful to learn form the cases of Japan or the US which has utilized the institutions of earmarked road funds for a long time, when introducing 'Road Preservation Fund' which is only used for road preservation management.

Based on these backgrounds, toward introducing 'Road Preservation Fund' to Indonesia, this research has studied its institutional issues, financial issues and operational issues. Also, the study team conducted the works to support the examination process of "Road Preservation Fund" by Indonesia. For this purpose, while Indonesia proceeds with the examination, concurrently the study team summarizes the agenda items necessary for examination, the expected challenges, and the results of analyses with particular attentions to the cases in Japan and the U.S. Also, the study team share intermediate outcomes with officials of Indonesia along the course of project through the work shop to be held at Jakarta.

1.2 Study issues

Toward an implementation of RPF, the study team was instructed by BINA MARGA to take the following steps from transition stage to permanent stage. In the transition stage, a pilot project will be conducted in an isolated area especially focusing on the local roads. National roads will be added in the transition stage if necessary. In the permanent stage, RPF will be implemented, and whole roads in Indonesia will be managed and preserved.

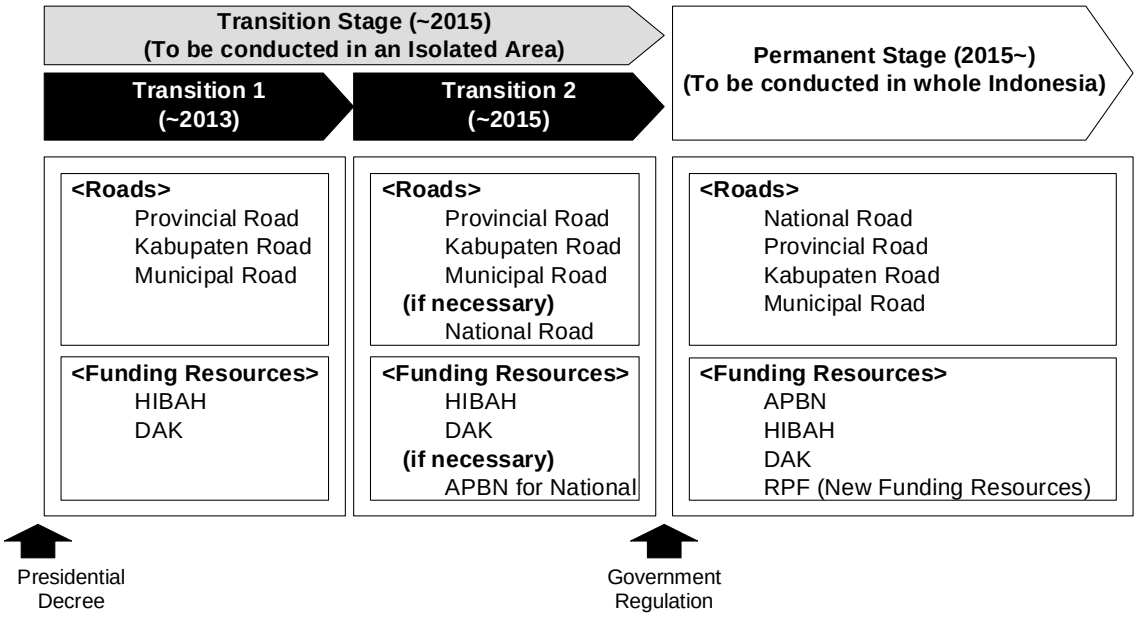


Chart 1.1 Implementation strategy for RPF

In accordance with the above instructions, the study team focused on the three issues which become references for the draft of presidential decree on institutional issue, and for that of government regulation on financial and operational issues.

- **Institutional Issues**

✓ Administrative system to supervise or monitor the budget allocation and proper execution of road preservation works through independent 'Board'
✓ Current and future possible funding resources to be applied for road preservation works.
✓ Necessary items of works to be conducted in transition stage and permanent stage toward the implementation of RPF

- **Financial Issues**

✓ Demand and supply analysis comparing the budget and the roughly simulated future preservation costs for national and sub-national roads.
✓ Rough simulation of the future road conditions under the budget constraints
✓ Rough amounts of gasoline charges to cover the future budget shortage.

- **Operational Issues**

✓ Implications from the road operational and organizational systems in Japan
✓ Minimum standard of road conditions referring the cases of other countries

1.3 Study flow

Chart 1.2 is the flow chart of this study. The study team conducted the study dividing it into the works in Indonesia and fact research and studies in Japan, while working together closely.

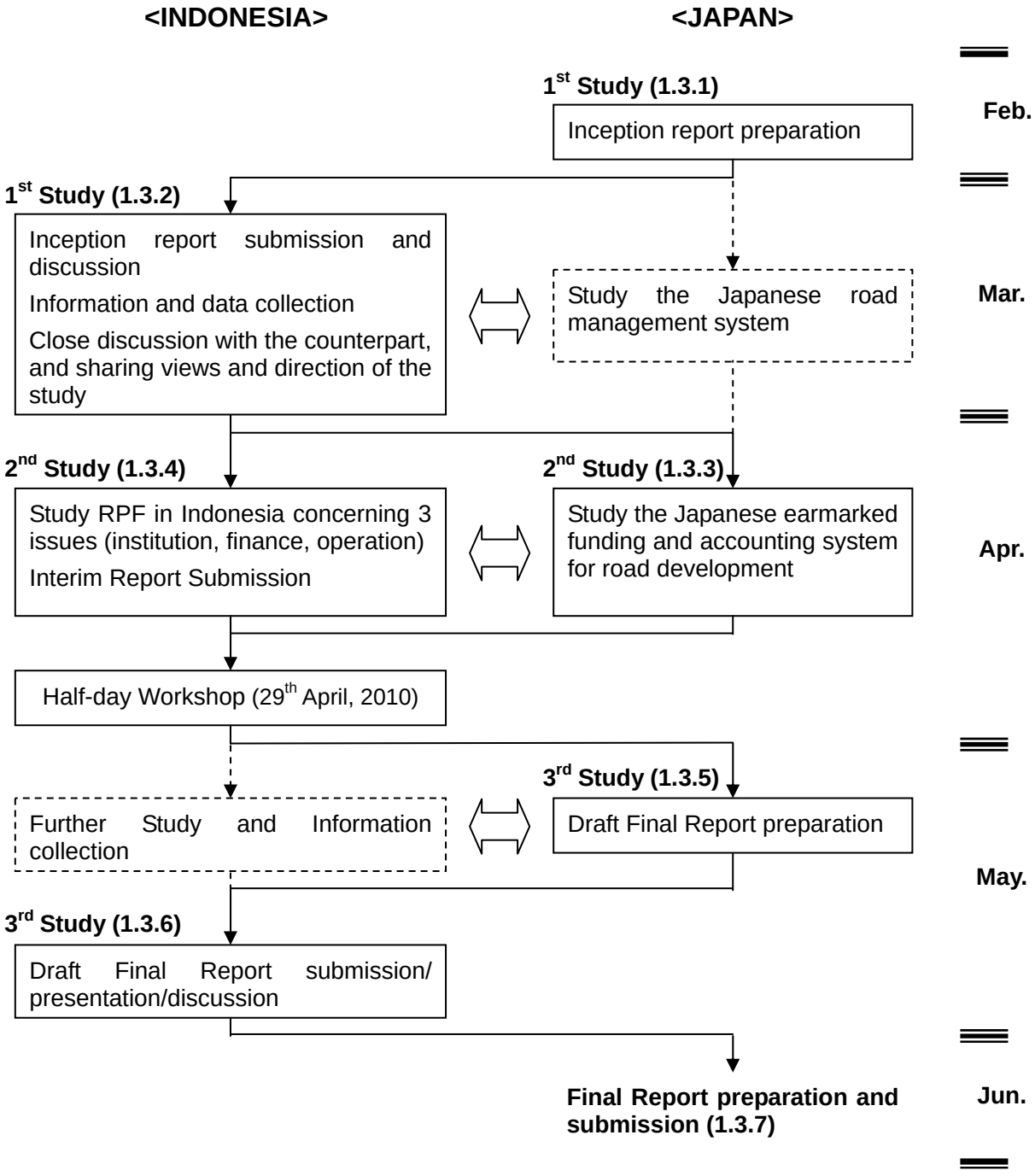


Chart 1.2 Study flow

1.4 Study team organizations

The study team members and relations with associated parties are described in Chart 1.3 and Chart 1.4. The study team conducted the research under the close discussion with the counterpart of BINA MARGA and the consultant expertise of Indonesia.

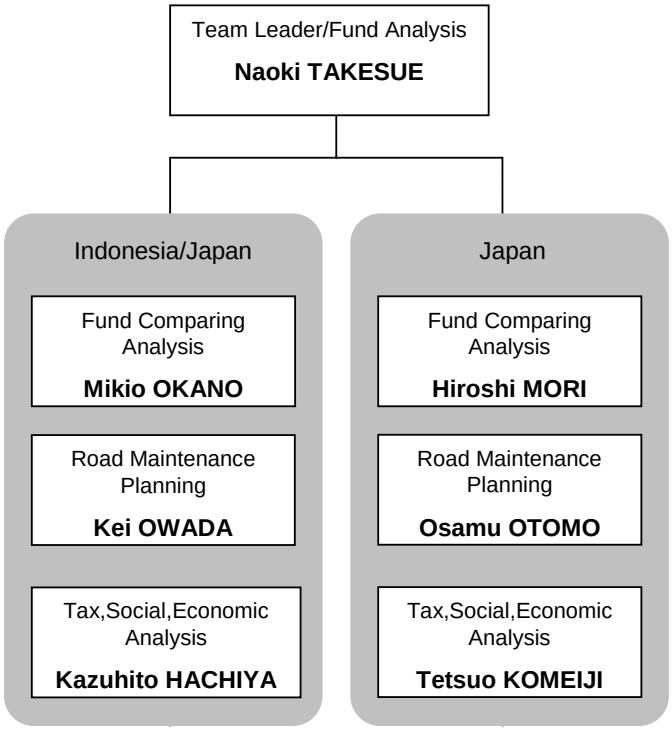


Chart 1.3 Study team members

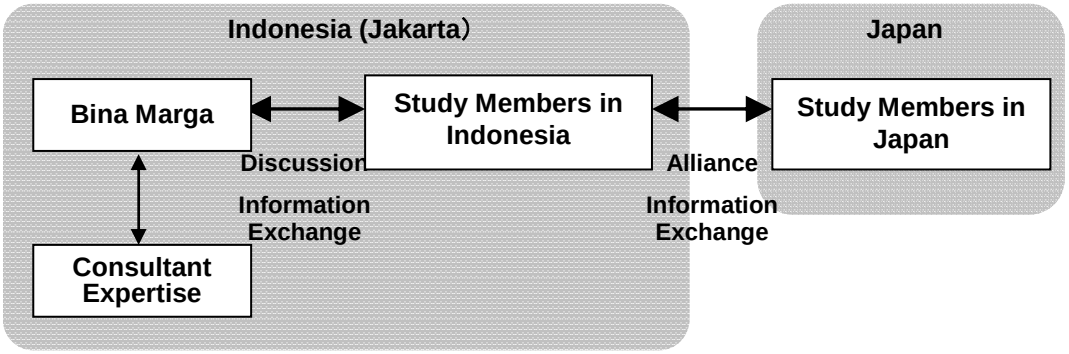


Chart 1.4 Relations with associated parties

1.5 Summary of the study

1.5.1 The 1st study in Japan

(1) Formulation of work implementation plan

The study team gathered and studied the documents and information available in Japan about the funds relating to roads in Japan and abroad, the needs for road preservation and the tax system in Indonesia, and the status of examination in the Ministry of Public Works, BINA MARGA in Indonesia. Then, the study team discussed and formulated the basic principles for research implementation, agenda items for research, research contents and methods, research team organization, research schedule, and so on.

The study team held a kick-off meeting with staffs in JICA based on the implementation plan and clarified the research principles, contents and output pictures. Also, the study team overviewed the relevant documents acquired from JICA and summarized the accumulated information while searching for other related documents.

The study team summarized the above, and prepared our inception report.

1.5.2 The 1st study in Indonesia

(1) Review and discussion on inception report

The study team presented the inception report to the related parties in the internal meeting at BINA MARGA. The study team received the advices for corrections based on the understanding of the current status of road preservation in Indonesia, and got the latest information concerning the status of the examination of “Road Preservation Fund.”

(2) Confirmation of the status of examination in Indonesia

The study team made a confirmation regarding planning and examination status of “Road Preservation Fund” in BINA MARGA and the schedule for the time ahead. Although the study team had the discussion results and documents distributed in a kick-off meeting held in August 27, 2009, and the documents distributed in the second meeting on September 14, 2009, the study team made a confirmation regarding each document’s purpose in the meeting, contents, issues particularly discussed, and the examination status after the meeting.

(3) Information gathering and analysis regarding the system in Indonesia

While the study team had certain amount of information about the tax system in Indonesia necessary for the planning and examination of the fund from the existing documents, the study team gathered information not available in Japan as much as possible. For information not attained even in this period, the study team analyzed necessary items and contents and continued to gather it through the local consultant.

1.5.3 The 2nd study in Japan

During the 2nd study in Japan, the study team worked on a close coordination between the researches in Japan and that in Indonesia. The study team carried out a research again for information not attained in 1st study in Indonesia, and the update of examination status in BINA MARGA was sent to Japan. The information newly acquired in 2nd study in Japan was inputted to the Indonesian Government

(1) Related information gathering and analysis

The study team further gathered and analyzed the existing literature of funding sources for roads in developed countries together with their historical backgrounds, contents, current challenges, and future directions.

(2) Examination of the form of "Road Preservation Fund"

The study team got the information gathered in the examination of "Road Preservation Fund" in Indonesia. The study team made a comparison of the features of each fund's organizational structure, scope of responsibility, methods of securing financial resources, management mechanism, purpose of use and scope, basic principles in operation. The study team also summarized the points that Indonesia should refer to.

1) Comparative analysis of funds

The study team conducted the comparative analysis of road funds in Indonesia and Japan based on gathered information. In order to make the analysis useful for "Road Preservation Fund" in Indonesia, the study team also summarized the latest topics in road preservation in addition to the points in organizational structure, securing of financial resources, management methods and so on.

2) Form of "Road Preservation Fund" in Indonesia

The study team examined the best fitted form of "Road Preservation Fund" in Indonesia based on the comparative analysis of road preservation funds in Japan and the current status of road preservation in Indonesia. The study team referred to the lessons obtained from case studies of other countries such as Japan and the US in preparing our comments.

Also, in order to run a simulation of the future expenses, the study team estimated the future expenses for road preservation at the levels of country, state, and region, and then estimated the budget scale to be secured.

1.5.4 The 2nd study in Indonesia

(1) Examination of the form of "Road Preservation Fund"

The study team exchanged opinions with officials in Indonesia about the form of Road Preservation Fund to be introduced in Indonesia. Following the discussions, the study team started to summarize the interim report in which the three important issues of institutional issues, financial issues, and operational issues were examined.

(2) Preparation of the presentation documents

The study team summarized the interim report. The items included in the report are as follows;

- Current Progress of the Study
- Intermediate Output of the Study
  - ✓ Reference to Regulations
  - ✓ Study on Institutional Issues
  - ✓ Study on Financial Issues
  - ✓ Study on Operational Issues
- Future Schedule of the Study

(3) Presentation at workshop

The study team presented the interim report at the workshop on 29th of April, 2010 in Jakarta. At the workshop, the study team particularly focused on three issues; institution, finance and operation for the introduction of Road Preservation Fund. The study team obtained comments from the participants which would be reflected on our Draft Final Report.

Table 1.1 Timetable of workshop

Time	Agenda	Person in Charge
09.00-09.45	Opening and presentation on Progress of Preparation of Draft Presidential Regulation on Road Preservation Fund Unit	DR. Max Antameng, MA
09.45-11.00	Explanation of Study on Assistance of Planning the Road Preservation Fund 1.Institution Issue 2.Financial Issue 3.Operational Issue	JICA-Mitsubishi Research Institute Inc. Study Team (Mr.Takesue,Mr.Okano,Mr.Owada)
11.00-11.20	Quick Assessment Explanation from Academic Paper regarding Road Preservation Fund	Dr.Ir.Suyono Dikun, Msc and Prof. Dr. Ir. Wimpy Santosa, Msc
11.20-12.20	Discussion	Moderator
12.20-12.30	Closing	Director of Bina Program (Ir.Taufik Widjoyono, Msc)

Chart 1.5 Workshop at Jakarta (29 April, 2010)

1.5.5 The 3rd study in Japan

The study team formulated the Draft Final Report based on the results of our study. The contents of the report are as follows;

- ✓ Outline of the Study
- ✓ Study on Institutional Issues
- ✓ Study on Financial Issues
- ✓ Study on Operational Issues
- ✓ Recommendations

1.5.6 The 3rd study in Indonesia

The study team submitted the draft final report to the Ministry of Public Works, BINA MARGA, to get their comments on the report. At the same time, the study team presented the report in the internal meeting of BINA MARGA, and made a close discussion with the related parties.

1.5.7 Final report preparation and submission

In accordance with the comments derived from the related parties on the draft final report, the study team made necessary amendments and submitted the final report.

CHAPTER 2 Study on Institutional Issues

2.1 Current status of road management in Indonesia

2.1.1 Overview of road management in Indonesia

(1) Organizations

Chart 2.1 shows the organization structure for preservation management of national roads in Indonesia at present.

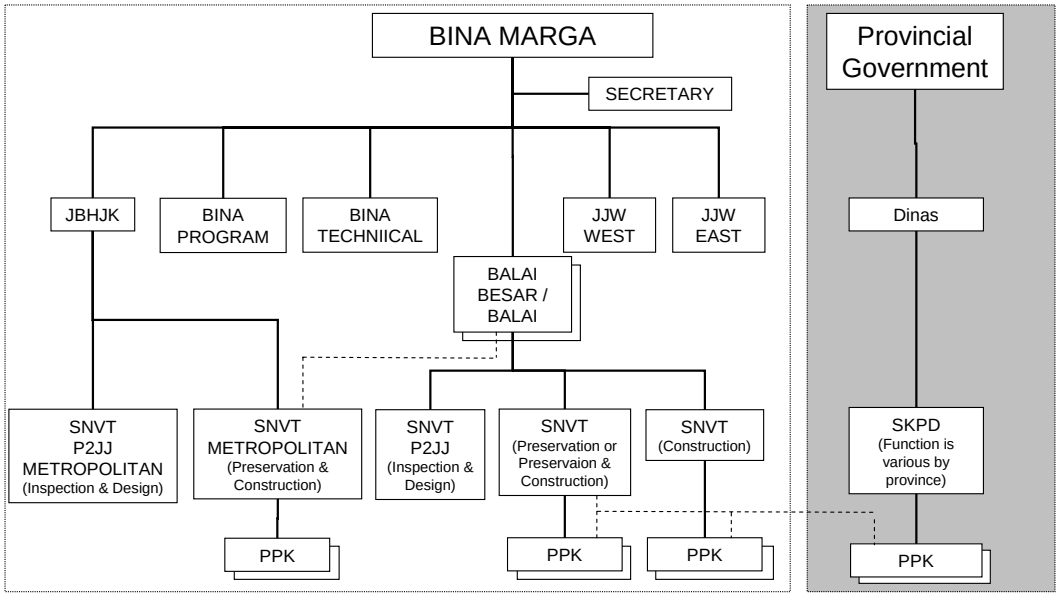


Chart 2.1 Organization structure for road management of national road in Indonesia (April, 2010)

1) BALAI

Under BINA MARGA, 10 BALAI are located across the country as an organization that administrates local road ministrations. Each BALAI controls 2 to 6 provincials as shown in Table 2.1.

Table 2.1 District boundary of each BALAI

Balai No.	Province			
1	(1)NAD	(2)North Sumatra	(3)Riau	(4)Riau Island
2	(5)West Sumatra	(6)Lampung	(7)Bengkulu	
3	(8)South Sumatra	(9)Jambi	(10)Bangka Belitung	
4	(11)Banten	(12)D.K.I. Jakarta	(13)West Java	
5	(14)Central Java	(15)D.I. Yogyakarta	(16)East Java	
6	(17)South Sulawesi	(18)West Sulawesi	(19)Southeast Sulawesi	(20)Central Sulawesi
	(21)Gorontalo	(22)North Sulawesi		
7	(23)West Kalimantan	(24)Central Kalimantan	(25)South Kalimantan	(26)East Kalimantan
8	(27)Bali	(28)West Nusa Tenggara	(29)East Nusa Tenggara	
9	(30)Maluku	(31)North Maluku		
10	(32)Papua	(33)West Papua		

Chart 2.2 The picture of BALAI 4

2) SNVT/SKPD

SNVT is deployed as a branch office under BALAI, and SNVT is categorized as follows:

- SNVT P2JJ：Inspection ＆ Design
- SNVT (Preservation)：Routine / Periodical maintenance / Improvement
  - ✓ Routine maintenance

    Continued improvement and maintenance works to the stable and in good road conditions, so that traffic can be served in the repetition limit of standard load or in structural capability as designed
  - ✓ Periodical maintenance

    Periodical betterment or maintenance of road in stable and fair to good conditions so that traffic can be served in the repetition limit of standard load or in structural capability as designed
  - ✓ Improvement

    Periodical improvement and replacement of components to the stable condition, so that traffic can be served to adjust with environment in the limit of standard load repetition or structural capability as design
- SNVT (Construction)：Construction

SNVT P2JJ implements administrative work and planning of roads and bridges. The workforce of SNVT P2JJ is composed of state and provincial officials.

SNVT (Preservation) is a new organization established in 2009 and implements periodical maintenance, routine maintenance and improvement structure. Only routine maintenance is conducted by direct method.

SNVT (Construction) constructs and expands roads to improve traffic capacity. The budget is requested under the name of the ministry of Department of Public Works (PU). The budget is distributed to SNVT from APBN through Balai.

In addition, a substructure called SKPD is established in each province except for Jakarta Special Region and the special province of Yogyakarta Special Region. The roles of SKPD are same as those of SNVT (Preservation). Some tasks of SKPD are different among provinces, but the main task is routine maintenance. The budget of SKPD is distributed by APBN, but all staff members are composed of province staff members.

Chart 2.3 The picture of SKPD (Dinas BINA MARGA Provinci Jawa Barat)

It is likely that while SNVT (Preservation) conducts preservation of the most important route, SKPD conducts preservation of the other routes. Furthermore, SKPD tends to cover the areas which local governments used to cover before decentralization. Since decentralization is expected to be progressed in the future, there is a possibility that SKPD will increase its importance compared to SNVT as an organization of conducting preservation works.

3) PPK

A branch office called PPK is set up as a substructure of SNVT (Preservation), SNVT (Construction) and SKPD to conduct the site preservation works. BALAI and SNVT are a permanent office but some of the PPK are not permanent. Considering the importance of preservation work in the future, it is necessary to keep PPK as a permanent office for strategic foothold.

Chart 2.4 The picture of PPK (PPK Bandung Dan Purwakarta)

4) Organization structure in case of BALAI 4

Chart 2.5 shows the organization structure for road preservation management under BALAI in case of BALAI 4. The BALAI 4 is in charge of 3 provinces; Banten, West Jawa and D.K.I Jakarta.

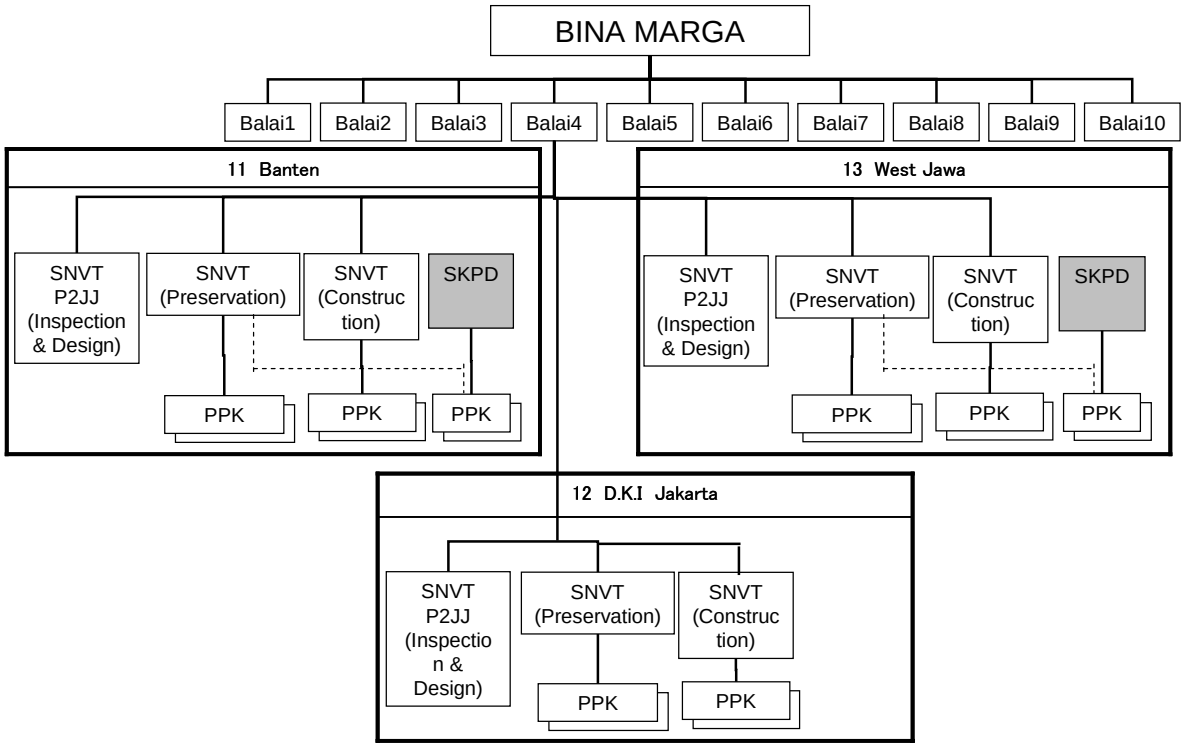


Chart 2.5 Organization structure under Balai （in case of Balai4）(present)

(2) Basic data for roads

Roads in Indonesia are categorized into national road, provincial road, kapubaten / municipal road. Road length for each road is described in Chart 2.6.

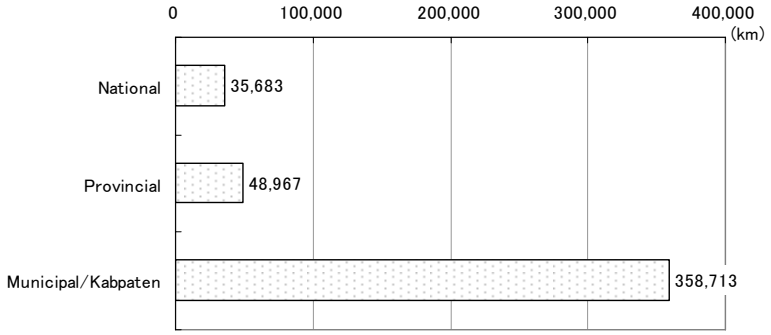


Chart 2.6 Road length for each road

Source: Data offered by BINA MARGA

2.1.2 Focal points of institutional issues

It is obvious that preservation costs for national and provincial roads will be dramatically increased, and that the budget for the road preservation works will be severely deficient, if proper remedial actions are not taken to the current undesirable road conditions.

At present in Indonesia, in order to compensate for this budget shortfall, the needs to introduce a new fund which could be used only for road preservation works are recognized. Article 29 to 32 of Revised Road Traffic Act which passed the Diet on May 2009 stipulates the introduction of Road Preservation Fund (RPF) and the establishment of Road Preservation Fund Unit. Also Presidential Decree being under review at the moment stipulates provisions regarding the introduction of Road Preservation Fund.

Revised Road Traffic Act which (May 2009)

Article 29

(1) to support the service of safe, secure, orderly, and smooth traffic and road transportation, road condition must be maintained
(2) to maintain the road condition as meant by clause (1) above, Road Preservation Fund is needed
(3) Road Preservation Fund is special used for the activity of road preservation, rehabilitation, and reconstruction
(4) Road Preservation Fund may source from the Road Users and its management in accordance with regulations and laws.

Article 30

Road Preservation Fund will be organized based on the principle of continuation, accountability, transparency, balance, and harmony.

Article 31

Road Preservation Fund is managed by management unit of Road Preservation Fund, responsible to Minister for roads' aspect

Article 32

Provision regarding organization and work system of Road Preservation Fund management unit will be dealt with in Presidential Regulation

On the basis of the above, institutional issues regarding the introduction of RPF and the establishment of RPF unit were especially focused funding resources, administrations, and budgeting & execution.

- Funding Resources
  - Secured funding resources for road development work should be implemented.
  - Enough funding resources should be secured for road preservation work.

- Administrations
  - Administrative system to supervise or monitor whether relevant budget will be allocated to road preservations should be implemented.
  - Administrative system to supervise or monitor whether relevant budget was allocated to road preservations should be implemented.
  - The operating result of the previous year should be reflected or feed-backed to the next year's budget.

- Budgeting & Execution
  - Budgeting and executing system should introduce road preservation work to be carried out in appropriate season.
  - Budgeting and execution should be planned in accordance with the present road conditions or damages.

2.1.3 Funding resources

(1) Budgets for road management

1) National roads

Total budget for road works of BINA MARGA (Directorate General for Road)[1] has been remarkably increased for the recent years, and the amount as of 2009 is around 16 trillion Rp. It is approximately 1.6% of the Indonesia's national budget which is around 1,000 trillion Rp. Among the total, the budget for preservation works has also been increased, and the amount of 2009 is around 5.2 trillion Rp, which is around 4.4 times of that in 2005.

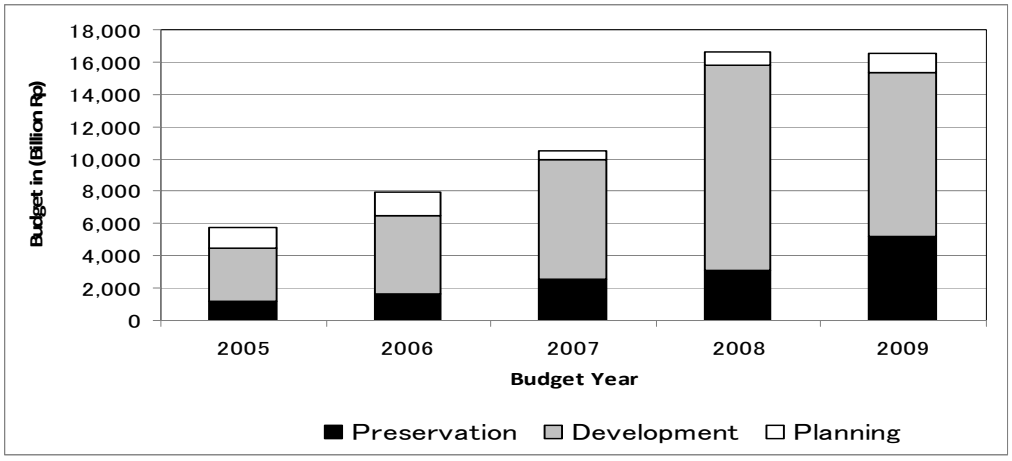


Chart 2.7 Budget for national road

Source: REALISASI FISIK DAN KEUANGAN TAHUN ANGGARAN 2010 DIREKTORAT JENDERAL BINA MARGA、Sistem Pemantauan Proyek Ditjen BINA MARGA

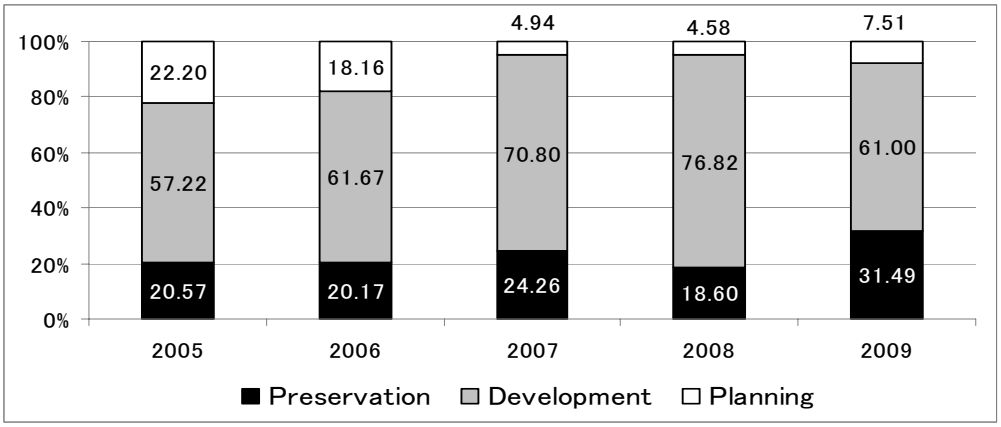


Chart 2.8 Budget comparison for preservation and development (national roads)

Source: REALISASI FISIK DAN KEUANGAN DIREKTORAT JENDERAL BINA MARGA、Sistem Pemantauan Proyek Ditjen BINA MARGA

[1] The Budget Planning (DIP) approved by MOF. It is different from the actual expenditures of BINA MARGA.

The budget of national road for each province per Balai in 2009 is shown in Chart 2.9. Among the provinces, Nanggroe Aceh Darussalam and North Sumatra under Balai 1, DKI Jakarta and West Java under Balai 4, and Central Java under Balai 5 show the higher percentages of the budget for preservation.

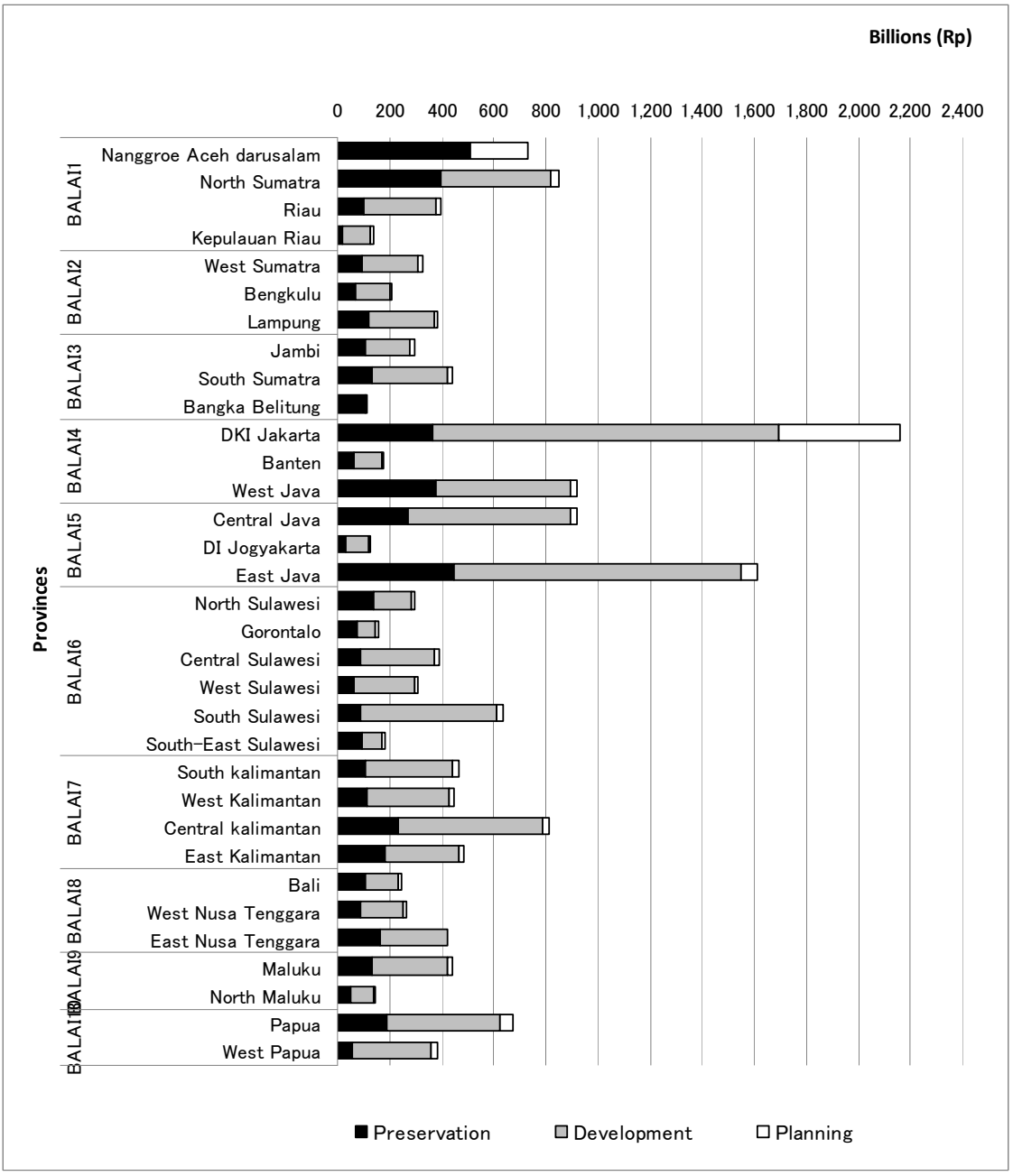


Chart 2.9 The budget of national road for each province per Balai in 2009

Source: REALISASI FISIK DAN KEUANGAN DIREKTORAT JENDERAL BINA MARGA、Sistem Pemantauan Proyek Ditjen BINA MARGA

2) Provincial road / kabupaten road / municipal road

Total budget for road works of provincial road / kabupaten road /municipal road could not be found, since BINA MARGA has not established the system to keep track of their details.

As for the budget for preservation works, the budget of provincial roads is 664 Billion Rp and that of kabupaten / municipal roads is 5.27 trillion Rp in 2009. As shown in Chart 2.10, most of the provinces have the road preservation budget within 20-40 Billion Rp, although the budget data of all provinces could not be obtained from BINA MARGA. Among the budgets of kapubaten / municipal road, the budget of North Sumatra and East Java province shows high amount.

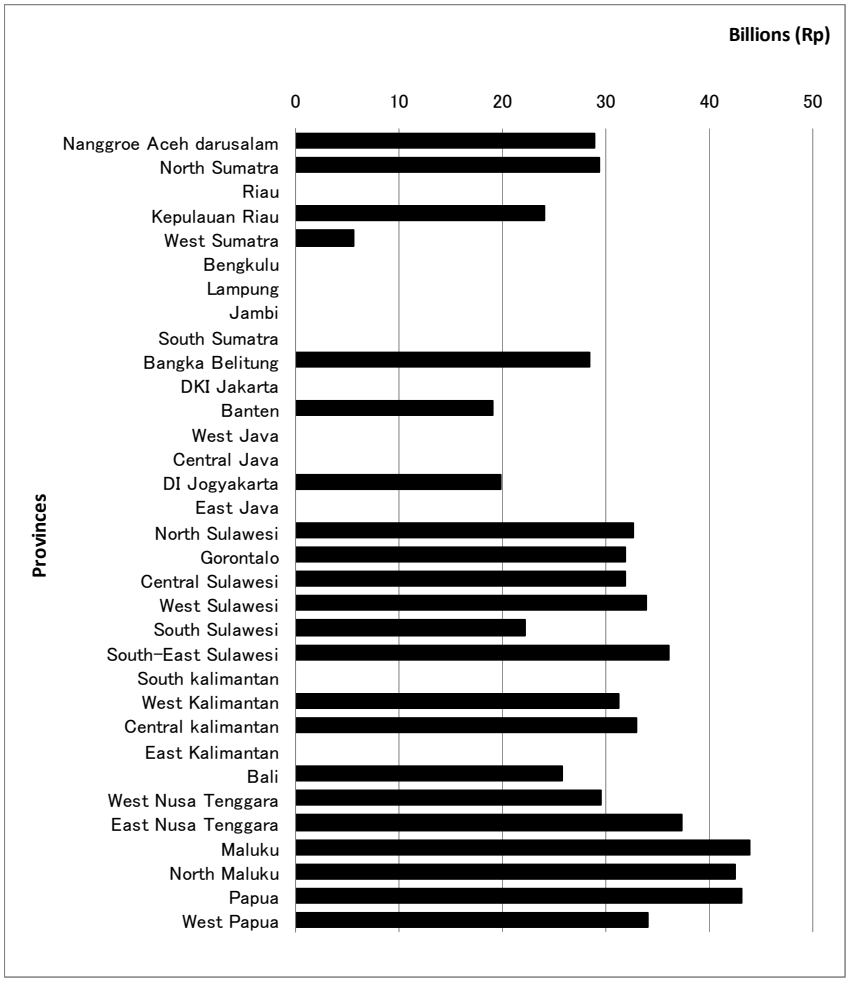


Chart 2.10 Budget of preservation works for provincial road in 2009

Source: BINA MARGA

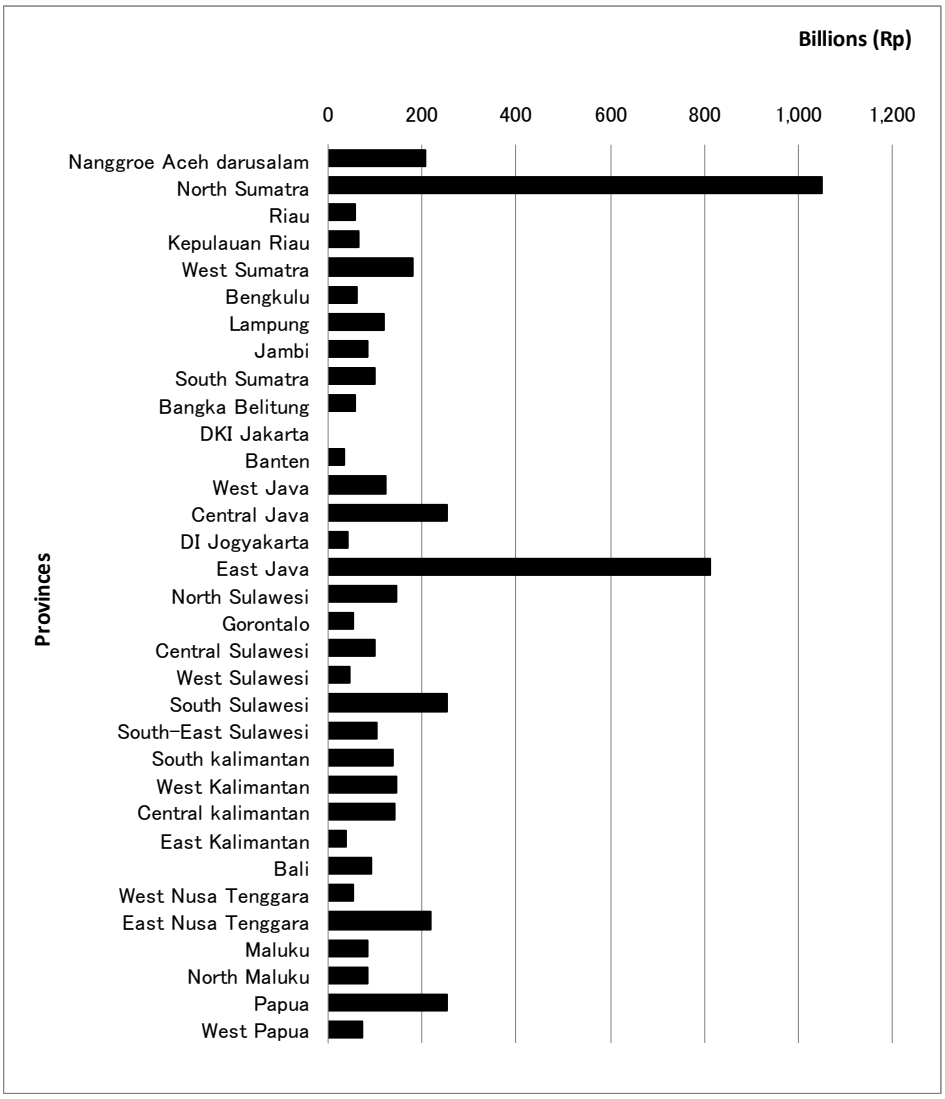


Chart 2.11 Budget of preservation works for kapubaten / municipal road in 2009

Source: BINA MARGA

(2) Funding for road management

1) National roads

National budget（APBN）of the Indonesian government in 2010 is around 1,000 trillion Rp. 71 % of the budget is covered by general Tax Revenue. Tax Revenue includes Income Tax (corporate tax and individual tax) and Value Added Tax. Non Tax Revenue includes the income of Natural Resources and Profit Transfer from SOE'S (State-Owned Enterprise). Grants are resources given by domestic civil agencies and oversea donors, which are not obliged to repay. Domestic Financing and International Financing are loans from home and abroad.

The budget for national roads is contributed from APBN which comes mainly from the taxes mentioned above.

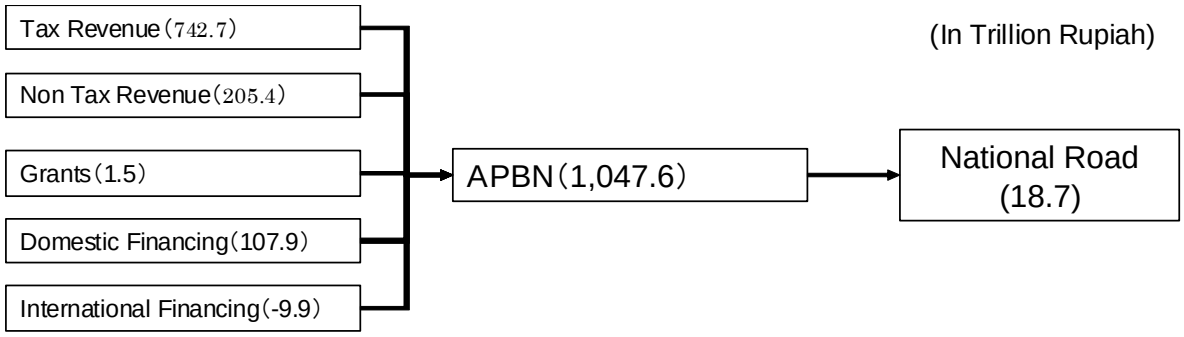


Chart 2.12 Funding resources of national roads in 2010

Source: DATA POKOK APBN 2005-2010 (Republic of Indonesia Ministry of Finance)

2) Provincial road / kabupaten road / municipal road

Chart 2.13 shows the revenue structure of regional governments. DAK and HIBAH are classified as one of the revenues, and a share of DAK for province was 1.4% of total province revenue, while a share of HIBAH was 0.6% in 2009. On the other hand, a share of DAK for kabupaten was 8.3% of total kabupaten revenue, while a share of HIBAH was 0.4%.

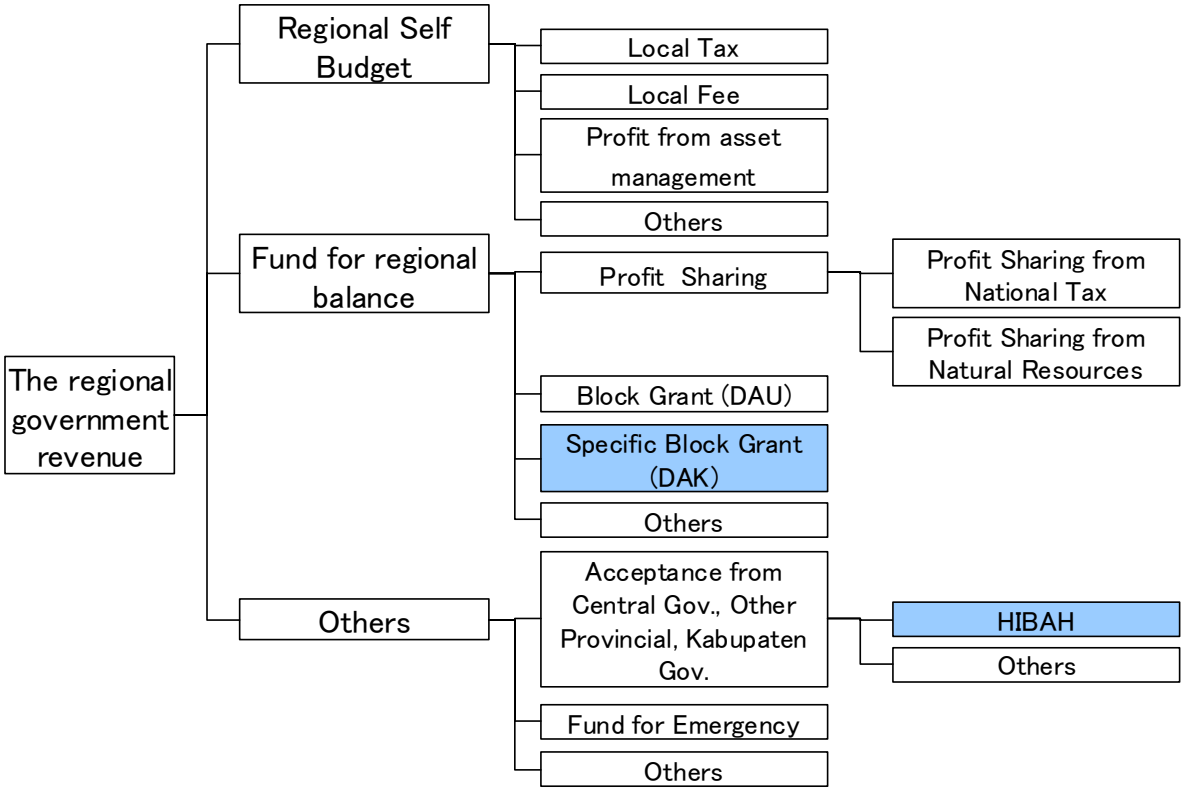


Chart 2.13 Revenue structure of regional governments

(LAW No. 32 YEAR 2004 REGARDING REGIONAL GOVERNMENT Article 162)
Special allocation fund (DAK), one of the constituents of the fund for regional balance, is allocated from APBN to certain region in framework of decentralization implementation for :

a. to fund special activities determined by Government on the base of national priority
b. to fund specific activity proposed by certain region

(LAW No. 32 YEAR 2004 REGARDING REGIONAL GOVERNMENT Article 164, Government Act / Regulation (PP) No. 57 / 2005)
HIBAH, one of the constituents of other legitimate regional revenues, constitutes Regional Income / Revenue originated from foreign country, foreign institution / agency, international institution / agency, Government, domestic institution / agency or individual, either in form of foreign exchange, Rp as well as material and / or service, include experts and training which doesn't need to be repaid

Table 2.2 Regional government revenue(2009)

Unit:Billion Rp

			Province	Kabupaten	Total
Regional Self Budget	Local Tax		36,005,395	6,875,850	42,881,245
	Local Fee		1,476,452	6,286,353	7,762,805
	Profit from asset management		1,489,303	1,663,577	3,152,880
	Others		3,535,432	5,404,372	8,939,804
Fund for regional balance	Profit Sharing		23,711,948	49,418,407	73,130,355
	Block Grant(DAU)		18,623,293	167,603,521	186,226,814
	Special Block Grant(DAK)		1,298,100	23,843,273	25,141,373
	Others		0	343,680	343,680
Others	Acceptance from Central Gov.,Other	HIBAH	603,413	1,180,857	1,784,270
		Others	8,333,237	22,113,079	30,446,316
	Fund for Emergency		33,550	187,286	220,836
	Others		804,329	636,113	1,440,442
Total			95,914,452	285,556,368	381,470,820

As shown in Chart 2.14 and Chart 2.15, funding resources of APBD (the local government budget) consists of Regional Self Budget, Fund for Regional Balance, and Others. Fund for Regional Balance is a balanced budget which is distributed with considerations to a regional balance, and it consists of Profit-sharing, DAU and DAK. Profit-sharing is allocated grants gained from the profit of natural resources such as oils and gasses. DAU is general grants, and DAK is special grants which are stipulated of its usage. Loan is debt from home and abroad, and local bond. Others consist of HIBAH which is grants in aid from civil agencies and oversea donors, Fund for Emergency, Fund for adjustment, and etc. A part of APRD is distributed to the budget for Road & Bridge sector.

Among the budgets for provincial government, Profit sharing, DAU, DAK, HIBAH, Fund for Emergency and Fund for adjustment are distributed to the provincial budgets from APBN.

The funding resources of kabupaten government are almost same as those of the provincial government; however, there is a difference between them, which is that Tax-sharing from the provincial government and Help of finance from the provincial government are distributed from the provincial government.

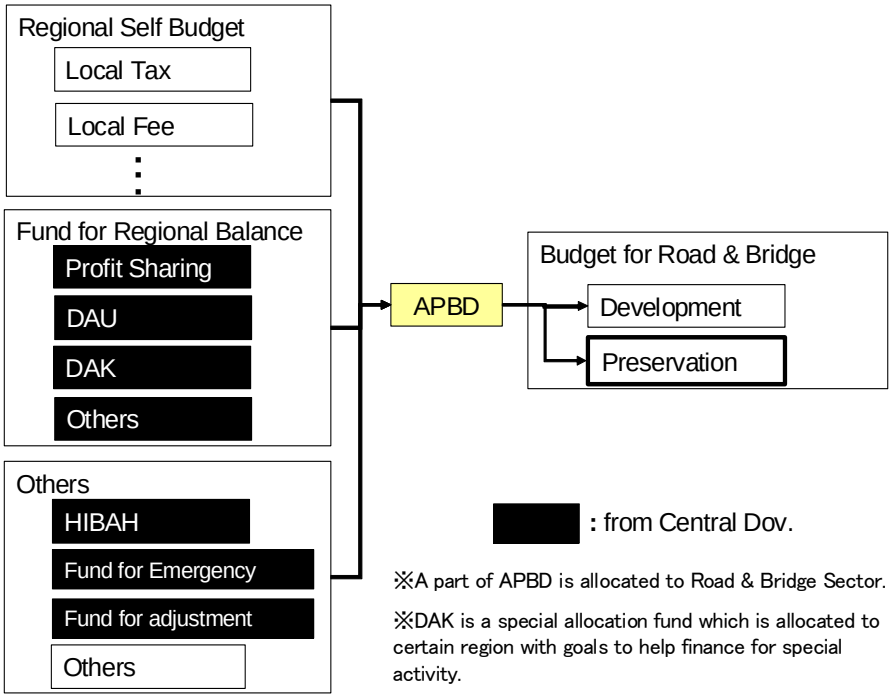


Chart 2.14 Budget flow(provincial government)

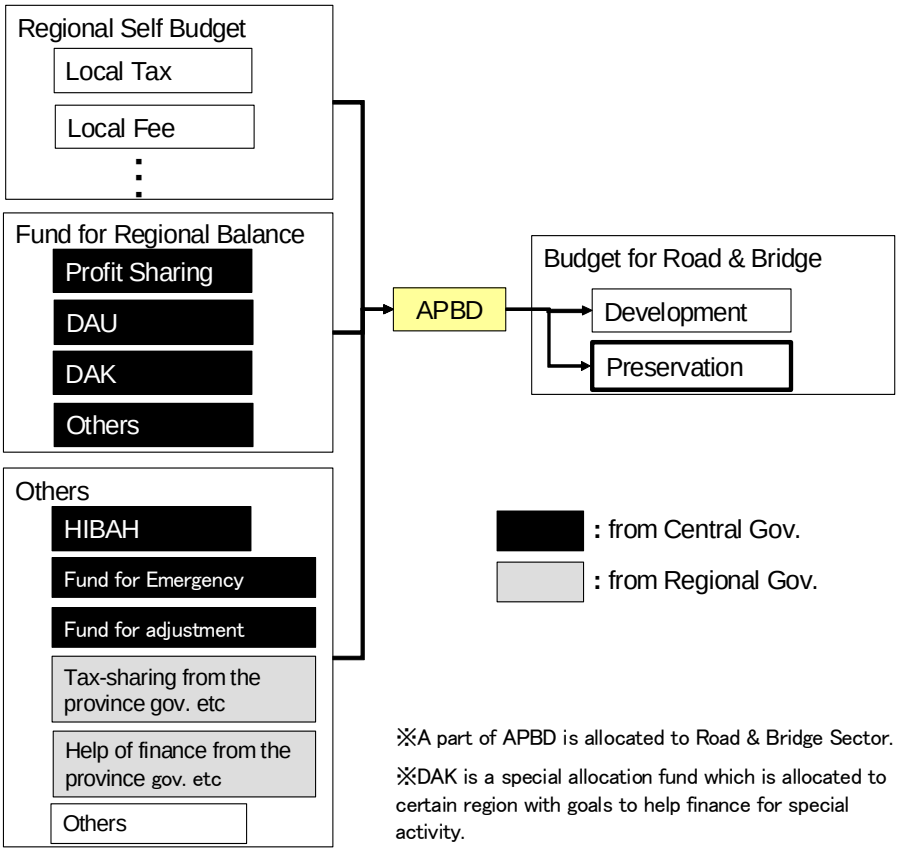


Chart 2.15 Budget flow (kabupaten government)

Chart 2.16 and Chart 2.17 show examples of the actual budget flow of road preservation work in the Lampung and Sulawesi Utara province. It should be figured out the annual budget of road preservation work and information of the actual volume of provincial taxes used for road preservation work are not clear in the both provinces. In order to study and analyze the volume of budget deficit or requisite budget for road preservation work, it should be collected sufficient data for each province.

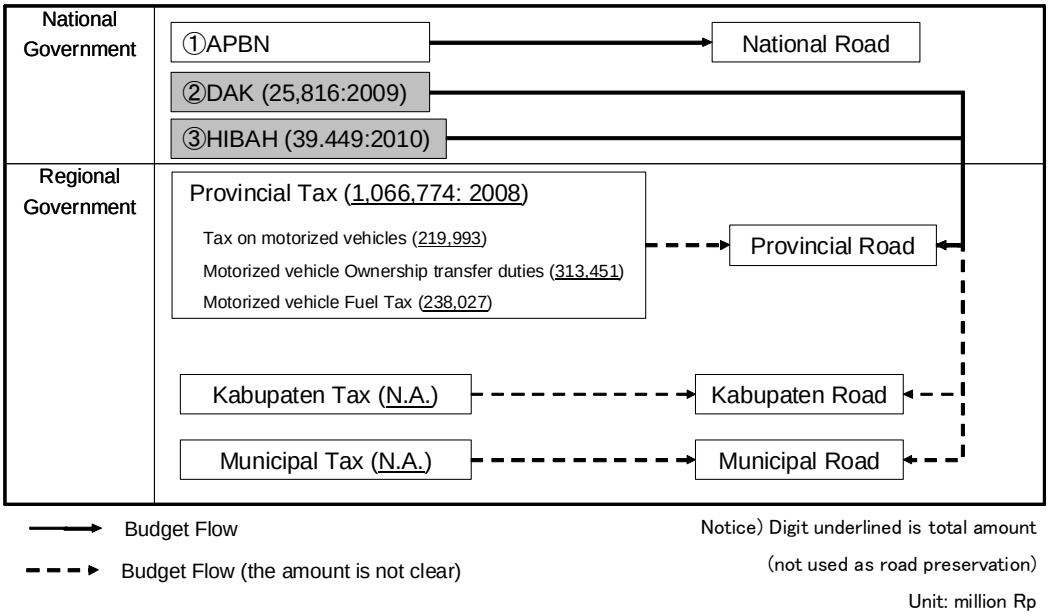


Chart 2.16 Budget flow example (Lampung)

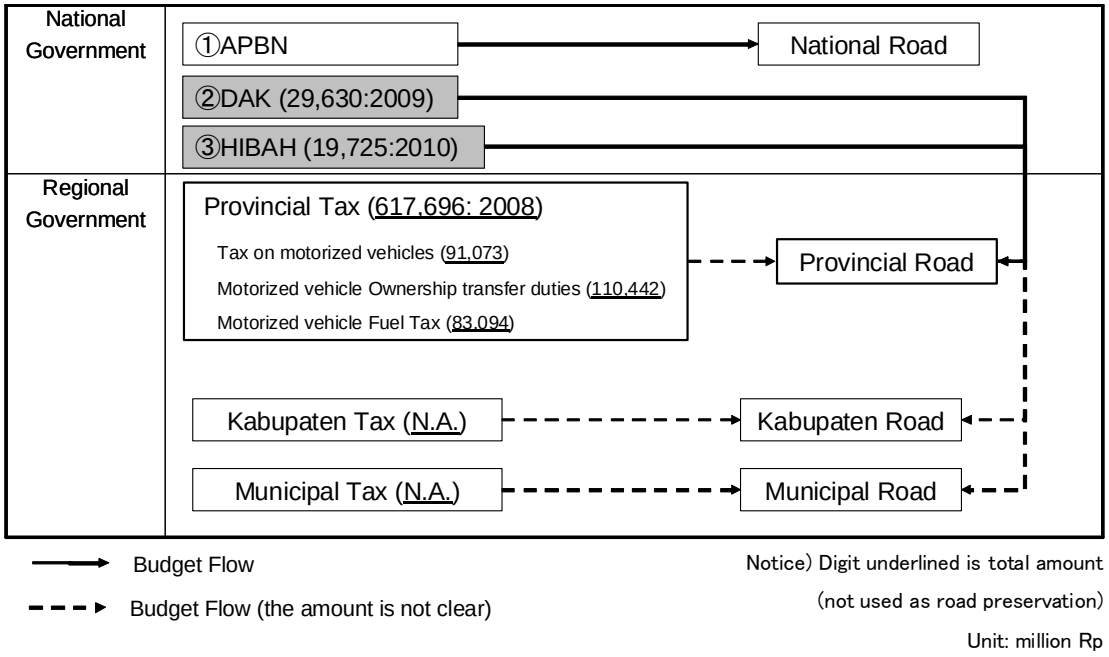


Chart 2.17 Budget flow example (Sulawesi Utara)

The following description is regarding the legal system associated to subsidies in Indonesia.

OVERNMENT OF REPUBLIC INDONESIA DECREE NO. 55 YEAR 2005 REGARDING BALANCE / EQUALIZATION FUND

REGARDING BALANCE / EQUALIZATION FUND of Government of Republic Indonesia Decree No. 55 (2005) prescribes the aim and procedures of distribution of balanced funds (dividends, general subsidies (DAU) and Special subsidies (DAK)) to a local government from the central government. As an example of the procedures in DAK, it states that “The DAK recipient region is obliged to budget matching funds in the Local Budget / APBD at least 10 % from amount of DAK allocation it received”. In addition, after DAK is distributed, “Ministry of Finance carries out the monitoring and evaluation of the DAK’s financial management."

Minister of public works Decree 42(Regarding Technical Guideline The Usage of Special Allocation Fund Infrastructure Sector)

The "Technical Guideline: The Usage of Special Allocation Fund Infrastructure Sector" of Minister of public works Decree 42 shows the technical guideline for the usage of Special Subsidies (DAK) in infrastructure sectors including road. In Article 4, it states that the following items should be deliberated when using DAK for province roads. In addition, in Article 9, there is a description on the usage of DAK as: “The road infrastructure is prioritized for rehabilitation, periodical maintenance and improvement of road and bridge infrastructure activity.”

a. Length of Provincial roads;
b. Length of unstable provincial roads
c. Performance of provincial roads (in road roughness value)
d. Reporting performance of Provincial road subsector’s DAK
e. Index of Construction Expensiveness

(3) Overview of legal system considering HIBAH

According to Article 22 of Law no. 17 / 2003 regarding State’s / Country’s Finance, the central government can give loan / HIBAH to regional government or vice versa after approval by DPR (Parliament). According to Article 16 of Law No. 57 / 2005 regarding HIBAH to the region, HIBAH from the government and HIBAH from overseas are managed through mechanism of APBN and APBD.

The types of aid by HIBAH which include not only money but also the provision of services and goods are more flexible compared to that by DAK.

Examples of the types of aids by HIBAH are as follows;

- Money HIBAH in form of Rp, foreign exchange, and / or securities
- Material / goods HIBAH in form of movable goods and immovable goods
- Service HIBAH in form of technical aid, education, training, research and other service

HIBAH has the characteristic of aid to implement government administration affair which constitutes regional government authority. For example, governmental affair in region financed by Decentralization / Assistance duty fund, or governmental affair in region can be financed by HIBAH. Scope covered by HIBAH is decided flexibly in practice.

HIBAH is implemented considering regional fiscal capacity, which is determined by the Ministry of Finance. Also, activity financed through HIBAH is proposed by the ministry / institution.

Concerning the evaluation and monitoring, regional government delivers the report of activity implementation funded by HIBAH to Ministry of Finance or its trustee and to the related state ministry / institution at every quarter. Ministry of Finance or its trustee and / or related state ministry / institution can monitor the performance of activity implementation and usage of HIBAH in the framework of target and goal attainment established in NPHD or NPPH. However, extensive sector monitoring which specifies how much is distributed to road preservation maintenance has not been implemented.

(4) Tax systems in detail

1) National tax

National tax is divided into income tax for company or individual, added-value tax, luxury tax, stamp tax, and fixed asset tax. In 2004, luxury taxes of specific goods were excluded from taxation.

- ✓ Added-value tax: 10% is taxed when goods are sold or services are provided
- ✓ Luxury tax: 10~75% is taxed when luxury is handed over to others or imported.

2) Local tax

The system of local taxes in Indonesia was prescribed in "The 2000 Act associated to local tax and local commission tax number 34" but was revised in 2009. The new law is "The 2009 Act associated to local tax and local commission tax number 28."

In the 2009 Act, tax types and highest tax rates for province, prefecture and city are prescribed. Tobacco tax was added to the Province taxes such as tax on motor cars, tax on changing the ownership of motor cars, fuel tax on motor cars, ground and surface water taxes, making it five types of taxes. On the other hand, prefecture and city tax originally had hotel

tax, restaurant tax, amenity tax, advertisement tax, street lamp tax, parking tax, tax on rights to mining of type C natural resources, but by revision tax on rights to mining of type C natural resources was excluded, and instead, non metal ore tax, ground water tax, swallow's nest tax, buildings on urban and rural area tax were added.

Uniform tax rate is set on province tax, while law sets highest tax rate and each of the prefecture/city ordinance sets the actual tax rates.

In Indonesia, there exists a system that redistributes the gathered local taxes to the local governments. Provincial taxes will be redistributed to kabupaten and municipal, and kabupaten taxes will be redistributed to villages automatically. The rate of redistribution is set by the ordinances of provinces and kabupatens, and the way of use of distributed taxes is decided by each government.

These taxes do not have to be all subjects of taxation. Local government is allowed to decide which items shall be the subject of taxations taking its financing status into consideration. Also, local government is allowed to establish new local tax as well.

3) Taxes associated to road users

Taxes associated to road users are shown in Table 2.3 and Table 2.4.

Table 2.3 Taxes associated to road users

Tax type	Tax name	Overview	Law name
National tax	Added-value tax(PPN)	Taxed on selling car components	Law No.8/1983 amended by Law No.18
	Luxury tax（PPnBN）	Taxed on items classified as luxury goods (listed in chart of tariff) Taxed within 10～75%	
Province tax	tax on motor cars （PKB）	Taxed on cars with motors (engines) ・ Taxed 2% on first car and 2% each then on (progressive tax) ・ 30% is distributed to prefectures and cities that composes province. ・ In revision of 2009, 10% of it is limited to usage in organization of road and public transport.	Law No.34/2000（ revised in August of 2009）→ Law No.28/2009）
	tax on changing the ownership of motor cars (BBNKB)	・ The first time to change ownership of the car: tax rate up to 20% ・ 30% of it is distributed to prefectures and cities that composes provinces.	
	fuel tax on motor cars（PBBKB）	・ Taxed on gasoline, diesel gas, compressed natural gas (maximum 10%) ・ 70% of it is distributed to prefectures and cities that composes provinces.	
Prefecture/ City tax	Parking tax（PP）	Up to 30% is taxed for the usage of parking area.	

Table 2.4 Luxury taxes associated to cars

Tax rate	Car type
20%	a. commercial car seats fewer than 10, which is both gasoline and diesel gas type and rear-wheel-drive car, of 1500cc to 2500cc.
	b. double cab' over seats more than 03, which is both gasoline and diesel gas type and four-rear-wheel-drive car
40%	a. commercial car seats fewer than 10, which is gasoline type and rear-wheel-drive car, of 2500cc to 3000cc.
	b. commercial and passenger car seats fewer than 10, which is gasoline type and four-wheel-drive car, of 1500cc to 3000cc.
	c. commercial and passenger car seats fewer than 10, which is diesel gas type and four-wheel-drive car, of 1500cc to 2500cc. (exception is golf cart which is deferred 50%)

In addition, the revised local tax law in 2009 made change in taxes associated with road users as shown in Table 2.5 and Table 2.6.

Table 2.5 Highest tax rates

Type	Tax Items	Law No.34/2000	Law No.28/2009
Province tax	tax on motor cars ・ 1st private car ・ 2nd private car ・ Public/Government/Military/Police purpose car ・ Heavy machine	5%	10% 1-2% 2-10% 0.5-1% 0.1-0.2%
	tax on changing the ownership of motor cars ・ 1st time ・ 2nd time ・ Heavy machine (1st) ・ Heavy machine (2nd)	10%	20% 20% 1% 0.75% 0.075%
	Fuel tax on motor cars	5%	10% □
Prefecture/ City tax	Parking tax	20%	30%

Notice: Fuel tax which was set in local ordinances can be changed by presidential decree (valid 3 years)

Table 2.6 Distribution of province taxes

Tax type	Law No.34/2000		Law No.28/2009	
	Province	Kabupaten /Municipal	Province	Kabupaten /Municipal
Tax on motor cars	70%	30%	70%	30%
Tax on changing the ownership of motor cars	70%	30%	70%	30%
Fuel tax on motor cars	30%	70%	30%	70%

2.1.4 Administrative issues

(1) Overview of the legal system of road administration in Indonesia

Overview of legal system in Indonesia is described in Chart 2.18. The order of law is UUD (State Constitution), TAP MPR (Decree of People's Consultative Assembly), and then leads to UU (various laws and ordinances). Perpu (Regulation of the replacement law) comes in attached to UU, and further leads to PP (Government Regulation), Keppres (Presidential Decree), and Kepmen (Ministerial Decree).

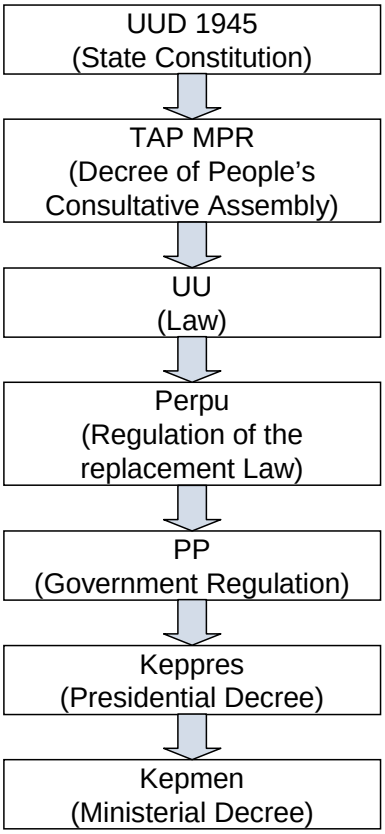


Chart 2.18 Overview of legal system in Indonesia

As for the laws on road administration in Indonesia, there exists 'LAW NO. 38 YEAR 2004 REGARDING ROAD' and 'LAWS NO 22 YEAR 2009 REGARDING ROAD TRAFFIC AND TRANSPORTATION'. Law No.38 defines types of roads and the authorities of road administrators from the perspective of road administration. Laws No. 22 defines road mangers' obligations and authorities, road traffic agents' obligation, and road users' obligation to make smooth usage of road transportation from the perspective of transportation administration which includes road traffic,

As for the preservation of road, the above two laws specify the road managers' role and obligations. Also laws and ordinances of road traffic and transportation administration show the legal structure of road preservation.

In addition, Laws No.22 includes the explanation about the significance of the implementation of Road Preservation Fund and its characteristics, but its information about various procedures and management system is explained separately in the draft of Presidential Decree, which is under preparation.

Under Law No.38, there exists 'GOVERNMENT DECREE (PP) NO 34 YEAR 2006 REGARDING ROAD', which defines details of roles and responsibilities of road authorities indicated by Law No.38.

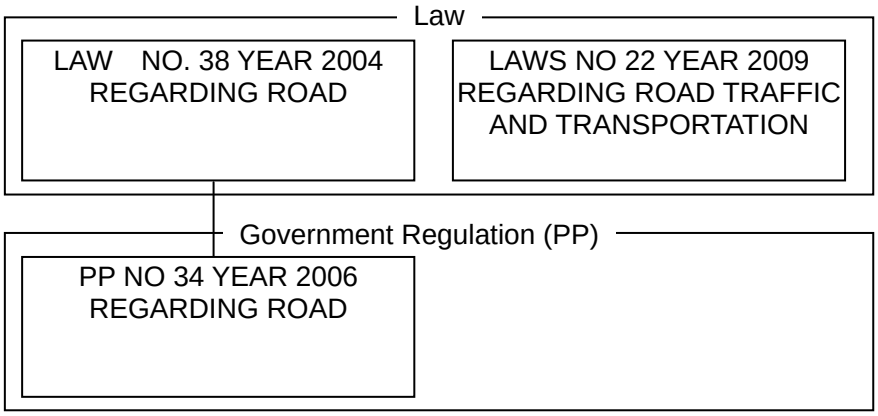


Chart 2.19 The overview of legal system of Indonesia's road ministration.

1) Types of roads classified by road act in Indonesia

Table 2.7 shows the types of roads classified by Road Act in Indonesia. Table 2.7 describes the provision of Law No 38 year 2004 which identifies how the authority for road management is distributed to road administrators by each type of road in legal framework.

The central government has the authority to determine road development policies in national roads and road preservation for national roads. The provincial government has the authority for provincial road and the others have equivalent structures.

Basically, each road administrator has responsibility for its own road preservation. However, Law No.38 article 13 states that a provincial government, when it is difficult to execute its authority for provincial roads, is allowed to alienate its authority to the central government. The same applies for kabupaten road and municipal road. Kabupaten and municipal government are also allowed to alienate its authority to the provincial government.

Table 2.7 Outline based on law no 38 (2004)

Type of roads by status		Administrator for road operation			
		Central Government		Provincial Government	Kabupaten / Municipal government
General Road	National Road	Formation of regulatory law. Formulation of planning policy Macro control of road administration Determination of norm, standard, criteria and guideline of road arrangement	Determination of national road status Operation and Maintenance etc		
	provincial road			Policy Formulation based on national road policy Determination of provincial road status Operation and Maintenance etc	
	Kabupaten/ municipal road				Determination of kabupaten road and village road status Operation and Maintenance etc

Notice) Further stipulation regarding authority of Kabupaten road administration is regulated in Government decree

2) Minimum service standard for road preservation

In article 30 of Law No.38 states that road administrator is obliged to prioritize the periodical maintenance, and to conduct road examination to keep the road service level according to the established minimum service standard. In addition, article 22 of Law No.22 states that road operators must conduct road function worthiness examination in the longest period of 10 year and or as needed.

In accordance with article 22 of Law No.22, road function worthiness examiners consist of road operators and institutions responsible for road traffic and transportation, as well as National Police of Indonesia. Results of road function worthiness examination must be published and followed up by these related parties.

Minimum standard of road preservation condition for non toll road is prepared in Indonesia as shown in Table 2.8. According to the guideline of minimum service standard; Guideline of determination of spatial arrangement, housing and settlement and public works (Minister of Settlement and Regional Infrastructure Decree no 534 / KPTS / M 2001), the minimum standard for urban road, neighborhood road and path way does not include the condition of pavement like unevenness but the average velocity and the width of road.

Table 2.8 Guideline of minimum standard of service determination based on minister of settlement and regional infrastructure decree no 534 / KPTS / M 2001

Field of Service	Indicator	Standard of Service			Explanation
		Quantity		Quality	
		scope	Level of service		
a. urban road	Road length / number of population Average velocity	Road length 0.6km/1,000 population Road area / city area	Average speed 15 up to 20km/hour Ratio of road area is 5% of area	Easy Access to all part of city	
b. Neighborhood road	Ratio of road length with area wide	Length 40 – 60m/ha with width of 2 – 5 m			
c. Path way	Ratio of road length with area wide	Length 50 – 110m/ha with width 0.8 – 2m			
Rural Settlement a. Road Network	Ratio of				
Ready to built area a. Road Network 1) Neighborhood road	Road condition	Length of 40-60m/ha with 2 – 5m width	Average velocity 5 up to 10km / hour	Access to all settlements zone	Technical guideline of Housing ‘s road infrastructure 1998
2) Path way	Maintenance cost	Length of 40-60m/ha with 2 – 5m width		Can be accessed by fire brigade truck	

(Decree of minister of settlements and regional infrastructure No. 534/KPTS/M/2001)

Service sector	Service Standard			Remarks
	Quantity		Quality	
	Scope	Consumption/Production		
Road Network				
A. Accessibility Aspect	All road network	People Density (people/km^2)	Accessibility Index	Road length/area (km/km^2)
		Very high >5.000	>5,0	
		High > 1.000	>1,5	
		Moderate > 500	>0,5	
		Low > 100	>0,15	
		Very Low < 100	*	
B. Mobility Aspect	All road network	PDRB per capita (Million Rp/capita/year)	Mobility Index	Road Length// 1000 people
		Very High >10	>5,0	
		High > 5	>2,0	
		Moderate > 2	>1,0	
		Low > 1	>0,5	
		Very Low < 1	*	
C. Accident Aspect	All road network	Road User	Accident Index 1	Accident/ 100.000 km. vehicle
		People density (people/ km^2)	Accident Index 2	Accident/ km/Year
		Very high >5000		
		High > 1000		
		Moderate > 500		
		Low > 100		
		Very low < 100		
Road Segment				
A. Road Condition	Minimum Road Width.	Traffic Volume (Vehicle/day)	Road Condition	
	2x7m	Average Daily Traffic *(LHR)* > 20.000	Moderate; IRI < 6; RCI > 6.5	
	7m	8000 < *LHR* < 20.000	Moderate; IRI < 6; RCI > 6.5	
	6m	3.000 < *LHR* < 8.000	Moderate; IRI < 8; RCI > 5.5	
	4,5m	*LHR* < 3.000	Moderate; IRI < 8; RCI > 5.5	
B. Service Condition	Road Function	Road User	Minimum Speed	
	Primary Arterial	Far distant regional traffic	25 km/hour	
	Primary Collector	Moderate distant regional traffic	20 km/hour	
	Primary Local	Local Traffic	20 km/hour	
	Secondary Arterial	Far distant town traffic	25 km/hour	
	Secondary Collector	Moderate Distant Town Traffic	25 km/hour	
	Secondary Local	Town Local Traffic	20 km/hour	

Note : ***** Determined based on regional ability, condition and needs
PDRB: Gross Regional Domestic Income

Minimum standard for toll road is also established in Minister of Public Works Decree No. 392 / PRT / M / 2005 as shown in Table 2.9.

Table 2.9 Minimum service standard of toll road
based on minister of public works decree No. 392 / PRT / M / 2005

No	Substance of service	Minimum service standard		
		Indicator	Scope	Benchmark
1	2	3	4	5
1	Toll Road Condition	・Roughness ・Unevenness ・No hole	・All segments of toll road	・> 0.33 μm ・IRI < 4 m / km ・100 %
2	Average cruise velocity	・Average cruise velocity	・Inner city toll road	・> 1.6 fold of average cruise velocity of Non toll road
			・Outer city toll road	・> 1.8 times of average cruising velocity of non toll road
3	Accessibility	・Average transaction speed	・Open system toll gate	・< 8 second for each vehicle
			・Closed system toll gate ・Entrance Ticket booth ・Exit Ticket booth	・< 7 second for each vehicle ・< 11 second for each vehicle
		・Number of Toll's ticket booth	・Open system capacity	・< 450 vehicle per hour per ticket booth
			・Closed system capacity ・Entrance Ticket booth ・Exit ticket booth	・< 500 vehicle per hour ・< 300 vehicle per hour
4	Mobility	・swiftness of traffic congestion handling	・Observation area / patrol observation	・30 minute per cycle of observation
			・Start from Information acceptance up to the site of event	・≤ 30 minute
			・Handling of broken down vehicle	・Perform towing to the nearest Toll gate / service station using official tow car / crane (for free)
			・Patrol of tow car	・30 minute per cycle

No	Substance of service	Minimum service standard		
		Indicator	Scope	Benchmark
1	2	3	4	5
5	Safety	・Means of traffic arrangement ＊Traffic beacon	・Completeness and clarity of order and prohibition as well as instruction	・100 %
		＊Street mark	・Benefit and function	・Total 100 % and reflectivity ≥ 80 %
		＊Guide Post / Reflector	・Function and benefit	・Total 100 % and reflectivity > 80%
		＊Kilometer pole every 1 km	・Benefit and Function	・100 %
		・Urban area Street lighting	・Function and benefit	・Lamp is on 100 %
		・Fence	・Function and benefit	
		・Handling of Accident	・Victim of the accident	・100 % exist
			・Vehicle of the accident	・Free evacuation to reference hospital
			・Toll Road segment	・Free towing to tow car pool (still in toll road)
		・Security and Law Enforcement		・Existence of 24 hour Police patrol
6	Rescue unit / and service support	・Ambulance	・Toll road segment	・1 unit per 25 km or minimum 1 unit (equipped with standard Paramedic and rescue)
		・Towing Vehicle	・Toll road segment ＊LHR > 100.000 vehicle /day ＊LHR < 100.000 vehicle / day	・1 unit per 5 km or minimum of 1 unit ・1 unit per 10 kilometer or min of 1 unit
		・Highway Police Patrol	・Toll Road Segment ＊LHR > 100.000 vehicle / day ＊LHR < 100.000 vehicle /day	・1 unit per 15 km or minimum 1 unit ・1 unit per 20 km or minimum 1 unit
		・Toll road patrol (operator)	・Toll road segment	・1 unit per 15 km or minimum 2 unit
		・Rescue Vehicle	・Toll road segment	・1 unit per toll road segment (equipped with rescue equipment)
		・Information system	・Information and Communication of traffic condition	・Every entrance gate

3) Central government's financial assistance for sub national road

Article 30 of Law No.38 states that road development and preservation costs should be covered by each road authority as a general rule. However, article 38 stipulates that the central government is allowed to provide financing assistance to the regional government in case that the regional government has little financial resources for road development and preservation by itself. According to article 85 of PP No.34, the regional government is regarded as the authority which cannot secure funding resources for road development and preservations, if the government cannot meet the minimum standard of the road conditions after providing 20% of the total budget with the road improvement and other related works. Road sections to be aided by the central government will be determined considering the priority of the roads and funding assistance capacity of the central government after getting the approval of the minister in charge of national road policies.

4) Highway construction and preservation on behalf of a local government

Article 59 of PP No.34 states that works of the central government in national road development could be partially implemented by provincial governments. The works include technical planning, construction, operation and preservation. However, road management responsibilities of the central government will not be completely transferred to provincial governments.

Article No.12 of Law No.32 year 2004 regarding local government stipulates that the works transferred to the local governments are accompanied by the source of funding, infrastructure, materials, machine & equipment, human resources, and etc. Also, the works transferred to provincial governor are accompanied by the funding resources in accordance with the authority transferred to the governor. As a result, in case that local governments conduct a part of development or preservation for national road, funding resources for these works are transferred from the central government to the local governments.

5) The planning of road preservation

Article 97 of PP No.34 states that a road operator is responsible for road preservation according to its authority. Furthermore, the article also states that road preservation constitutes the highest priority of all types of road handling. The highest priority includes the fulfillment of preservation financing sufficiency.

Road preservation work is conducted in accordance with road preservation plan. Road preservation plan consists of information system, asset management system, and road preservation handling plan. The provisions of laws and ordinances related to road management are summarized in the attached references:

(2) Budgeting and execution

1) Budget decision and execution processes

The budget decision and execution processes for road preservation works in Indonesia are shown in Chart 2.20.

Budget decision process is started by use of IRMS in the beginning of January, and final decision of budget is made by parliament at around the end of the year. Once the budget is determined, preservation work plan is started at the beginning of the next year by BALAI, SNVT, PPK and the other related parties, and most of the actual road preservation works tend to be conducted in the last 3 to 4 months after coordination process with local police and other authorities. Under such budgeting and execution process, road preservation works have to be conducted during short time periods, and also tend to be delayed due to the inappropriate conditions of rainy season.

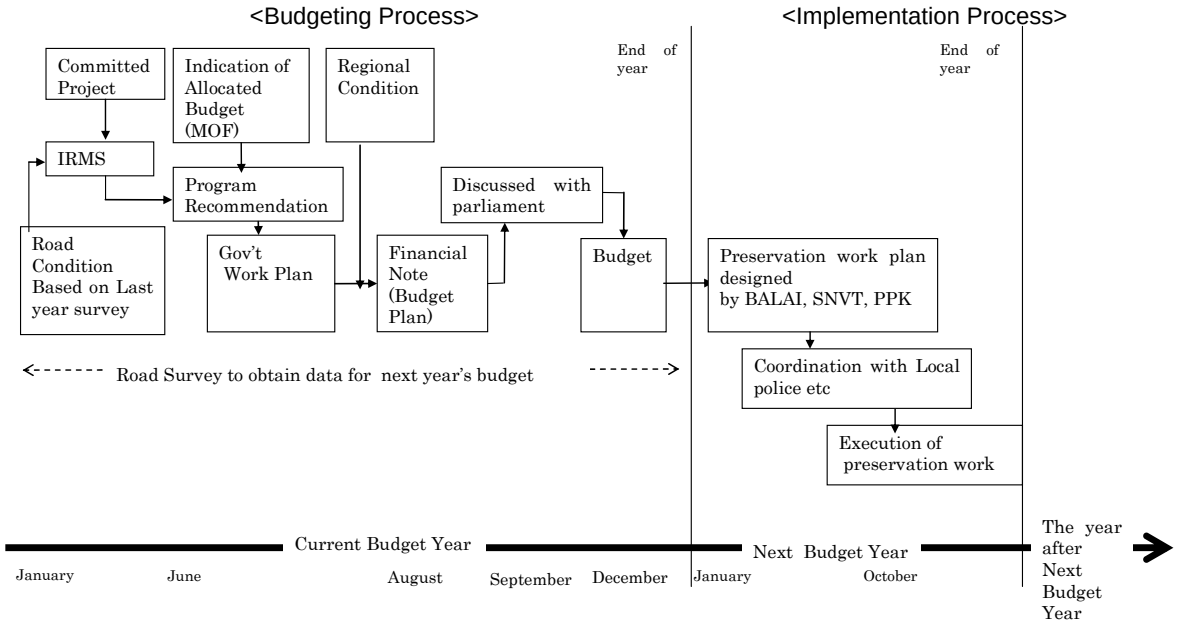


Chart 2.20 Budget decision and execution processes

2.1.5 Lessons from the road preservation in Indonesia

(1) Funding resources

1) National roads

For national roads, the budget comes from APBN, which is general national revenue. There is no guideline for road preservations.

2) Sub-national roads

For sub-national roads; provincial roads, kabupaten roads, and municipal roads, each budget comes not only from its local tax, but also from DAK and HIBAH, both of which are part of national budget. DAK is a special fund to be distributed from the national government to a regional government for special purposes sector by sector. HIBAH consists of donations of the developed countries, and also be distributed to a regional government. DAK is considered as a kind of earmarked fund for road preservation.

There are no guidelines for road preservation. DAK is put into road preservation, but is still insufficient

(2) Administrations

1) National roads

There are no regulations and no administrative system of Balai, SNVT, PPK in terms of distributions from APBN to road preservation.

2) Sub-national road

There are no monitoring systems to check whether APBD is being used for requisite road preservation, and to check whether DAK and HIBAH are being used for road preservation.

(3) Budgeting & execution

1) National & sub-national

It takes a time to design and method planning of road preservation works. Most of the actual preservation works tend to be conducted in rainy season, and as a consequence, the works are not complete by end of the year.

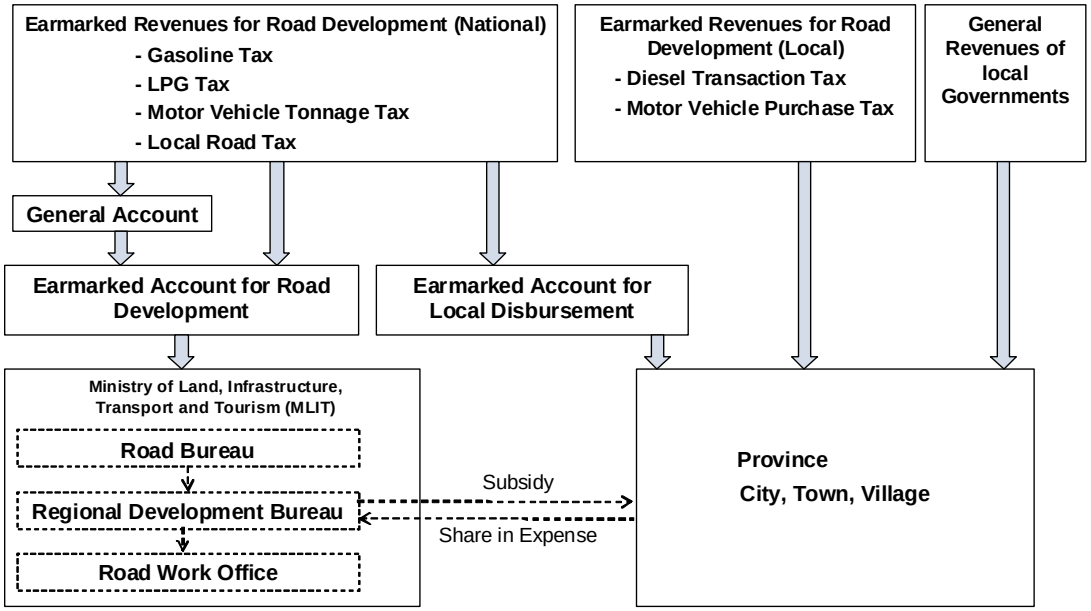
2.2 Road funding system in Japan

2.2.1 The legal frame work of earmarked account for road development in Japan

For quite a long time period, Japan had adopted the earmarked funding system for road development. In 2009, this system was transferred to the general funding; therefore, the below diagram indicates the flow of the budget up to 2008.

Japan had three kinds of revenues of road development for national and local governments as shown in Chart 2.21. The national government had only earmarked revenue for road development which comes from gasoline tax, LPG tax, motor vehicle tax, and local road tax. This revenue was divided into earmarked account for national road development, and earmarked account for local disbursement. Ministry of Land, Infrastructure, Transport and Tourism (MLIT) conduct road management by use of this account.

Local governments had both earmarked and general revenue for road development. Also, local governments had earmarked account which was disbursed from earmarked national revenue.



※ The Earmarked Account for road development has been abolished and transferred to General Account by amendment of laws in 2009.

Chart 2.21 Road management in Japan (Flow of budget)

The allocation of tax revenue to earmarked account for road development had been obviously authorized by related laws. Tax ratio of any kind of taxes had been also obviously authorized by laws.

Table 2.10 The legal frame work of earmarked account for road development in Japan

Allocated to	Tax allocated for Road management	Basis of the allocation for Earmarked Account for road development	Tax ratio authorized by legal frame work	
			Primary	Provisional
Central Government	Gasoline Tax	**Act on State's Special Financial Measures on Road Construction and Improvement Projects No. 34 of 1958**	**Gasoline Tax Act** -Article 9	**Act on Special Measures Concerning Taxation** -Article 89
	LPG Tax	-Article 3	**LPG Tax Act** -Article 10	
	Motor Vehicle Tonnage Tax	(2/3 of Motor Vehicle Tonnage Tax distributed to Central Government is also allocated to the Earmarked Account in operation)	**Motor Vehicle Tonnage Tax Act** -Article 7	**Act on Special Measures Concerning Taxation** -Article 90-11
Local Government	Local Road Tax (Local Road Transfer Tax)	**Local Road Tax Act** -Article 1 **Local Road Transfer Tax Act** -Article 8	**Local Road Tax Act** -Article 4	**Act on Special Measures Concerning Taxation** -Article 89
	LPG Transfer Tax	**LPG Transfer Tax Act** -Article 7	**LPG Tax Act** -Article 10	
	Motor Vehicle Tonnage Transfer Tax	**Motor Vehicle Tonnage Transfer Tax Act** -Article 7	**Motor Vehicle Tonnage Tax Act** -Article 7	**Act on Special Measures Concerning Taxation** -Article 90-11
	Automobile Acquisition Tax	**Local Tax Act** -Article 699	**Local Tax Act** -Article 699-8	**Local Tax Act** (Supplementary Provisions - Article 32)
	Diesel Oil Charge Tax	**Local Tax Act** -Article 700	**Local Tax Act** -Article 700-7	**Local Tax Act** (Supplementary Provisions - Article 32-2)

Table 2.11 Examples of authorizing the allocation of tax revenue to earmarked account and the tax ratio for road development in national and local.

		Tax	Law	Article	Tax ratio authorized by legal frame work
Allocation of tax revenue for Earmarked Account for road development	For National Road development	Gasoline Tax, LPG Tax	**Act on State's Special Financial Measures on Road Construction and Improvement Projects No. 34 of 1958**	3	authorizes to **allocate total of Gasoline Tax, ½ of LPG Tax to Earmarked Account for Road Development managed by Central Government**. (Other 1/2 of LPG Tax is allocated for Local Road Development.)
	For Local Road Development	Local Road Tax (Local Road Transfer Tax)	**Local Road Tax Act**	1	Authorizes to **allocate total of Local Road Tax to Earmarked Account for Local Road Development.**
			Local Road Transfer Tax Act	8	Authorizes that Local Road Tax is collected with Gasoline Tax by Central Government. Authorizes to **allocate 58% of the tax revenue to prefecture and designated city, 42% of it to municipal**.
Tax ratio	For National Road development	Gasoline Tax	**Act on Special Measures Concerning Taxation**	89	Authorizes that tax ratio of Gasoline Tax is **provisionally 48.6 yen per litter** until 2018. (The primary tax ratio is 24.3 yen per litter.)
	For Local Road Development	Local Road Tax	**Act on Special Measures Concerning Taxation**	89	Authorizes that tax ratio of Gasoline Tax is **provisionally 5.2 yen per litter** until 2018. (The primary tax ratio is 4.4 yen per litter.)

Chart 2.22 and Chart 2.23 show details of revenues for road development in national and local government as of 2008. National government obtained 80% of the total from gasoline tax. Local government obtained a little bit more than half from earmarked revenue.

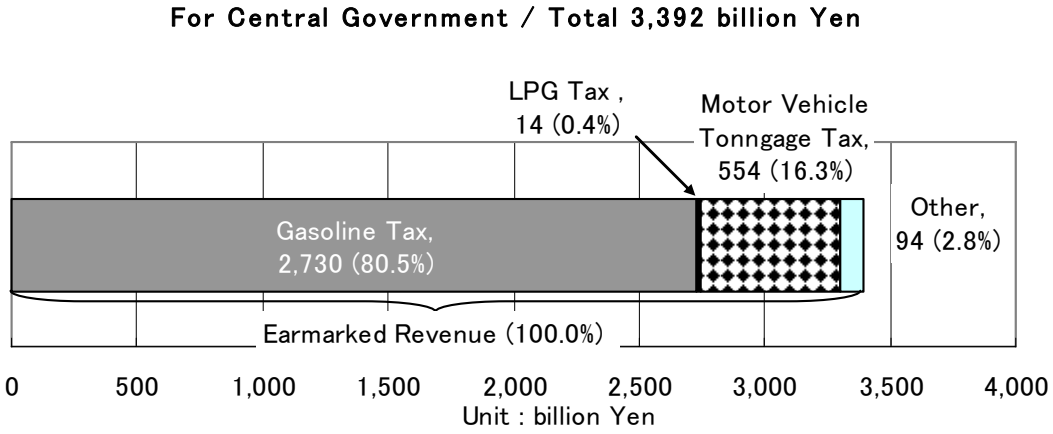


Chart 2.22 Revenue for road development in national government as of 2008

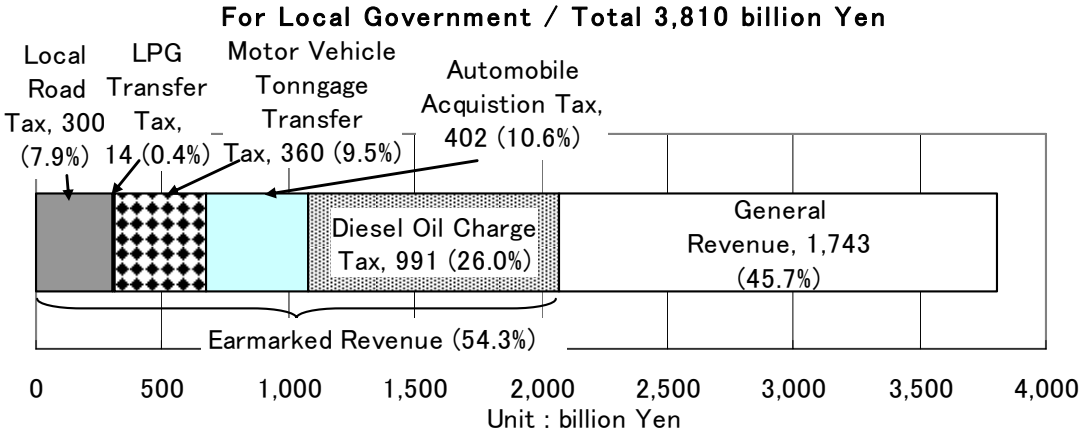


Chart 2.23 Revenues for road development in local government as of 2008

2.2.2 Road management in Japan – administration, source of expenses

As for the road management system concerning administrations and source of expenses for national roads in Japan, national roads are actually divided into 2 sections; a designated section and an undesignated section. For the designated section, the central government basically develops and preserves the roads. For the undesignated section, the central government develops the roads, but provincial governments preserve the roads. Sources of these expenses come from both national and provincial budget. For development of the designated or undesignated section, 2/3 is from the national budget, and 1/3 is from the provincial budget. For preservation of the designated section, 55% is from national budget, and 45% is from provincial budget. For preservation of the undesignated section, on the other hand, 100% is from provincial budget.

Table 2.12 Administration, source of expenses

<table>
<tr><td colspan="2">Type of section and its length(*1)</td><td>Designated Section
(22,786.6km)</td><td>Undesignated Section
(31,949.3km)</td></tr>
<tr><td colspan="2">Road administrator</td><td>Central Gov.</td><td>Provincial Gov.</td></tr>
<tr><td rowspan="2">Road work project owner and Source of expense</td><td>For
-New Construction
-Renewal</td><td colspan="2">Project owner : Central Gov.

Expense : National budget : 2/3
Provincial budget: 1/3
<u><Authorized by Article 50 of Road Act ></u></td></tr>
<tr><td>For
-Preservation
-Repair
-Restoration from disaster(*2)
-Others</td><td>Project owner :
:Central Gov.
Expense:
National : 55%
Provincial : 45%

<u><Authorized by Article 50 of Road Act ></u></td><td>Project owner :
Provincial Gov.
Expense:
Provincial : 100%(*3)
(*4)</td></tr>
</table>

(*1) April 1st, 2008
(*2) Special rules and subsidies can be applied for restoration from disaster.
- (*3) Maximum 50% can be subsidized from the National budget if necessary (authorized by Article 56 of Road Act).
(*4)Central Gov. can be project owner of repair work if necessary. 50% of the expense should be shared by the Provincial budget in such a case.
*Designated section is regulated by Ministry Law for the national roads of large traffic volumes, which are almost completed for construction or renewal.

In Japan, there are special rules and subsidies to be applied for restoration from natural disaster. This is authorized by Road Act and other related laws. For example, article No.13-3 of Road Act No.180 authorizes that MLIT can do its own repair work from disaster in undesignated national roads if high level engineering techniques are required. Also, the central governments provide local government with special financial support to deal with the designated disaster of extreme severity in accordance with the Act of other related law.

Table 2.13 Special rules and subsidies applied for restoration from disaster

Road Act No 180 of 1952 revised No.19 of 2007

Article	title	provision
13-3	**The Preservation work etc for National Road**	-Authorizes that **MLIT can own repair work from disaster in undesignated national road** if it is necessary of high level techniques etc.
49	**Principle of Expense for Road Management**	Authorizes the Expense of the Road administrator for the road management **except special rules based on Road Act, Act on National Treasury's Sharing of Expenses for Project to Recover Public Civil Engineering Works Damaged by Disaster etc.**

Other Related Laws

Law	object
Act on National Treasury's Sharing of Expenses for Project to Recover Public Civil Engineering Works Damaged by Disaster No. 97 of 1951	To authorize that Central Government will share the expenses for recovery of public civil engineering works administrated by Local Government with considering the ability of expense from Local Government in order to recover the damage by disaster so quickly.
Act on Special Financial Support to Deal with the Designated Disaster of Extreme Severity No. 150 of 1962	**To authorize special financial support of Central Government to Local Government etc with the designated disaster of extreme severity.**

2.2.3 Road management in Japan – budgeting process

Regarding the budgeting process for road management in Japan, at the beginning of the fiscal year, a road work office of national roads prepare and request the budget to the headquarters via a regional development bureau, and provincial governments also request the budget for subsidy. The headquarters of road bureau summarize the total budget, and request to Ministry of Finance. Then, close discussions and negotiations are made between MLIT and MOF, and the finalized draft budget is opened to the House of Representatives. Before the start of the next fiscal year, the budget of the next year is finalized.

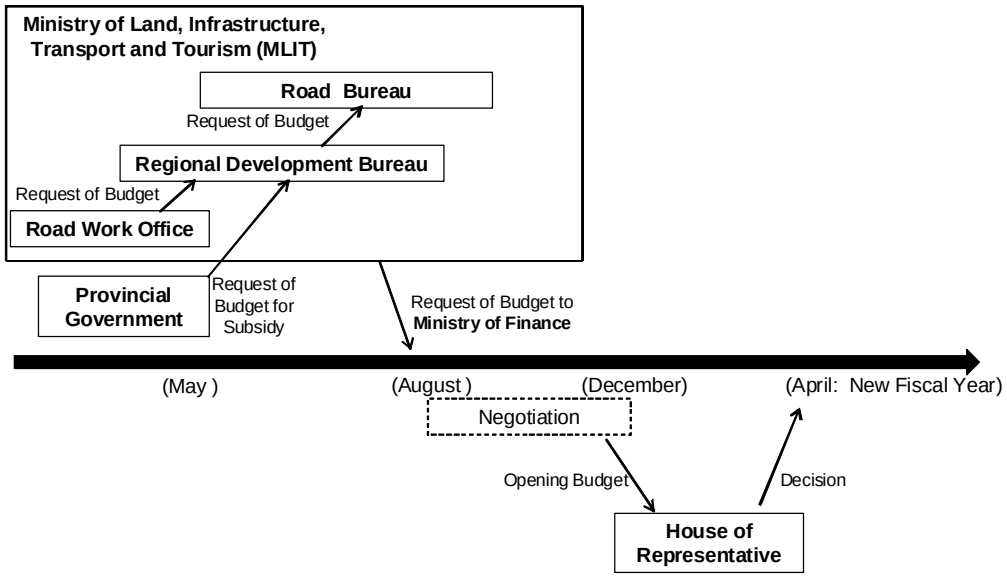


Chart 2.24 Budgeting process

2.3 Views of road preservation fund in Indonesia

2.3.1 Structure of organization that support the fund

As described in the previous section, the Indonesian government still has a lot of problems and challenges to the implementation of road preservation fund. As for the issues of funding resources and administrations, it is required to clearly monitor and understand the actual budget distribution of road preservation works from both national and regional general account. Technical and engineering assistance also need to be provided by central government to provincial, kabupaten, and municipal government. Therefore, it seems quite difficult to solve such current challenges in short time period, and to implement road preservation fund to whole roads in Indonesia at the same time.

For this reason, the study team recommends that the Indonesian government should take 2 steps: the transition stage and the permanent stage, and should take necessary actions in each stage for the future full implementation of road preservation fund.

(1) Transition stage

As stated before, the procedures associated to DAK are prescribed in 'GOVERNMENT OF REPUBLIC INDONESIA DECREE NO. 55 YEAR 2005 REGARDING BALANCE / EQUALIZATION FUND', and Ministry of Finance is obliged to carry out the monitoring and evaluation of the DAK's financial management. However, as provinces and kabupaten which received DAK do not always report to the Ministry of Finance, the monitoring and evaluation have not been properly conducted. Moreover, although provincial and kabupaten governments are required to contribute 10% of the received DAK from their budget, the fact is not reported as well. Furthermore, HIBAH is distributed without clarifying its usage, and thus Ministry of Finance has no information of the actual use of HIBAH. Therefore, in order to solve such operational problems, BINA MARGA should have operational systems to check whether allocated budgets for preservation works are properly used as planned, and to check whether road conditions have been improved as expected and planned.

For these reasons, in the transition stage 1, BINA MARGA should set up 'Board' inside the existing organization in order to monitor and grasp the current budget allocation and its actual use for road preservation work for sub-national roads at a selected province. Chart 2.25 shows budget flow and role of 'Board' in the transition stage 1. 'Board' members should consist of funding or budgeting specialists as well as technical or engineering specialists.

BINA MARGA is able to clarify issues and challenges to be solved toward the permanent stage, in which whole roads in Indonesia will be managed under the newly implemented RPF.

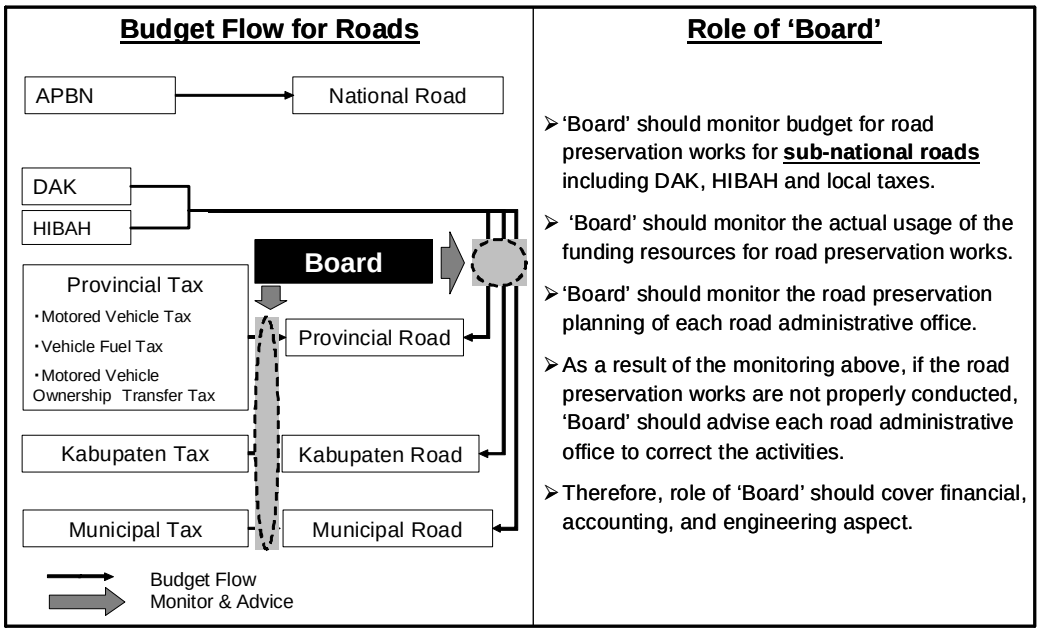


Chart 2.25 Implementation of 'Board' (transition stage 1)

In the transition stage 2, 'Board' will monitor and grasp the current budget allocation and its actual use for road preservation work for national roads in addition to sub-national roads, if necessary. Chart 2.26 shows budget flow and role of 'Board' in the transition stage 2.

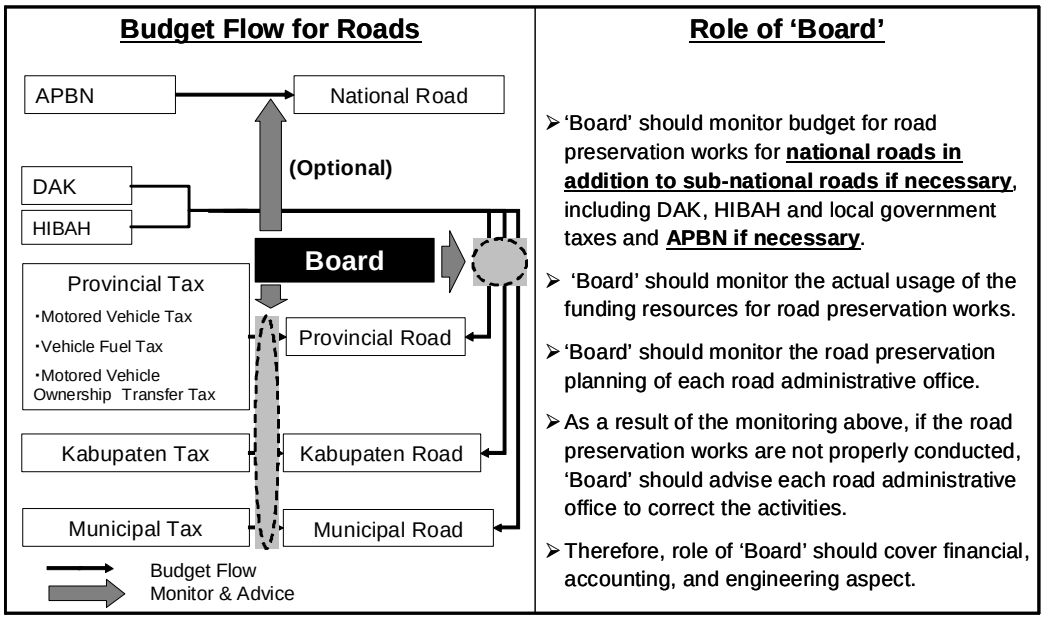


Chart 2.26 Implementation of 'Board' (transition stage 2)

(2) Permanent stage

'Road Preservation Fund' (RPF) is newly introduced in the permanent stage. RPF should be functioned as a wallet of funding resources which is independently secured of the national budget. Through the use of RPF, the road preservation works could be conducted efficiently, effectively, flexibly, continuingly, and appropriately.

RPF should be applied together with some incentives and responsibilities of the road administrators. In Indonesia, for example, it should be studied to introduce such system that RPF would be only provided if the road administrators increase the distribution of APBN or APBD to road preservations at more than a certain level.

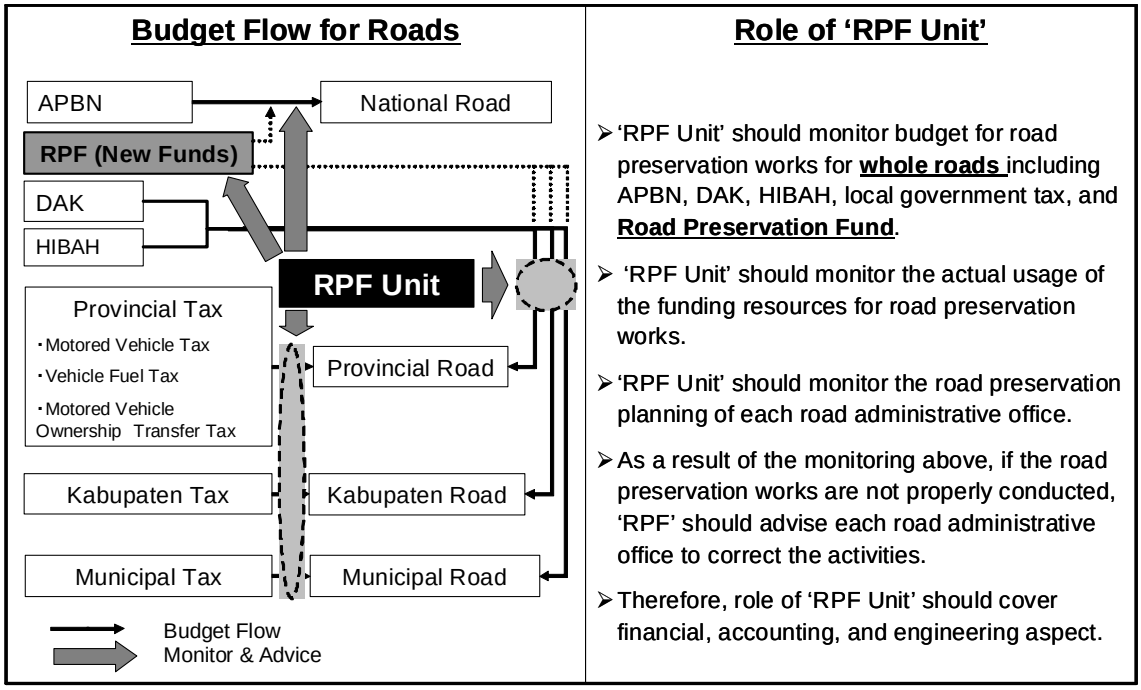


Chart 2.27 Implementation of 'Board' (permanent stage)

2.3.2 Structure of 'Board' and 'RPF Unit'

Chart 2.28 shows the structure of 'Board' or 'RPF Unit' in the transition stage and permanent stage respectively.

In the transition stage 1, 'Board' should monitor the activities of road preservation works for sub-national roads at a selected province including preservation planning and execution, and proper use of the existing funding resources. In the transition stage 2, if necessary, the coverage of monitoring by 'Board' should be extended to national roads optionally. In the permanent stage, 'Board' should be organized as 'RPF Unit', which will monitor use and allocation of the newly implemented RPF at central level. Since whole roads in Indonesia should be managed under the RPF, 'Board' for each 33 province should also be set up at SKPD level under the control of 'RPF Unit'.

As for the organization of 'Board' or 'RPF Unit', it is recommended that the members should be odd numbers which include secretariat and experts of finance, budgeting, road preservations coming from BINA MARGA, MOT, MOF, Academia, and etc.

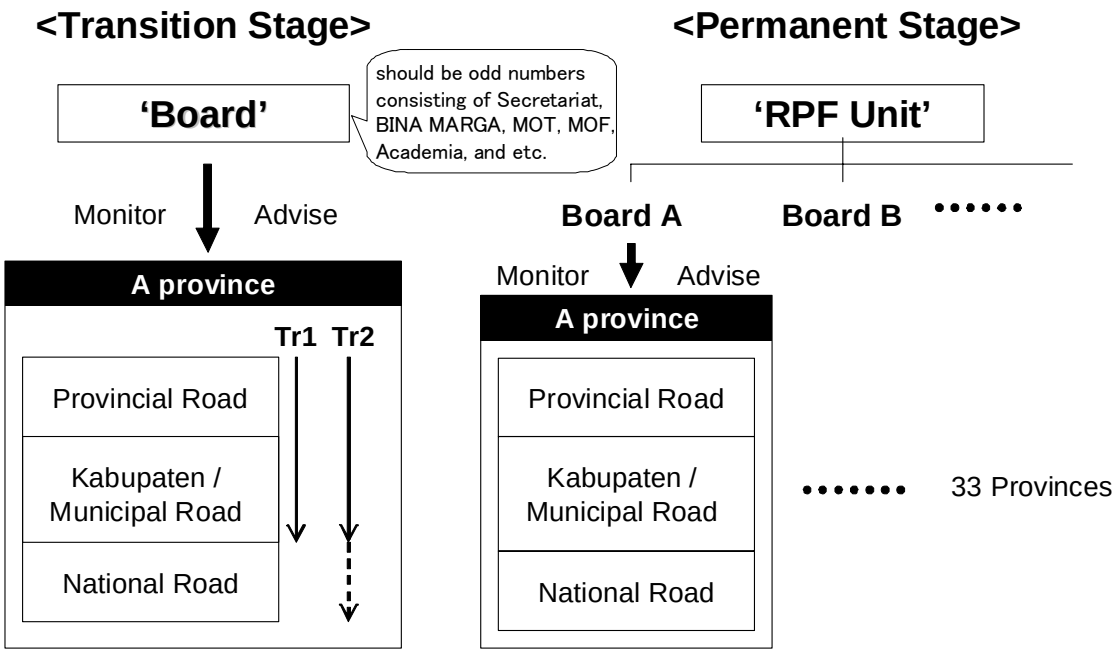


Chart 2.28 Structure of Board and RPF Unit

2.3.3 PDCA cycle and RPF Unit

As a result, overall role of the 'Board', or 'RPF Unit' is described in the following diagram with PDCA cycle for road preservation work. The 'Board' or 'RPF Unit' will take monitoring and advice to various activities such as appropriate budget allocation and distribution, relevant preservation work planning, and etc. Also, the 'RPF Unit' in the permanent stage will provide incentive measures of RPF distribution or flexible use of RPF to road administrators.

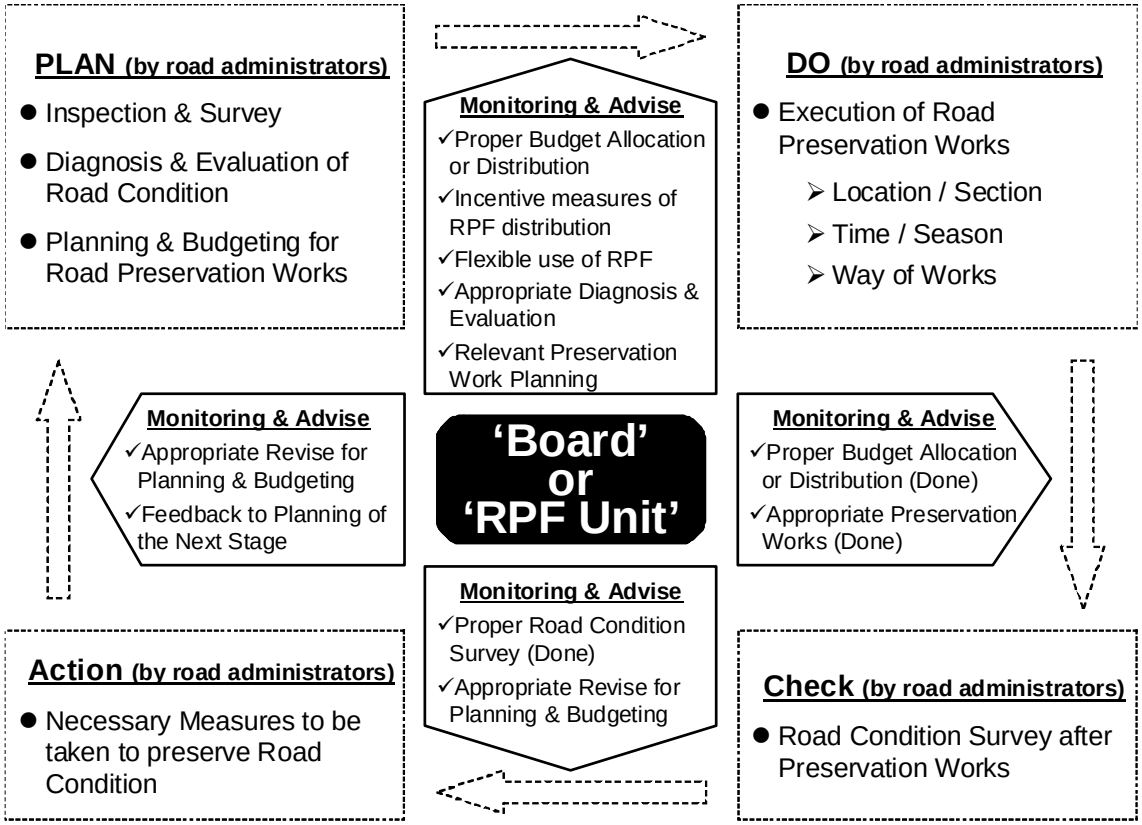


Chart 2.29 PDCA cycle and RPF Unit

2.3.4 Securing revenues and management mechanisms

(1) New tax possibilities

The following new taxes associated to cars have possibilities of becoming revenues for road preservation and development of local government.

Table 2.14 Possible new taxes for the future road preservation and development

New taxes	Expense items	Remarks column
Local tax (Province tax)	Tax on motor cars	The new local tax act (2009 decree number 28) prescribes to make 10% of tax on motor cars revenue for road construction or preservation and improving public transport systems.
	Tax on changing the ownership of motor cars	－
	Fuel tax	－
Local tax （Prefecture and city tax）	Parking tax	－
	Street lamp tax	The new local tax (2009 Decree 28) prescribes to use resource to set street lamps.
Local Commission tax	Public Service commission （driving license commission）	Amount is small compared to other expense items.
	Project service commission (Park only commission）	
	Specific permission commission （travel permission commission）	
Subsidy	Non-tax revenue from natural resources	Petroleum mining industry: 15.5% of the whole revenue to local Natural gas mining industry: 30.5% of the whole revenue to local
National tax	Luxury tax (heavy vehicle）	－

Since Local tax, Local Commission tax, and National tax relate to cars, it seems easy to secure as revenue for local governments to conduct road preservation works. In order to secure the resources, the following obligation is thought to be a good reference. According to this, local government owes obligation to contribute through the provision of matching fund, and has responsibilities to report the effectiveness of DAK distributed to road preservation works.

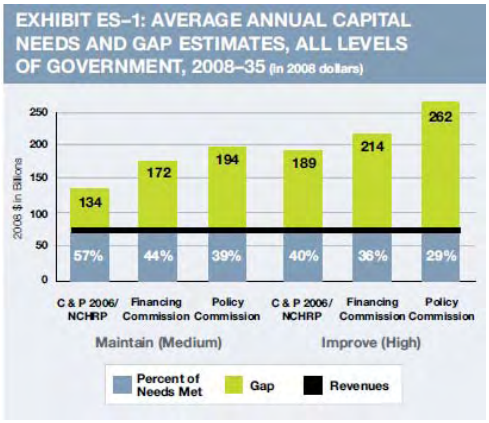
（GOVERNMENT OF REPUBLIC INDONESIA DECREE NO. 55 YEAR 2005 REGARDING BALANCE / EQUALIZATION FUND）

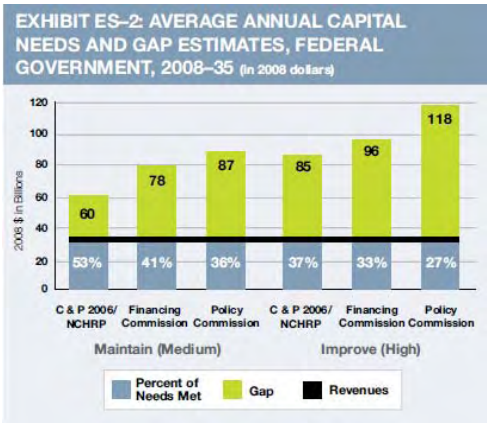
“The DAK recipient region is obliged to budget matching funds in the Local Budget / APBD at least 10 % (ten percent) from amount of DAK allocation it received”

(2) New funds for RPF

Considering the new funding resources for road preservation works, it is helpful to reference the study result of the United States. Chart 2.5 shows how is the gap between the required level and the predicted one with regard to the preservation costs of National roads in the United States, which was estimated by several institutions in the US.

Freight-Related Charges、Tolling and Mileage-Based User Fees would be one of the possible candidates of the new fund resources in Indonesia. In order to implement this, detailed study should be conducted to clarify the volume of funding resources which will be obtained from the ways, and to collect the related data to calculate the volumes.





Paying by the Gallon : Motor Fuel Taxes	
<Strength> ✓ Short-term and Medium-term Revenue Potential ✓ Historical Basis for Tax ✓ Flexible Use of Funds ✓ Administrative Costs/Ease ✓ Ability to Charge for Negative Environmental Impacts ✓ Particularly Carbon Dioxide Emissions ✓ User Pay/Benefit Correlation	**<Weakness>** ✓Unsustainable in the Long Term ✓Declining Public/Political Support for Increases ✓Weak Promotion of Efficient Use and Investment ✓Charging for Negative System Impact ✓Regressive Taxation ✓Compliance Considerations
Paying for the Ton : Freight-Related Charges	
Customs Duties and Fees, Freight Waybill Tax, Weight-Distance Tax, Container Tax, Harbor Maintenance Tax	
Paying by the Mile : Tolling and Mileage-Based User Fees	
<Strength> ✓ Sending Accurate Market Signals to System Users ✓ Shifting some vehicle trips from peak to off-peak periods ✓ Reducing total vehicle trips and trip distances ✓ Increasing mode shift ✓ Improving reliability ✓ Reducing commercial services travel time ✓ Impacts on System Investment ✓ Environmental Benefits ✓ Benefits for Transit,	**<Weakness>** ✓Public and Political Opposition to Tolling and Pricing ✓Challenges to Setting Efficient Tolls and Road Prices ✓Mobility Impacts ✓Balkanization of National Network ✓Route Diversion ✓Adverse Freight Industry Impacts ✓Social Equity Concerns ✓Rural Equity Concerns ✓Double Taxation Arguments ✓Tolling and Pricing Deployment and Administration Costs ✓Privacy Concerns ✓Scaling the Technology

Resource: "Paying Our Way – A new Framework for Transportation Finance" (The National Surface Transportation Infrastructure Financing Commission, 26 February, 2009)

Chart 2.30 The US study for new funds of road preservations

2.4 Recommendations on institutional issues

Introduction of RPF should be divided into two stages; the transition stage and the permanent stage. In the transition stage, BINA MARGA should concentrate on its suitability for Presidential Decree which will be revised after a short time; and therefore, they should consider the introduction of RPF step by step under the current funding resources and organizations.

In the transition stage, BINA MARGA should set up an independent 'Board' in order to monitor and grasp the current budget allocation and its actual use for road preservation work as described earlier. BINA MARGA is able to clarify issues and challenges to be solved for the introduction of RPF in the permanent stage, and the transition stage is a preparation period for the implementation of RPF in the permanent stage. Therefore, BINA MARGA should provide the 'Board' with a manual to check the proper use of road fund during the transition stage.

Once RPF is introduced in the permanent stage, RPF should be functioned as a wallet of funding resources which is independent of the national budget so that the Indonesian government might conduct the road preservation works efficiently, effectively, flexibly, continuingly, and appropriately under its severe circumstances of facing frequent natural disaster.

In Japan, the government conduct road preservation works according to the systematic budgeting process, and in case of budget shortage, they sometimes utilize the next year's budget as necessary. The Indonesian government does not have to adopt such system, once RPF is introduced in the permanent stage. RPF could solve the problems of inefficient preservation work which are normally conducted in a rainy season in Indonesia.

Also, RPF should be applied together with some incentives and responsibilities of the road administrators. In Japan, the central government has a system to provide subsidies for local government who has prepared the future preservation planning of bridges. In Indonesia, for example, it should be studied to introduce such system that RPF would be only provided if the road administrators increase the distribution of APBN or APBD to road preservations at more than a certain level.

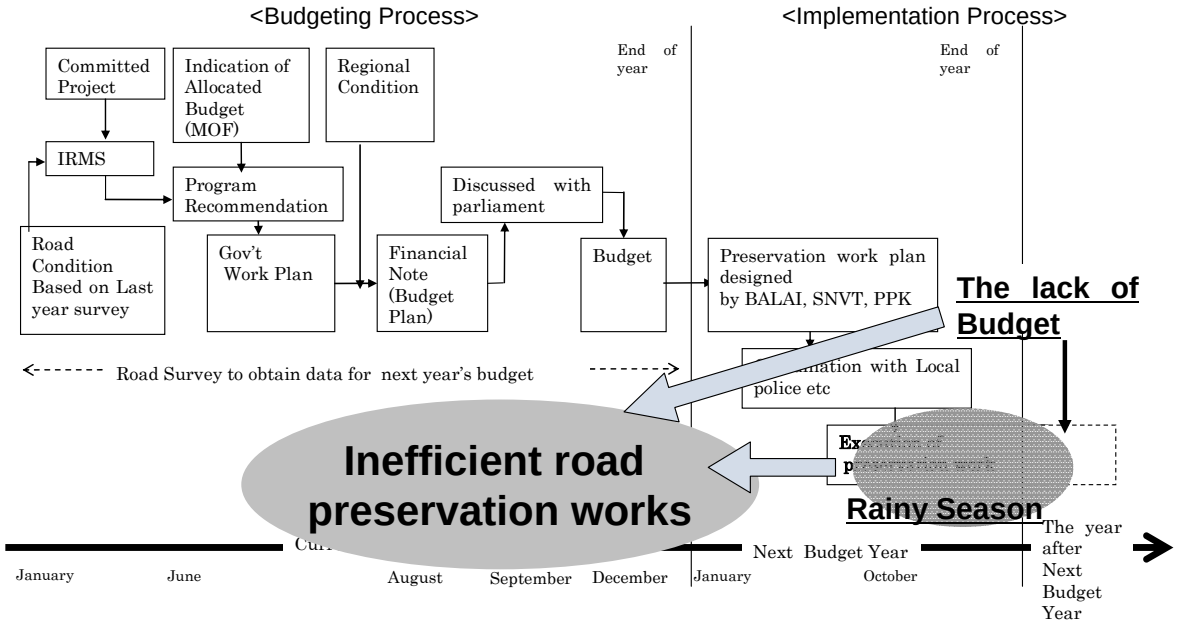


Chart 2.31 Issue of road preservation work in the budgeting and implementation process before introducing RPF

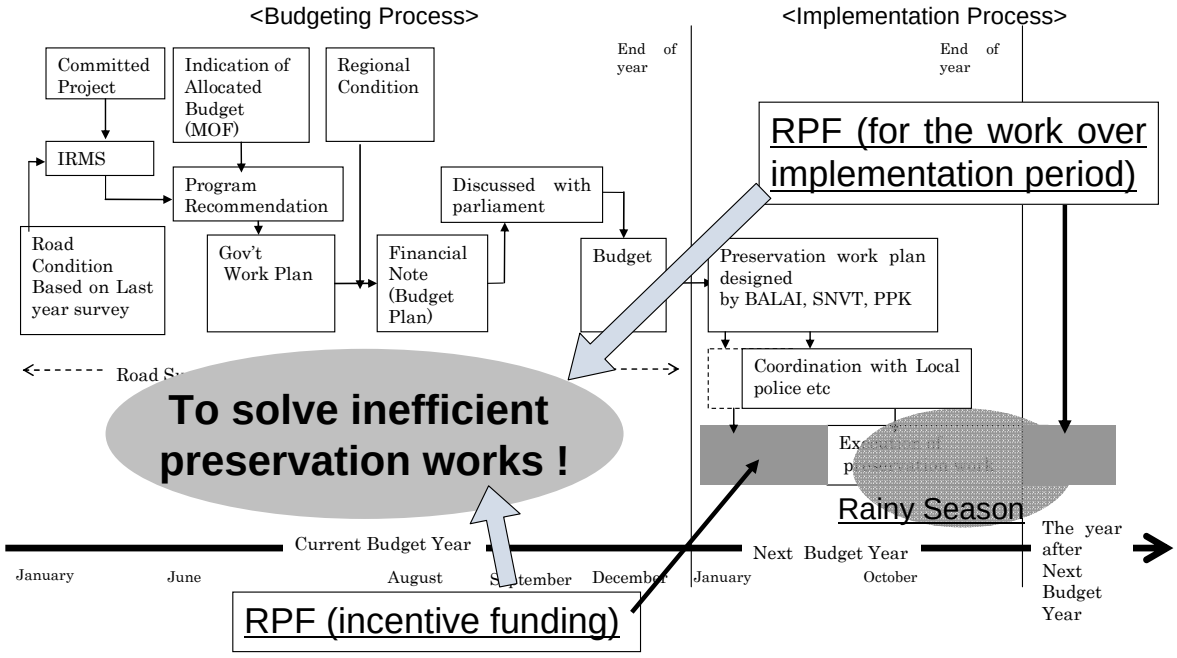


Chart 2.32 Improvement of road preservation work in the budgeting and implementation process after introducing RPF

Reference 2-1: Related issues of DAK and HIBAH

In Year 2010, direction of DAK’s general policy

1. Prioritized to support regions whose financial capability are relatively low, in framework of SPM attainment for community, through provision of physical means and infrastructure of people’s basic service
2. To support priority of acceleration of welfare improvement for poor society, as well as institutional structuring and implementation of social protection, especially in framework of extend the access of basic services for poor community
3. To support priority of human resource quality improvement, especially … improvement of health service quality, reduction of mother and child mortality rate, improvement of nutrition…. , control of disease , improvement of service guarantee for poor population, remote, border, and islands area, stabilization of family planning revitalization, and equitable compulsory nine year basic education
4. To support priority of stabilizing bureaucracy and legal reform , stabilizing the democracy and national security, especially in framework of local government and public service quality empowerment
5. to support priority of domestic competitive economy empowerment ……supported by development of agriculture and energy infrastructure … in frame work of price stabilization and secure the staple good supply, improvement of food sufficiency, revitalization of agriculture, fishery and forestry ….. infrastructure support for improvement of real sector competitiveness
6. To support improvement of natural resource and environmental management, especially … improvement of water resource management , … rehabilitation and preservation of natural resource, and improvement of spatial structuring and land management

Source: Pelengkap Buku Pegangan 2010, KEMENTERIAN Keuan gan Rep ublik Indonesia

DAK associated articles in GOVERNMENT OF REPUBLIC INDONESIA DECREE NO. 55 YEAR 2005 REGARDING BALANCE / EQUALIZATION FUND

Chapter	Part	Article No.	Article
General Stipulation		1	24. Special allocation fund hereinafter called **DAK, fund having its source from Province's budget revenue that allocated to certain region with the goals to help finance the special activity which constitute regional affair in accordance with national priority**
SPECIAL ALLOCATION FUND / DAK	General	50	(1)The amount of DAK is determined each year in **Province's Budget / APBN** (2)The DAK as meant in art. (1) is **allocated in APBN according to program which become national priority**
		51	(1)The DAK is allocated to certain region to finance special activities which constitute part of program with national priority as meant in art.50 vers(2) which is become the region's affair (2)The certain region as meant in vers (1) is area that can obtain DAK **allocation based on general criteria, special criteria and technical criteria**
	Mechanism of DAK's Allocation	52	(1)The program that become national priority as meant in art.50 vers.(2) and art.51 vers.(1) is contained in Government's Work Program in current budget year (2)**Technical minister propose the special activity that will be financed from DAK and is determined after coordination with Minister of Internal Affair, Minister of Finance, and Province Minister of National Development Planning**. (3)Technical minister submit the determination regarding special activity as meant in vers.(2) to Minister of Finance
		53	After receiving proposal of special activity as meant in art.52 vers.(3) the Ministery of Finance make calculation of DAK's allocation
		54	(1)Calculation of DAK's allocation as meant in as 53 is made through 2 (two) stages, namely: a. **Determination of certain region that receive DAK;** b. **Determination of DAK's allocation amount of each region** (2)Determination of certain area as meant in vers.(1) should fulfill **general criteria, special criteria, and technical criteria** (3)Amount of DAK's allocation of each region ……. is determined with index calculation …..

Chapter	Part	Article No.	Article
		59	(1)Based on determination of DAK's allocation as meant in art.58, **the technical minister compose Technical Guideline of DAK utilization**. (2)Technical guideline of DAK's utilization is coordinated by Ministery of Internal Affair.
	Part III Regional Budgeting	60	(1)**The DAK recipient region must provide allocation and usage of DAK in the local budget** (2)The usage of DAK is made according to Technical guideline of DAK usage (3)**DAK cannot be used for financing the activity administration, preparation of physical activity, research, training, and official travel**
		61	(1)**The DAK recipient region is obliged to budget matching funds in the Local Budget / APBD at least 10 % (ten percent) from amount of DAK allocation it received** (2)Matching fund as meant in vers.(1) is used to finance the activity with physical characteristic (3)The region with certain financial capability is not obliged to budget matching funds
	Part V Reporting	63	(1)**The head of region submit the quarterly report which contain report of the activity and DAK usage implementation to** **a. Minister of finance** **b. Technical minister** **c. Internal affair minister**
	Part VI Monitoring and Evaluation	64	(1)The minister of National Development Planning together with the Technical Minister carry out monitoring and evaluation to the utilization and technical implementation of activity funded from DAK (2)**Ministery of finance carry out the monitoring and evaluation of DAK's financial management**

Associated articles of road preservation in Minister of public works Decree 42(Regarding Technical Guideline The Usage of Special Allocation Fund Infrastructure Sector)

Article No.	Heading	Item	Article
1	Definition	Infrastructure Sector / Field	6. Infrastructure Sector / Field includes **road sub-sector** , irrigation sub-sector and Drinking water and sanitation sub-sector
		Fund/Goal	7. Special Allocation Fund of Infrastructure Sector hereinafter called DAK of Infrastructure Field is **fund having its source from Province's Budget / APBN** allocated to certain region with **goals to help finance special activity which are the region's affair and in accordance with national priority especially to finance means and infrastructure needs which do not attain the certain standard or to encourage acceleration of regional development**
		Responsibility	8. Regional apparatus Working Unit of Special Allocation Fund of Infrastructure sector hereinafter called **SKPD DAK is organization / institution in Regional Government responsible to the governor / bupati / mayor who managed the activity financed by Special Allocation Fund of Infrastructure Sector**
2	Intend goals and scope	Intend	(1.)This ministerial decree is intended as guideline for Department, Provincial Government, and Kabupaten / municipal government in **utilization, operation, monitoring and coaching-counseling from technical aspect to the activity financed through DAK of Infrastructure Sector**
3	Planning and programming	National priority	The national priority include : a. Road sub sector **improving integration of road network function, to improve access to the potential region, opening isolated and remote area, and supporting development of border area**
		Activity Plan	The composition of Activity Plan should address **stage of program composition, filtering, and determination of activity's location that will handle, composition of financing, as well as implementation method which is guided by standard, arrangement, and current regulation**

Article No.	Heading	Item	Article
4	Technical Criteria	Consist	(1.)Technical criteria of Infrastructure sector consist of a. **Technical criteria for road infrastructure** b. Technical criteria for irrigation ….. c. Technical criteria for drinking water and sanitation
		Road Infrastructure	(2.)Technical criteria for road infrastructure Consider : **A. Provincial road** **a. Length of Provincial road (km);** **b. Length of unstable provincial road** **c. Performance of provincial road (in road roughness value)** **d. Reporting performance of Provincial road sub-sector's DAK** **e. Index of Construction Expensiveness** **B. Kabupaten / municipal road** **f. Length of kabupaten / municipal road (km);** **g. Length of unstable kabupaten / municipal road** **h. Performance of kabupaten / municipal road (in road additional stability value)** **i. Reporting performance of kabupaten / municipal road sub-sector's DAK** **j. Index of Construction Expense**
9	Implementation and Scope of Activity	Authority of The Government	(2)Infrastructure sector's DAK is directed to finance physical needs of basic means and infrastructure which become region's authority but constitute national Infrastructure sector's priority program, include: a. **The road infrastructure is prioritized for rehabilitation, periodical maintenance and improvement of road and bridge infrastructure activity.** Provincial and kabupaten / municipal road segment which can be financed by DAK are segments as determined with Governor / Bupati / Mayor regarding determination of road segments as provincial road and kabupaten / municipal road

Associated articles of road preservation in attachment of Minister of public works Decree 42(SUBSECTOR OF ROAD TECHNICAL GUIDELINE)

Article No.	Heading	Item	Article
I.	Introduction	1.Background	Stages of provincial road and kabupaten / municipal road handling in utilization of DAK comprise of : **•Programming and budgeting activity consist of :** **1.Composition of Road segment list** **2.Composition of Priority road segment list ;** **3.Composition of program handling** **4.Composition Activity plan** **•Road's technical plan** **•Implementation of construction** **•Monitoring and evaluation of implementation, reporting** **•Performance evaluation**
II.	Planning and programming	II.2.3 Determination of handling program	**Program / road handling activity is determined by level of road damage** Classification of program / handling activity are : **•Routine maintenance** **•Periodical maintenance** **•Road Rehabilitation** **•Road Improvement**

Article No.	Heading	Item	Article
III.	Technical Plan and Construction Implementation	III.3.2 Road preservation activity	Road preservation work is guided by Standard and guideline published by Department of Public Works. Based on this guide, preservation work consists of routine maintenance and periodical maintenance. **1. Road's Routine Maintenance** Constitute small / light work and general year-round activity of road's routine maintenance, including the working type of : a. Filling the hole in road pavement and resurfacing the small cracks **2.Periodical maintenance of road** Constitute repair work and forming / re-coating of road surface needed to keep the road surface in good condition Periodical maintenance activity , including the working type of : a. in effective length : •Repair of pavement surface •Formation / re coating of pavement surface b. in functional length, the work type is similar with routine maintenance activity **3.Rehabilitation** Is the handling activity toward every type of damage not calculated in the design, the type of work is suited with the damage condition happened

CRITERIA FOR PROVISION OF GRANTS

Grants criteria were classified by source of grants, namely:

1) The grant comes from the state budget (APBN) revenue granted to local governments with the following criteria:

- ✓ For the implementation of the activities of local government affairs such activities to increase the function of government, basic public services, and empowerment of local government officials;
- ✓ For certain activities relating to the implementation of Central Government's activities in national / international scale by Local Government.
- ✓ Other activities as a result of central government policy which result in additional load on the regional budget (APBD).
- ✓ Certain activities that are specifically regulated in laws and regulations.

2) Grant that sourced from foreign loans, given to the government areas with the following criteria:

- ✓ To carry out activities in local government affairs in order to achieve the program objectives and national development priorities in accordance with national laws and regulations;
- ✓ Priority for local governments with low fiscal capacity based on the fiscal capacity of the map established by the Minister of Finance.

3) The grant that comes from foreign grants, given to local governments with the following criteria:

- ✓ To carry out activities that belong to the local government affairs, namely increasing function of government, basic public services, and empowerment local government officials;
- ✓ Activities in order to support the preservation of natural resources, environment and culture;
- ✓ Activities in order to support research and technology;
- ✓ Activity in the framework of humanitarian assistance.

Reference 2-2 : Related laws on road management in Indonesia

LAWS NO 38's road preservation related texts

Article No.	Heading	Item	Article
1	Definition	Road	4. Road is **land transportation infrastructure** consisting of **all part of road,** including **complementary building** and **accessories allotted for traffic**, **existing in the surface of the ground**, **above the ground**, **below the surface and / or water** , except the railway, lorry way and cable way.
		Road Management	Road Management is the activity including, **arrangement, coaching, development, and road monitoring**
		Road arrangement	Road arrangement is the activity of **formulation of planning policy, composition of general planning, and composition of regulatory law on road**
		Coaching	Coaching on road is activities of **guideline and technical standard composition, service, human resource empowerment, as well as road research and development;**
		Road development	Road development is activity of **programming and budgeting, technical planning, implementation of construction**, as well as **operating and preservation** of road
		Road monitoring	Road monitoring is activity conducted to **realize order of arrangement, coaching, and road development**
13	Public Road	Control	(1) **Control of road exist in state**
			(2) Control of road by state as meant in ….. **give authority to Government and local government to administerate road operation**
		Authority of The Government	(1) Authority of Government in road administration consists of **general road operation and national road operation**

Article No.	Heading	Item	Article
			(2) Authority of road administration ….. as meant in verse (1) consist of **regulation, coaching, developing and monitoring**
		Authority of Provincial Government	(1) Authority of provincial government in road administration consist of **provincial road operation**
			(2) Authority of road administration ….. as meant in verse (1) consist of **regulation, coaching, developing and monitoring**
			(3) In case the provincial government is incapable to carry out part its authority as meant in verse (1), **provincial government can give the authority to the (central) Government**
		Authority of Kabupaten / Municipal Government	(1) Authority of kabupaten government in road administration consists of **kabupaten road and village road administration**
			(2) Authority of municipal government in road administration consists of **municipal road administration**
			(3) Authority of road administration ….. as meant in verse (1) consists of **regulation, coaching, developing and monitoring**
			(4) In case the kabupaten / municipal government is incapable to carry out part its authority as meant in verse (1), **kabupaten / municipal government can give the authority to the Provincial Government**
			(5) Further stipulation regarding authority of **kabupaten road administration .... Is regulated in Government decree**
18	Public Road Arrangement	(1) Public road	(1) Public road arrangement in general as meant in …… consist of : **a. Formation of regulatory law ….** **b. Formulation of planning policy** **c. Macro control of road administration** **d. Determination of norm, standard, criteria and guideline of road arrangement**
		(2) National road	(2) National road arrangement as meant in ….. consist of : a. **Determination of road function** for artery and collector road connecting among capitals of provinces in primary road network system b. **Determination of national road status**; and c. **Composition of general planning of national road network**

Article No.	Heading	Item	Article
19		(3) Provincial road	Provincial road arrangement as meant in …… consist of a. **Formulation of provincial road arrangement policy** based on national road policy …. b. **Composition of operational guidelines of provincial road operation** ….. c. **Determination of road function** in secondary road network system and collector road …… d. **Determination of provincial road status**. e. **Composition of provincial road network planning**
20		kabupaten and village road	Arrangement of kabupaten and village road as meant in article 17 consists of : a. **Policy Formulation of kabupaten road and village road** administration ….. b. **Composition of operational guideline of kabupaten road and village road** Administration c. **Determination of kabupaten road and village road status**; and d. **Composition of planning of kabupaten road and village road network**
21		municipal road	Arrangement of municipal road as meant in article 17 consists of a. **Policy formulation of municipal road** administration based on …. b. **Composition of operational guideline of municipal road** c. **Determination of municipal road network planning**
22			Further stipulation considering road arrangement as meant in …….. are **regulated in government decree**
24	Coaching of Public Road	National road	Road coaching in general and national road as meant in verse 23 consists of : a. developing of guidance and counseling system as well as education and training in field of road; b. awarding of guidance, counseling c. … research and development of road technology d. …. Facilitate dispute settlement among provinces in road operation
25		Provincial Road	Coaching on Provincial Road as meant in article 23 consists of : a. Awarding of coaching, guidance as well as training and education for apparatus of provincial road management and kabupaten / kota road management; b. Assessment and research and development of technology in road sector for provincial road; and c. Awarding facility of dispute settlement among kabupaten / municipal in road management

Article No.	Heading	Item	Article
26		Kabupaten road and village road	Coaching on kabupaten road and village road as meant in article 23 consist of : a. Awarding of coaching, guidance as well as training and education for apparatus of kabupaten road management and village road management; b. Awarding of permit, recommendation, and consideration of usage of road benefit space, road own space , and road supervision c. Development of applied technology in road sector for kabupaten road and village road
27		municipal road	Coaching on municipal road as meant in article 23 consists of : a. awarding guidance, counseling, as well as education and training for apparatus of municipal road management b. awarding of permit, recommendation and consideration of usage of road benefit space, road own space , and road supervision c. Development of applied technology in road sector for municipal road
28			Further stipulation regarding road arrangement as meant in article 23 – 27 is **regulated in government decree**
30	Public Road Development	general	Road Development in general as meant in art. 29 is as follows: a. **Operation of public road** is conducted after it is stated to comply with function worthiness requirement technically and administratively b. **Road administrator is obliged to prioritize the periodical maintenance, care and road examination to keep the road service level according to the established minimum service standard** c. **Financing of public road development** is a responsibility of the Government and / or regional Government according to each authority d. In case that the regional government as a whole has not been able to finance road development with its responsibility, **the Government is possible to help according to the regulatory law** e. Part of the Government authority in field of national road development consisting of technical planning, construction implementation, operation, and maintenance can be carried out by regional government according to the regulatory law f. Creation of regulatory law, including the criteria, requirement, standard, procedure and manual; composition of national road general plan, and implementation of supervision is made by addressing the input from the society

Article No.	Heading	Item	Article
			(2) Further stipulation regarding **function worthiness requirement, procedure of periodeical maintenance, care and examination, and financing of public road development**, as well as input from the society as meant in ver (1) is **regulated in government's decree**.
31		National road	National road development as meant in art. 29 consists of : a. **technical planning, programming and budgeting, land procuring**, as well as implementation of **national road construction** ; b. **National road operating and preservation** ; and c. **Development and management of national road management system**
32		Provincial road	The development of provincial road as meant in art 29 consists of : a. **technical planning, programming and budgeting, land procuring**, as well as implementation of **provincial road construction** ; b. **Operating and preservation of provincial road**; and c. **Development and management the provincial road management system**
33		Kabupaten and village road	Kabupaten and village road development as meant in Art. 29 includes : a. **technical planning, programming and budgeting, land procuring**, as well as implementation of **kabupaten road and village construction** ; b. **Operating and preservation of kabupaten road and village road**; and c. **Development and managing of the kabupaen road and village road preservation management**
34		Municipal road	The development of municipal road as meant in art 29 consists of : a. **technical planning, programming and budgeting, land procuring**, as well as implementation of **municipal road construction** ; b. **Operating and preservation of municipal road**; and c. **Development and management of the municipal road preservation management**
35			Further stipulation regarding road development as meant in article 29, 30 …..and article 34 is regulated in **government's decree.**
37	Supervision	Public Road	(1) Road supervision in general as meant in art. 36 includes : a. **evaluation and assessment of implementation of road administration policy** b. **Control of function and benefit of road development results**; and c. Result of road administration must **fulfill the stablished minimum service standard**

Article No.	Heading	Item	Article
		National road	(2) National road supervision as meant in art. 36 includes ; a. **performance evaluation of national road administration** b. **control of function and benefit of results of national road development**
38		Provincial road	Provincial road supervision as meant in art. 36 consists of : a. **Performance evaluation** of provincial road operation b. **Control of function and benefit of results of provincial road development**
39		Kabupaten road and village road	Kabupaten road and village road supervision as meant in art. 36 consist of : a. **Performance evaluation** of kabupaten road and village road operation b. **Control of function and benefit of results** of kabupaten road and village road development
40		Municipal road	Municipal road supervision as meant in art. 36 consists of : a. **Performance evaluation** of municipal road operation b. **Control of function and benefit of results** of municipal road development
41			Further stipulation regarding road supervision as meant in art. 37,38,39,40 is **regulated in government's decree**

LAWS NO 22's road preservation related articles

Article No.	Heading	Item	Article
1	Definition	Road	12. Road is **all part of road**, including **complementary building** and its **accessories alloted for public traffic**, **residing at the surface of the ground**, **above the ground**, **below the ground and / or water surface**, as well as above the water surface, except railroad and cable road
		Road Preservation Fund	28. **Road Preservation Fund** is the **fund specifically used sustainably for road preservation, rehabilitation and reconstruction activity according to the established standards**
		Traffic engineering and management	29. Traffic engineering and management is a series of effort and activity including **planning, procuring, installation, arrangement, and preservation of road accessory facility** in framework of realizing, supporting and maintaining security, safety, order, and traffic smoothness
		Investigator	35. Investigator is an **officer of National Police of Republic** of Indonesia or certain Civil Servant officer assigned the special authority by laws to make investigation
		Assistant Investigator	36. Assistant Investigator is an officer of National Police of Republic of Indonesia who is able to make investigation duty regulated by this law
5	Development of Road Traffic and Road Transport		(3) Development of Road Traffic and Road Transport referred to ver (2) conducted by development institution in accordance with its basic task and function which consist of : a. **government affairs in road sector, conduct** by ministry which responsible in road sector; b. **government affairs in facility and infrastructure of Road Traffic and Road Transport**, conducted by ministry which responsible in facility and infrastructure of Road Traffic and Road Transport sector; c. **government affairs in technological development of Traffic and Transportation sector**, conducted by ministry which responsible in technological development; d. **government affairs in industrial development of Traffic and Transportation sector**, conducted by ministry which responsible in industrial sector; e. **government affairs in Registration and Identification of Vehicle and Driver, Law Enforcement, Operational Management and Traffic Engineering, and education in traffic**, conducted by **Indonesian State Police**.
6	Coaching of Road	Government	(1) Coaching of Road Traffic and Road Transport conducted by government institution referred to Art. 5 ver. (3) consists of:

Article No.	Heading	Item	Article
	Traffic and Road Transport		a. **stipulate the aim and policy direction of National Traffic and Road Transport system**; b. **stipulate the norm, standard, manual, criteria and implementation procedure of Road Traffic and Road Transport** nationally c. **stipulate competent officer** carrying out the task in Road Traffic and Road Transport nationally; d. **giving guidance, training, certification, granting permission and technical assistance to provincial government and municipal/town government**; and e. **supervising regarding norm implementation, standard, manual, criteria and procedure conducted by Regional Government**.
			(2) In conducting the coaching referred to ver (1), the Government could **hand over part of the affairs to provincial government and/or municipal/town government**.
		Provincial Government	(3) Provincial Government affairs in conducting **Road traffic and Road Transport construction** consists of: a. **stipulate the aim and policy direction of provincial and municipal/town of Road Traffic and Road Transport system**, network of which exceeds the boundary of municipal/town area; b. **giving guidance, training, certification, granting permission to public transport companies in province** c. **supervising the realization of Road Traffic and Road transport in province**.
		Municipal/town government	(4) Municipal/town government affairs in conduct the **construction of Road Traffic and Road Transport** consist of: a. **stipulate the aim and policy direction of municipal/town of Road Traffic and Road Transport system**, network of which is in the boundary of municipal/town area; b. **giving guidance, training, certification, granting permission to public transport companies in municipal/town** c. **supervising the realization of Road Traffic and Road transport in municipal/town**.
8	Operation in road sector		Operation in road sector consists of **road infrastructure arrangement, developing, construction, and supervision activity** as meant in art. 7 ver (2), namely: a. **Checking of service level of the road and its problems** b. **Composing the plan and program for its implementation** as well as **determining the desired service level of the road** ; c. **Planning, construction , and optimizing the utilization of road segment**

Article No.	Heading	Item	Article
			d. **Improvement of road segment geometrics and / or cross road**; e. **Determination of road class on each road segment**; f. **Worthiness test of road function** according to security and safety standard on traffic activity g. **Developing information and communication system** in road infrastructure sector
20	Arrangement of road class		(1) Arrangement of road class on each road segment is made by a. **The (central) Government, for national road** b. **Provincial government, for provincial road** ; c. **Kabupaten Government , for kabupaten road** ; d. **Municipal government, for municipal road**
			(3) **Further stipulation considering road grouping as meant in art. 19 and procedure of establishing road class** as meant in vers.(1) and (2) is **regulated by government decree**
22	road function worthiness		(1) Operated road has to **fulfill the road function worthiness technically and administratively** (2) Road operator must conduct road function worthiness examination before road is operated (3) Road operator must conduct **road function worthiness examination in longest period of 10 year as needed** (4) Road function worthiness examination …. is conducted by **team of Road function worthiness examiner formed by road operator** (5) Road function worthiness examiner ….. consists of **the element of road operator, institution responsible for means and infrastructure of road traffic and transportation, as well as National Police of Indonesia** (6) **Results of Road function worthiness examination must be published and followed up** by road operator, institution responsible for means and infrastructure of road traffic and transportation, as well as National Police of Indonesia
23	Road operator		(2) **Road operator in carrying out the road preservation and / or improving the road capacity** is obliged to **maintain the security, safety, orderly and smoothness of Road traffic and transportation**
			(2) The road operator in conducting the activity as meant in art.(1) makes **coordination with institution responsible for means and infrastructure of road traffic and transportation, as well as National Police of Indonesia**
24	repair		(1) ~~**The road operator is obliged and ought to immediately repair damaged road** which can cause~~

Article No.	Heading	Item	Article
	damaged road		road accident.
			(2) In the case that the road repair has not been able to carry out as meant in vers (1), the operator is obliged to give the road sign in the damaged road to avoid road accident
26			(1) Provision of Road equipment as meant in art.25 vers(1), is made by **a. The (central) Government for National road;** **b. Provincial Government for provincial road** **c. Kabupaten / municipal government for kabupaten / municipal road and village road** **d. Toll road company for toll road**
29	Road Preservation Fund		(1) To support the secure, safe, orderly and smooth service of Road Traffic and Transportation, **the road condition must be maintained**.
			(2) To maintain road conditions as referred to in verse (1), **Road Preservation Fund is needed**.
			(3) Road Preservation Fund is **used exclusively for road preservation, rehabilitation, and reconstruction activities**.
			(4) Road Preservation Fund may be **sourced / coming from Road Users** and its **management is in accordance with the provisions of legislation / laws**
30			The Management of Road Preservation Fund should be conducted based on **the principle of sustainability, accountability, transparency, balance, and suitability**
31			Road Preservation Fund is managed of by **Road Preservation Fund management unit responsible to the Minister in charge of Road**.
32			Provisions / Stipulation concerning the organization and working procedure of Road Preservation Fund management unit is **regulated by Presidential Decree / Regulation (Peraturan Presiden.)**

PP NO 34's road preservation related articles

Article No.	Heading	Item	Article
			Consider : that to implement the stipulation of article 6, article 7, article 8 …….and article 62 of **Law no 38 Year 2004** regarding Road it is necessary to determine the Government Regulation / Decree regarding Road
1	Definition	Road Administration	5. Road Administration is activity which include **arrangement, developing, development, and road supervision**
		Road arrangement	6. Road arrangement is the activity of **planning policy formulation, composition of general plan, and composing of regulatory law on road**
		Road coaching / developing	7. Road coaching / developing is activity of **guideline and technical standard composition, servicing, human resource empowerment**, as well as **road research and development**
		Road development	8. Road development is activity of **programming and budgeting, technical planning, execution of construction**, as well as **road operation and preservation**
		Road supervision	9. Road supervision is activity conducted to **realize orderly road arrangement, coaching / developing, and development**
57	authority of road management		(1) The authority of road management are by The (central) Government and The Regional Government
		Government	(2) The authority of road administration / operation by the Government …. include **road management in general and national road management**
		regional government	(3) Road management by regional government as meant in vers(1) includes **management of provincial road, kabupaten / municipal road and village road**
		general	(4) Road management in general as meant in vers(2) includes, **arrangement, counseling-guidance, development, and general supervision according to national policy**
			(5) Road management in general as meant in vers. (4) includes **national road, provincial road, kabupaten road, municipal road, and village road**
59	Devolution of Authority and Assignment		(1) **Part of the Government authority in national road development** includes **technical planning, implementation of construction**, as well as **operating and preservation** **can be done by provincial government**
			(2) **Technical planning** as meant in vers.(1) can be **transferred to the governor** as the Government's representative in the region in framework of decentralization

Article No.	Heading	Item	Article
			(3) **Implementation of construction** as well as **operation and preservation** as meant in ver.(1) **can be done by regional government** through duty assignment
			(4) Execution of authority in framework of decentralization as meant in vers(2) and duty assignment as meant in vers.(3) is made according to **regulatory law**
62	Establishment of Road Status		(1) Establishment of a road segment's status **as national road** is **periodically made by ministerial decree** addressing road function established as meant in art.61 vers.(1)
			(2) Establishment of a road segment's status as **provincial road** is made with **The Governor's Decree**, addressing ministerial decree as meant in vers.(1) and the established road function as meant in art.61 vers.(2)
			(3) Establishment of a road segment's status as **kabupaten road** is made with **The bupati's Decree**
			(4) Establishment of a road segment's status as **municipal road** is made with **The mayor's Decree**
			(5) Establishment of a road segment's status **as village road** is made with **The bupati's Decree**
			(6) Establishment of road segments according its status as meant in vers.(2), (3), (4) and (5) is made **periodically addressing the guideline established by the minister**.
84	Programming and Budgeting		(1) Programming of road network handling consists of activity plan to handle road segment which are the responsibility of road operator according to its authority
			(2) Programming of road network handling .. includes determination of performance level planned to achieve as well as estimation of needed cost
			(3) Program of road network handling consists of **road preservation program, road improvement program, and program of new road construction**
			(4) **Program of road network handling … is composed by the road operator** referring to road network middle term plan addressing guideline established by the minister according to the regulatory law
85	Government help		(2) In case the regional government has not been able to finance the road development for which it is responsible as a whole, the **Government can help according to regulatory law**
			(3) Further stipulation regarding procedure and requirement of funding assistance to the region ….. is **regulated in Ministerial Decree.**
97	road preservation		(1) The **road operator is obliged to and responsible for road preservation according to its authority**
			(2) Road preservation as meant in vers.(1) constitute **the highest priority of all type of road handling**

Article No.	Heading	Item	Article
			(3) Road preservation as meant in vers(1) include **routine maintenance, periodical maintenance, and rehabilitation**
			(4) Road preservation as meant in vers.(1) is **made based on road preservation plan.**
101			(1) The **public road preservation can be done by person or institution as long as no harm to the public interest** (2) The **Preservation / maintenance of public road** as meant in vers.(1) **can be in form of provision of financing and execution of construction** done by person or institution, or **execution of construction by road operator financed** by pertinent person or institution (3) Further stipulation concerning procedure of public road preservation as meant in vers.(2) is regulated by **ministerial decree**

PP NO 34's road preservation related articles (an explanation)

Article No.	Heading	Item	Article
			Confirmation about right and obligation of government and community pointed that the **government authority in road implementation / operation can be transfer / given to the agencies in region or be transferred to business entity or individual. Revolution** and / or transfer of authority of the road implementation does **not release the government responsibility on road implementation**
Article 84 Verse (3)			Road preservation **includes routine maintenance, periodical maintenance, and rehabilitation**
	Routine road maintenance		Routine road maintenance constituts activity of maintenance as well as repairing the damages happened in road segments with stable condition. **Road with stable service condition is road segments with calculable planned age and following certain standard**
	Periodical road maintenance		Periodical road maintenance constitute activity to **handle every damage which is calculated in design** so the reduction of road condition can be returned into the stable condition according to the plan.
	Road rehabilitation		Road rehabilitation constitute activity to **handle every damage which is not calculated in the design**, having consequences of diminished stable condition in the certain part / location from the road segment with lightly damage condition, in order the diminished stable condition can be returned into the stable condition according to the plan
	Road improvement		Road improvement consist of **structural improvement and capacity improvement**
	Structural improvement		Structural improvement constitute handling activity in order to **improve capability or road segments in unstable or critical condition** in order that the road segments have the stable service condition according to planned age established
	Capacity improvement		Capacity improvement constitute road handling with **widening the pavement**, whether **adding the lane** or not
	New road construction		New road construction constitute road **handling from unavailable road pavement condition to functioned road condition**
85	v1	Fun Allocation	Fun Allocation in concerned comes from **road implementation fund** according to its authority

Article No.	Heading	Item	Article
	v2	Financial support	The **regional government is stated as haven't been able to finance the road development** if it has made the good road preservation and improvement with fund at **least 20% from total regional budget**, **but the road condition has not fulfilled the criteria of established standard of minimum service**
			The determination of road segment aided by the Government is based on **road segment priority and financing capability of The Government after get the approval from the minister**
97	v2	The highest priority	The highest priority includes the **fulfillment of preservation financing sufficiency**
	v4	Road preservation plan	Road preservation plan consists of **information system, asset management system**, and **road preservation handling plan**

Reference 2-3 : Related laws on road preservation in Japan

<Road Act No. 180 of 1952>[2]

The first section: Road administrator

(Construction or renovation of the highway)

Article12 The Minister of Land, Infrastructure, Transport and Tourism implements the construction or renovation of the highway. However, if the scale of construction is small or ordinance prescribes special reasons for prefectural and city governments to conduct construction, such part of the construction shall be carried out by prefectural and city governments.

(Road Preservation, repair and other administration)

Article13 In addition to those prescribed in the preceding article, the road preservation, the road repairing, recovering damage from natural disasters(Article 2 Paragraph 2 of Act on National Treasury's Sharing of Expenses for Project to Recover Public Civil Engineering Works Damaged by Disaster, (No. 79 of the Act in 1988)) within the designated section is conducted by the minister of Land, Infrastructure, Transport and Tourism, and the area outside the designated section is conducted by the prefectural and city governments.

2 Minister of Land, Infrastructure, Transport and Tourism, under prescribed in ordinances, can conduct management other than maintain road, repairing road and recovering from natural disaster within the designated section.

3 Minister of Land, Infrastructure, Transport and Tourism, if highly skill is required for construction and is reasonable to implement so, can do work relating to recovering from natural disasters outside the designated section on behalf of the prefectural and city governments. In such occasion, the minister must notify as so beforehand.

4 *snip*

Chapter 4: Road costs, revenues and public burden

(Principles of management of the road costs)

Article49 Cost of management of road shall be, except in the case of Act on National Treasury's Sharing of Expenses for Project to Recover Public Civil Engineering Works Damaged by Disaster and other Act which has special prescription for this, burdened by administrator of the road.

(Administrative costs of the road)

Article 50 The cost to construct new highway or reconstruct will be shared by the government and the prefecture. If Minister of Land, Infrastructure, Transport and Tourism conducts the work,

[2] These references are translated by JICA RPF Study Team for their study, focusing only the provisions on the road preservation

the government will pay two third and the left will be paid by the prefecture. If the prefecture takes initiative of the work, the government and the prefecture will pay half of the cost respectively.

2 The government will pay 55% of the cost to maintain and repair designated section of the highway, and the prefecture will pay 45%. If it is out of the designated section, the prefecture will be responsible for paying of the cost. However, other than the preservation fee that is listed in article 13 paragraph 2, ordinance-designated city will pay for it.

3 In paragraph 1, if the construction or reconstruction of the highway gives benefit to other prefectures which is not responsible for paying of the cost it takes, the minister can, as prescribed in ordinance, can make such prefectures pay for the part of the cost equivalent to the benefit gains.

4 If the minister decides to make such prefectures pay for the part of the cost of the construction or reconstruction as stated in paragraph 3, the minister must take time to listen to the prefectures.

(Municipality's contribution)

Article 52 If the construction or reconstruction which is prescribed in article 49 or 50 gives benefits to municipalities, such municipalities must contribute by paying cost equivalent to benefit they have.

2 The cost prescribed in paragraph 1 must be decided by listening to the municipalities.

（Payments）

Article53 If the minister conducts construction or reconstruction of highway within the designated section, the government has to pay 100% of the cost at first, and after that, prefectures, as prescribed in ordinances, must contribute by paying as prescribed in article51 paragraph 1 to 3.

2 In case that prefecture and city governments constructs or reconstructs, the government must pay the money as prescribed in paragraph 1 of article51, and other prefectural and city governments must pay the part of the cost as prescribed in ordinance.

3 Municipalities must, as prescribed in article 53 paragraph 2, contribute to the prefectural and city governments by paying the cost.

（Subsidies given to construction of road）

Article 56 The government, if it needs to develop the road of prefectural and city governments which is designated by the minister or road of municipalities, or if it needs to develop road for research aims, or if it needs to develop road in need for raw materials, businesses, tourism policies, can give subsidies to the road administrator. The government can subsidize half the cost to construct or reconstruct the road, one third the cost to conduct research, and half the cost to repair highway outside the designated section.

<Road Repair Act No. 282 of 1948>

Article2 Minister of Land, Infrastructure, Tourism and Transport, if it finds necessary, can repair the highway outside the designated section which is prescribed in the article 13 paragraph 1 of the Road Act.

2 The authority of the road administrator transfers to the minister in paragraph 1.

3 The government will pay the cost to repair as prescribed in paragraph. However, the local public organization must, as prescribed in the ordinance, pay part of the cost.

<Decrees on enforcement of Road Repair Act No. 61 of 1949>

（The amount of cost）

Article5 The burden charge of the local public organization, as prescribed in article 2 paragraph 3 provision clause, will be multiplying one half to the cost to repair highway outside the designated section.

Reference 2-4 :
Related laws on the establishment of organization for road preservation in Japan

＜MLIT Decree on the organizational framework of Regional Development Bureau No 21 of 2001＞

Under Article 32 paragraph 2 of Establishment Act of Ministry of Land, Infrastructure, Tourism and Transport (1999 law number 100) and article 208 paragraph 6 of Order for Organization of Ministry of Land, Infrastructure, Tourism and Transport, regional development bureau organization rule is set as follow:

(Division of duties of Road division)

Article 9 The Road Division will be in charge of affairs listed below:

03 Management (except development and preservation) of designated national road and expressway.

05 The development and preservation of designated national road

13 The preservation of designated national road

15 The development, preservation, adjustment, advisement and supervision of local roads

16 The support of development and preservation of national highway, road of prefectural and city governments and municipalities (outside the designated section).

(Road Management and Planning Officer)

Article 54 paragraph 2 Put a Director for Road Management at the Road Division.

2 A Director for Road Management arranges affairs relating to management of highway in direct control, adjustments, advisement, supervision relating to management of local roads.

(Road structure preservation officer)

Article53/3 Put 14 officers for Road Structure Preservation in the Road Division.

2 Officers for Road Structure Preservation are responsible for matters relating to management, adjustment, safety, advisement, supervision of the direct control highway and local roads.

（Sections within Road Division）

Article 95 Put the following sections in the Road Division:

Road Administration Section
Road Planning Section
Road Planning 1st Section
Road Planning 2nd Section
Local Roads Section
Road Project Coordination Section
Road Works Section

Road Management Section
Road Traffic Management Section

(Division of duties in Road Planning Section)
Article97 Road Planning Section is responsible for the following affairs:
1 Matters relating to development and preservation for designated road

(Division of duties of Local Road Section)
Article100 Local Road Section is responsible for the following affairs:
1 Adjustments, Advisements and Supervisions which relates to development and preservation of local roads (except division of duties of Road Administration section).
2 Support which relates to development and preservation of undesignated national roads, prefecture roads, city government roads, and municipal roads.

(Division of duties of Road Management Section)
Article103 Road Management Section is responsible for the following affairs:
1 Matters (including snow removals) relating to preservation of designated national roads (except affairs which Road Administration Section is responsible of).

(Organization inside the Office)
Article141
4 National Highway Office must establish General Administration Division and Engineering Division.
5 Regardless of the preceding clause, director-general of regional development bureau, if necessary, can establish other divisions with approval of the minister of Land, Infrastructure, Tourism and Transport,.

(Branch)
Article 150
2 Director-general of regional development bureau with approval of the Minister of Land, Infrastructure, Tourism and Transport, can establish site branch offices in the area to divide part of the duties of the national highway office.

(Miscellaneous)
Article151 Director-general of regional development bureau shall determine the affairs to be required for regional development bureau except of those which are already prescribed in the ordinances.

CHAPTER 3 Study on Financial Issues

3.1 Framework of the study

Study on financial issues of road preservation fund was conducted form the viewpoint of demand and supply analysis. The demand side analysis was executed to examine how much road preservation costs are required in the future in case that the whole roads in Indonesia are properly preserved without any budget restrictions. On the other hand, the supply side analysis was executed to examine how is the physical road conditions in the future in case that road preservation works are performed under budget restrictions.

The study team conducted a simple simulation in accordance with basic information obtained from the existing statistics and interviews with the government staffs concerned to the road preservation works. Since the simulation is conducted under lots of assumptions and limited data resources, it should be pointed out that the detailed study has to be conducted in the future based on additional data and information.

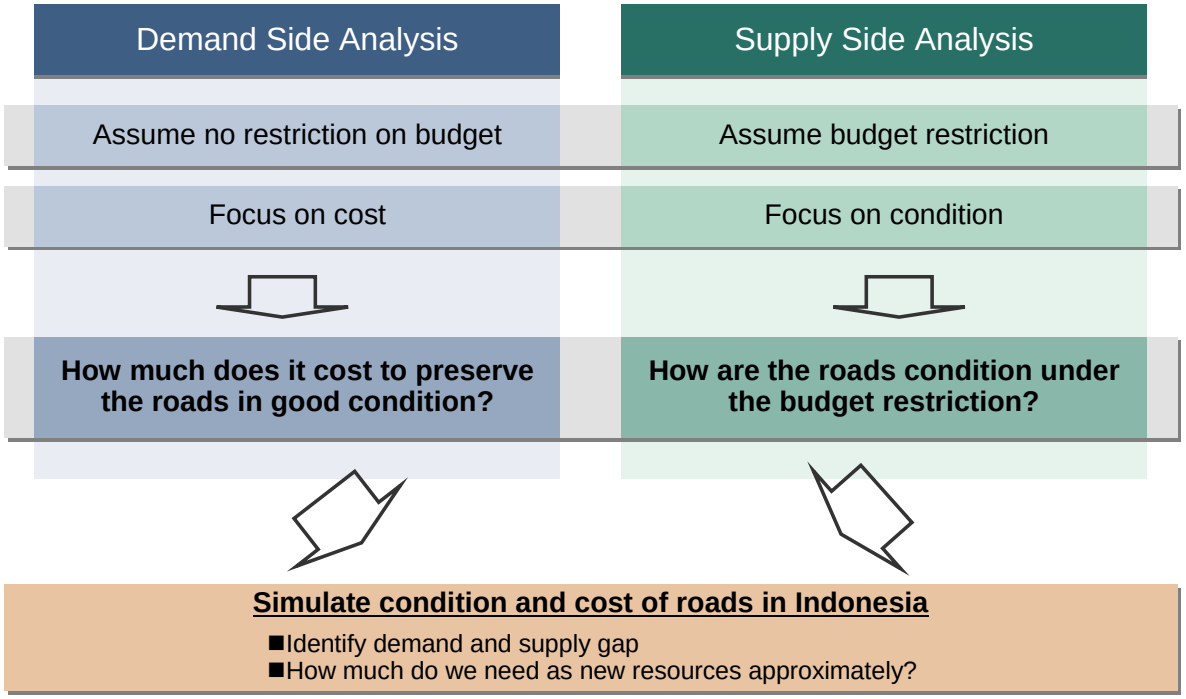


Chart 3.1 Framework of the study on financial issues

3.2 Descriptions of the simulation model

3.2.1 Simulation target

Simulation is conducted for road pavement of national road, provincial road, and kabupaten / municipal road, and bridges of national road due to the lack of data for bridge length of provincial and kabupaten / municipal roads. Table 3.1. shows the length of each road and bridge targeted to the simulation.

Table 3.1 Summary of simulation target

	National road	Provincial Road	Kabupaten Road Municipal Road
Road length (Total)	35,683km	48,967km	358,713km
Bridge length (Total)	314,339m	Not available	Not available

3.2.2 Level of conditions

According to IRMS and other documents obtained from BINA MARGA, conditions of road pavement and bridges are classified at 4 or 5 levels as follows.

- ✓ Road pavement :
  1.Good, 2.Fair/Normal, 3.Damaged/Moderate damaged, 4.Seriously/Badly damaged
- ✓ Bridge :
  0.Very Good, 1.Good, 2.Fair/Normal, 3.Damaged/Moderate damaged,
  4.Seriously/Badly damaged

The lower levels such as 0, 1, or 2 are defined as ‘Stable’ condition, and the higher levels such as 3 or 4 are defined as ‘Unstable’ condition.

3.2.3 Current conditions of road pavement and bridges

Chart 3.2 shows the current conditions of national, provincial, and kabupaten / municipal roads. The chart indicates that more than 80% of national road is in stable condition, whereas, more than 50% of provincial and kabupaten / municipal road is in unstable condition.

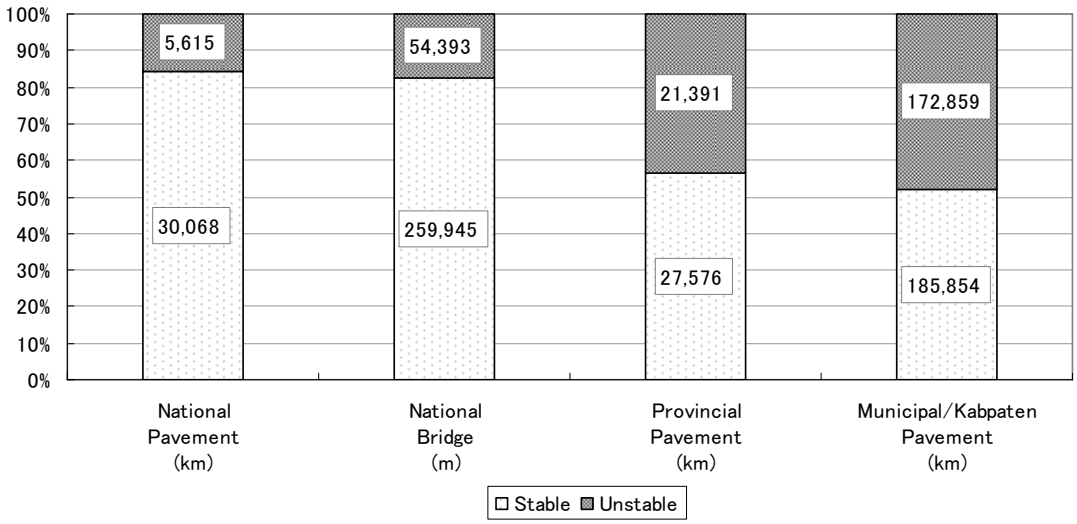


Chart 3.2 Current conditions for road pavement and bridges

3.2.4 Preservation works for pavement and bridges

The study team took account of three types of preservation works for pavement and bridges: routine maintenance, periodical maintenance and rehabilitation. In order to conduct the simulation in simple manner, the study team put the following assumptions for preservation works of pavement and bridges.

✓ Pavement

Routine maintenance : To be conducted every year regardless of the road conditions

Periodical maintenance : To be conducted every 5 years

✓ Bridge

Routine maintenance : To be conducted every year regardless of the bridge conditions

Periodical maintenance : To be conducted every 10 years

Rehabilitation : To be conducted every 100 years (if periodical maintenance is properly conducted)

: To be conducted every 55 years (if periodical maintenance is not properly conducted)

3.2.5 Unit price of preservation works

Unit price of the preservation works for national road is based on the actual data for West Java province, which is estimated from the guideline issued by BINA MARGA as shown in Table 3.2. It should be pointed out that the price is relatively higher than the average of other

provinces. Since the unit price of provincial and kabupaten / municipal road is not obtained from BINA MARGA, 67% of the unit price of national road is applied for provincial road, and 50% of that is applied for kabupaten / municipal road in accordance with the interviews with the government staff responsible for these works.

Furthermore, only two types of asphalt pavement and 'Lapan' are considered for the simulation. The ratios are assumed to be 90%:10% for national road, and 60%:40% for provincial and kabupaten / municipal road.

Table 3.2 Summary of unit prices

			National road	Provincial Road	Kabupaten Road Municipal Road
Pavement		Ratio between road paved by asphalt and "lapen" road (not paved road)	90%:10%	60%:40%	60%:40%
	Unit Prices	Routine (paved)	53.8 million Rp/km	36.1 million Rp/km (67% of National rd)	26.9 million Rp/km (50% of National rd)
		Routine ("lapen")	37.6 million Rp/km	25.2 million Rp/km (67% of National rd)	18.8 million Rp/km (50% of National rd)
		Periodical (paved)	1560.0 million Rp/km	1044.5 million Rp/km (67% of National rd)	779.5 million Rp/km (50% of National rd)
		Periodical ("lapen")	978.3 million Rp/km	655.4 million Rp/km (67% of National rd)	489.1 million Rp/km (50% of National rd)
Bridges	Unit Prices	Routine	15.0 million Rp/m	Not available	Not available
		Periodical	15.0 million Rp/m	Not available	Not available
		Rehabilitation	50.0 million Rp/m		

3.2.6 Deterioration model

The study team assumed the deterioration model for road pavement and bridges for the future preservation cost simulations as follows. The assumption is based on the actual practice in Indonesia and the experience in Japan.

(1) Road pavement

Routine maintenance is conducted every year, but the road pavement condition will be deteriorated by aging and traffics. The deterioration speed is increased year by year, and the pavement is finally fallen to unstable condition. Once the periodical maintenance is conducted at the unstable condition, the pavement condition is improved, and is back to the original stable condition. The study team assumed that the deterioration period should be 5 years for national and provincial road, and 10 years for kabupaten / municipal road, since traffic volumes of kabupaten / municipal road are quite smaller than those of national and provincial road. Also the study team assumed that the deterioration period is decreased to 2/3 of the original if routine maintenance is not properly conducted.

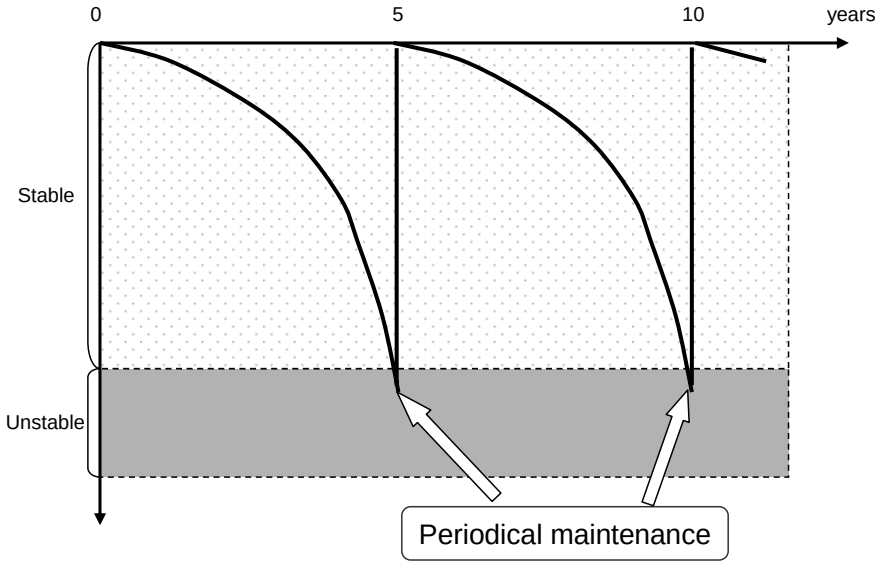


Chart 3.3 Pavement deterioration of National and Provincial road (with routine maintenance)

(2) Bridges

Routine maintenance is conducted every year, but the bridge condition will be deteriorated by aging and traffics. The deterioration speed is increased year by year, and the bridge is finally fallen to unstable condition, even if periodical maintenance is conducted at certain intervals. Once the rehabilitation is conducted at unstable conditions, the bridge condition is improved, and is back to the original stable condition. The study team assumed that the deterioration period should be 100 years under the condition of executing periodical maintenance at 10 years interval. Also the study team assumed that the deterioration period is decreased to 2/3 of the original if routine maintenance is not properly conducted.

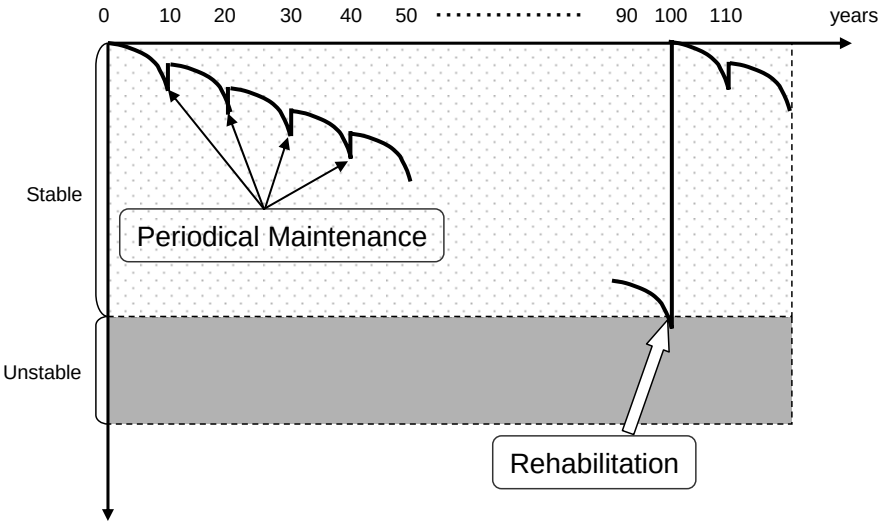


Chart 3.4 Deterioration on National bridges (with routine and periodical maintenance)

3.2.7 Image of the simulation result

Chart 3.5 shows the image of the simulation result of the future cost and conditions for road pavement. The study team assumed that all of the unstable road pavement and bridges will be rehabilitated by 2015 before the implementation of road preservation fund, and only routine and periodical maintenance will be conducted after 2016.

Also, the study team assumed that the current unit price should be applied for the future cost simulation without any considerations of inflation factors. Normally, this kind of cost simulation is conducted by converting future benefits or costs to their present values.

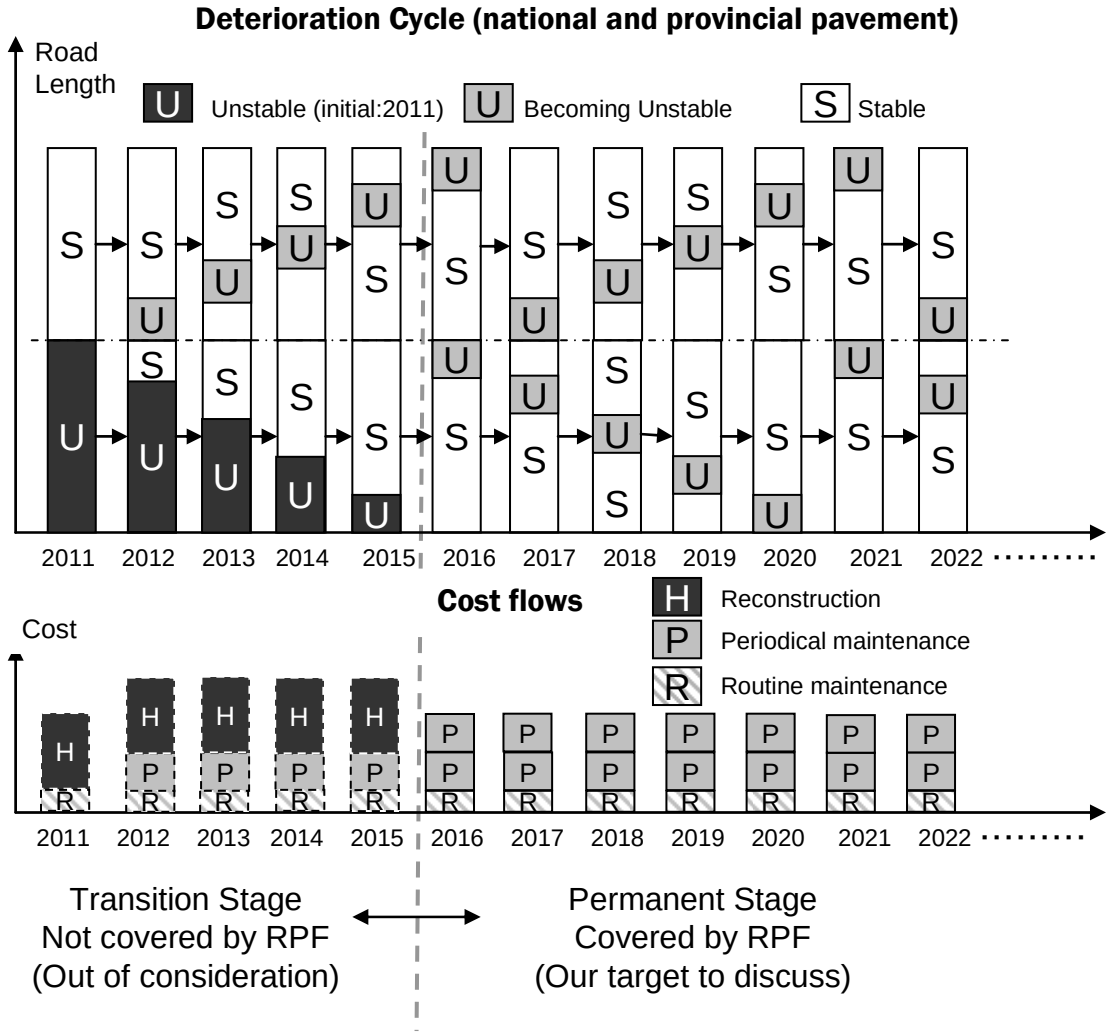


Chart 3.5 Image of simulation result for pavement

3.3 Demand side analysis

Chart 3.6 and Table 3.3 show the simulation result of the future preservation costs for pavement and bridges. Total preservation cost between 2016 and 2060 is 59.6 trillion Rp/year in average. Routine maintenance cost is constant at 16.6 Rp/year, and periodical maintenance cost fluctuates from 6.6 to 61.8 Rp/year due to the time deference of the periodical maintenance activities. On the other hand, more than 50% of the preservation costs are born by the costs for kabupaten / municipal roads.

Since this analysis does not include the future preservation costs for provincial and kabupaten / municipal bridges due to the lack of data resources, it should be pointed out that the total future preservation costs for whole roads and bridges in Indonesia will be higher than this simulation result.

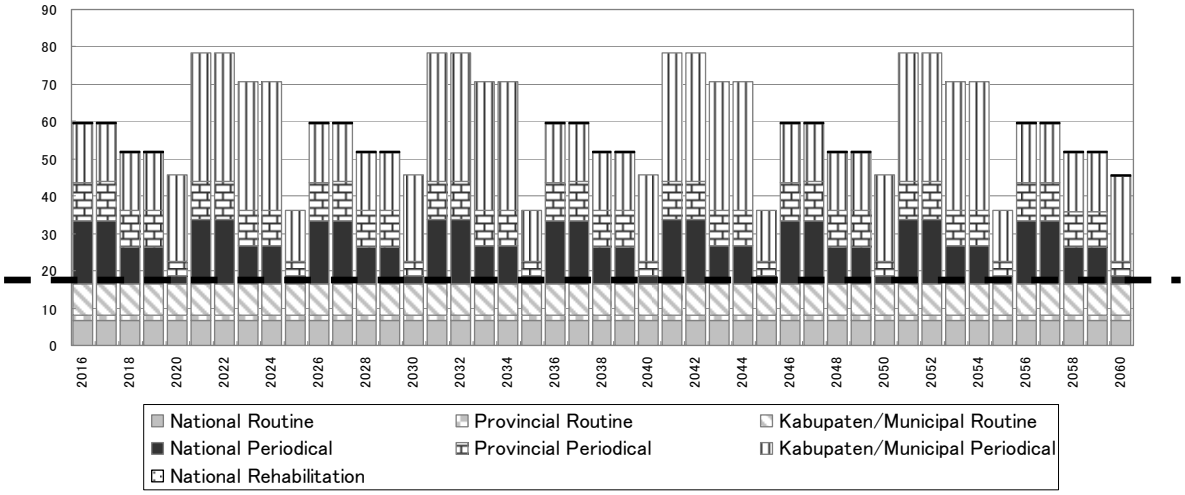


Chart 3.6 Future maintenance cost based on “Demand side analysis”

Table 3.3 Summary of “Demand Side Analysis”

	Routine Maintenance	Periodical Maintenance Rehabilitation			Total (Average)
		Max	Min	Average	
National road Pavement	1.9	16.5	1.7	10.7	12.6
Provincial road Pavement	1.6	10.3	3.8	8.7	10.3
Kabupaten / Municipal Road Pavement	8.5	34.5	13.7	23.1	31.6
National road Bridges	4.7	0.1	0.1	0.1	5.2
Total	16.6	61.8	6.6	21.0	59.6

3.4 Supply side analysis

3.4.1 Conditions of budget constraint

In order to conduct supply analysis, the study team assumed the three simulation cases; pessimistic case, moderate case, and optimistic case in accordance with different budget restrictions.

(1) Pessimistic case

In this case, the study team assumed that the total budget for road preservation works will be constant at 9.4 trillion Rp/year in the future. The 9.4 trillion Rp/year is the volume of the current national and sub-national budget for road preservation works. According to the government staff concerned in BINA MARGA, budget of road preservation works for national road in 2009 is around 4.7 trillion Rp/year, and the approximately same amount of budget is secured for road preservation works of provincial and kabupaten / municipal roads.

The study team also assumed that the budget will be allocated at 90% for road pavement and at 10% for national bridges following to the result of the supply side analysis. The 90% for road pavement is further assumed to be allocated at the ratio of 50:25:25 to national road, provincial road, and kabupaten / municipal road respectively. This assumption is based on the interview with the government staffs in BINA MARGA.

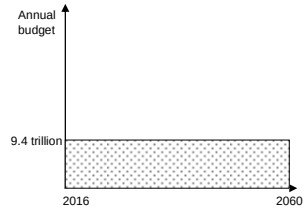
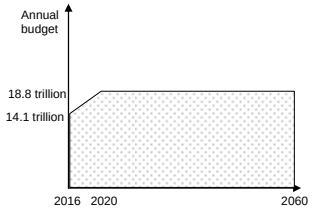
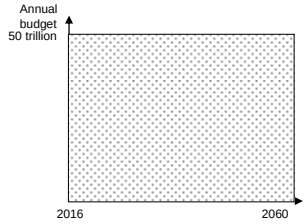
(2) Moderate case

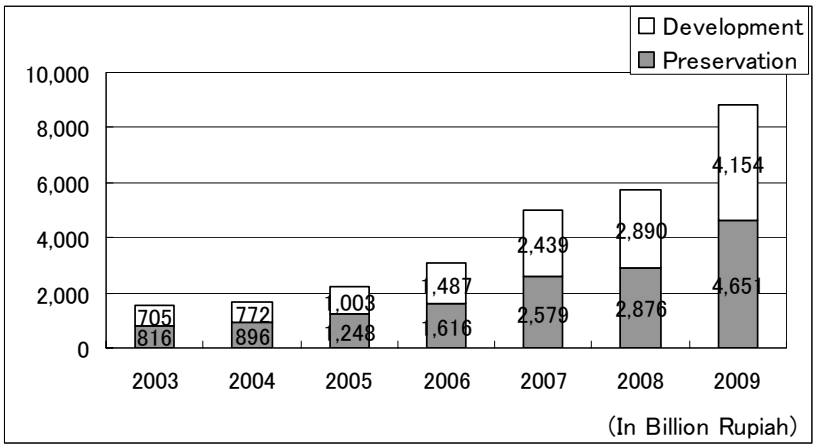
In this case, the study team assumed that the total budget for road preservation works will be increased by 10% annually until 2020 following to the expected GDP growth in Indonesia. Therefore, until 2020 from now, the budget will be raised by 0.94 trillion Rp/year and will be constant after 2020. Other conditions such as budget allocation are assumed to be same as the pessimistic case.

(3) Optimistic case

In this case, the study team assumed that the total budget for road preservation works will be increased up to 50 trillion Rp/year in 2016 after the implementation of road preservation fund. Budget allocation between road pavement and national bridges is same as the pessimistic or moderate case; however, budget allocation between road pavement is assumed to be at the ratio of 20:60:60 to national road, provincial road, and kabupaten / municipal road respectively in order to improve the conditions of kabupaten / municipal roads.

Table 3.4 Summary of simulation cases in “Supply side analysis”

Case	Pessimistic Case	Moderate Case	Optimistic Case
Abstract	● Total budget will stay 9.4 trillion RP per year, the amount of which is the budget of 2010	● Total budget will be raised by 10% annually up to 2020 based on the expected GDP growth, and will stay after 2020	● Total budget will be raised up to 50 trillion Rp, which means about 40 trillion Rp is added after RPF is introduced in 2016.
Budget flow image			
Budget Allocation	● Budget allocation between all road pavement and national bridges is 90%:10%, which is based on simulation of the demand side analysis.		
	● Budget allocation between each road pavement is as follows; National: Provincial: Kabupaten/ Municipal = 50%: 25%: 25%; based on the current allocation.		● Budget allocation between each road pavement is as follows; National: Provincial: Kabupaten/ Municipal = 20%: 20%: 60%



Resource) Data offered by BINA MARGA

Chart 3.7 Budget for road development and preservation（national road）

3.4.2 Result of the simulation

Chart 3.8 - Chart 3.10 show the future conditions for road pavement and bridge for each simulation case.

In the pessimistic case as shown in Chart 3.8, pavement conditions for each type of road become extremely bad by 2025, and the condition will not be recovered in the future. Bridge conditions for national road also become worse by 2055, and will not be recovered.

In the moderate case as shown in Chart 3.9, pavement conditions for each type of road become also extremely bad by 2025, and the situation is not so different from the pessimistic case. The future bridge conditions for national road are almost same as the pessimistic case.

In the optimistic case as shown in Chart 3.10, the pavement conditions for each type of road and bridge conditions for national road are quite better than the above two cases. Especially, pavement conditions of kabupaten / municipal roads will be dramatically improved, and most of the whole roads and bridges will be kept in stable conditions.

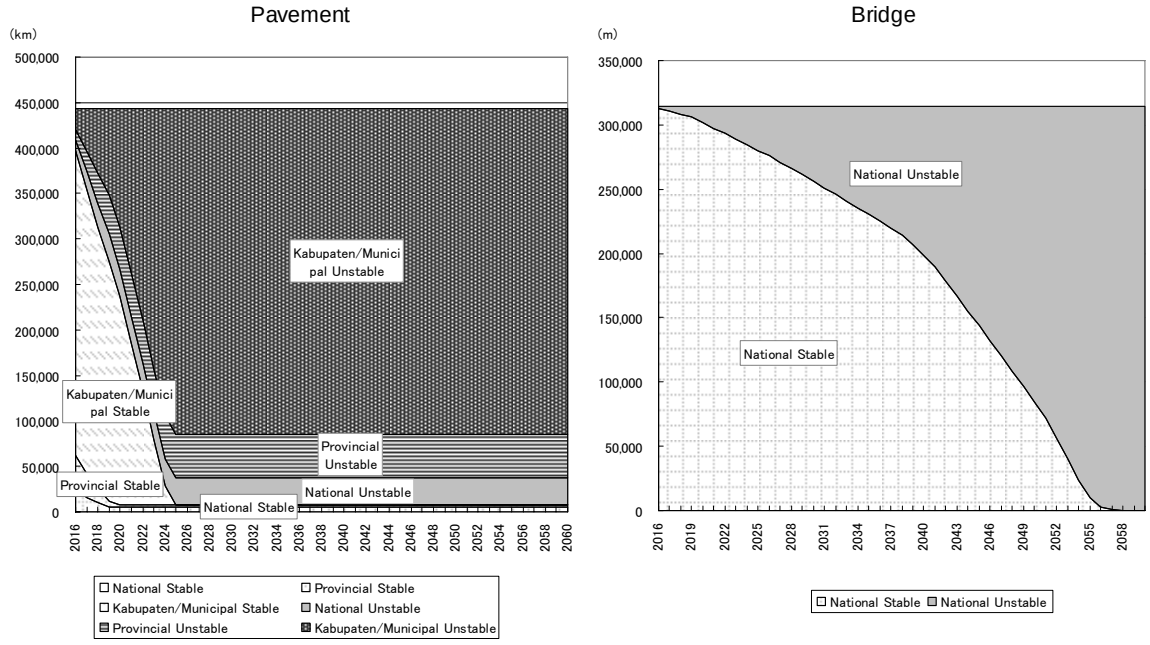


Chart 3.8 Future road condition based on “Pessimistic Case”

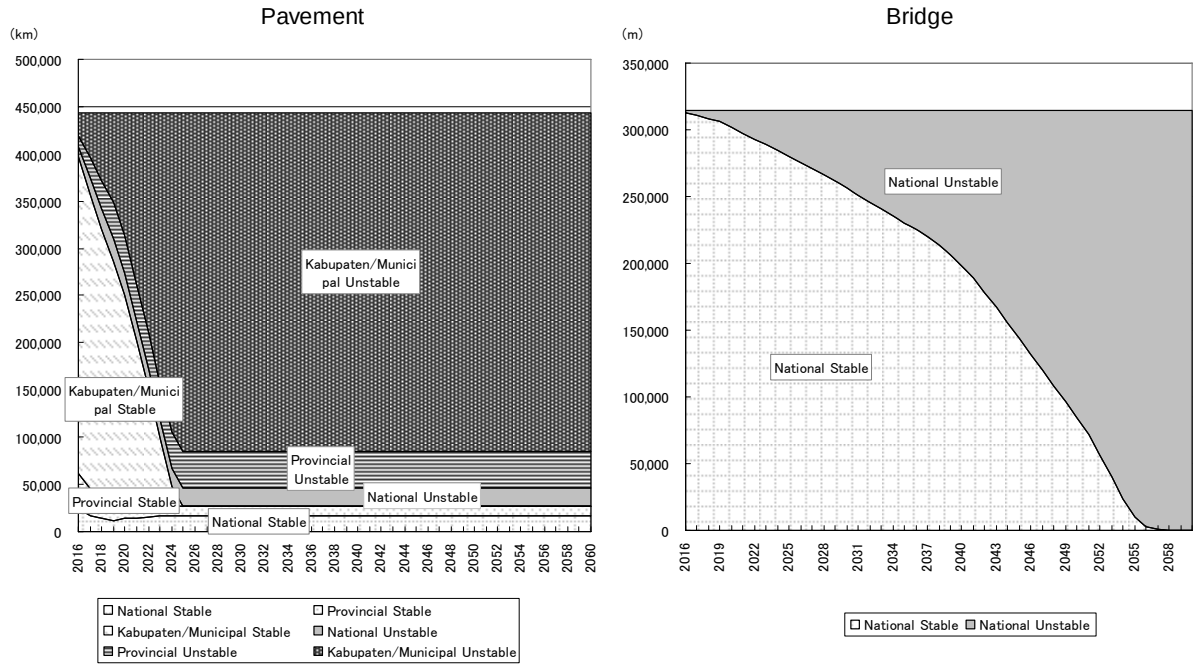


Chart 3.9 Future road condition based on “Moderate Case”

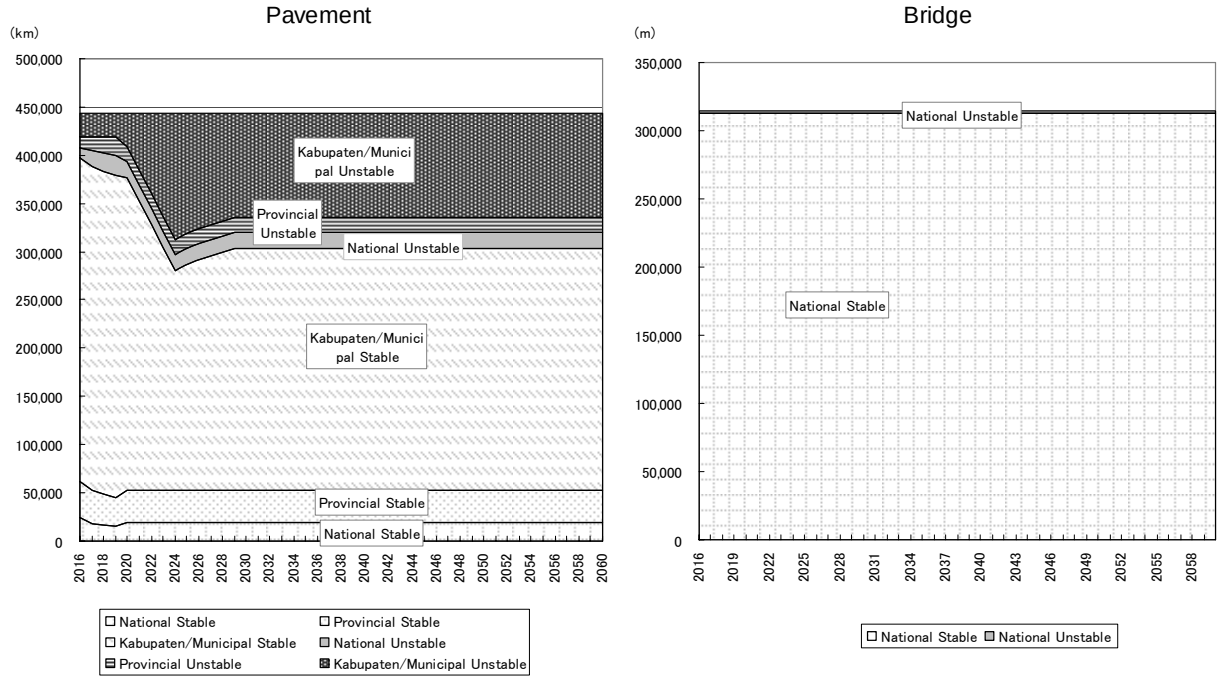


Chart 3.10 Future road condition based on “Optimistic Case”

3.5 Recommendation on financial issues

3.5.1 Summary of the simulation

The study team has conducted a rough calculation of the future preservation costs for pavements and bridges. Table 3.5 shows the summary of the simulation results, and then it is figured out that huge costs might be required for the proper preservation of national, province and kabupaten/municipal roads. The calculation result shows that the conditions of road pavements might be deteriorated under the budget restrictions, and sufficient funding resources should be provided solely for road preservations. Especially, kabupaten / municipal roads have their long length and require much more preservation costs. In order to secure minimum road conditions, it is suggested that large portions of funding resources should be distributed to such local roads.

Table 3.5 Summary of the simulation

		Cost	Condition	Compare to Demand Side
Demand Side		About 59.6 trillion Rp per year	Always in good condition	
Supply Side	Pessimistic Case	9.4 trillion Rp per year	The condition of Municipal and Kabupaten road pavement will be extremely bad	About 50 trillion shorter and the condition will be worse.
	Moderate Case	About 18.8 Rp per year		About 40 trillion shorter and the condition will be worse.
	Optimistic Case	50 trillion Rp per year	Always in almost good condition	As cheap as Demand Case, and the condition is not so worse but can be improved The condition will be as good as that in Demand Side Analysis

3.5.2 Implication of simulation

As mentioned above, there exists a wide gap between the demand for the requisite future preservation costs (59.6 trillion Rp /year) and the supply for the current budget of road preservations (9.4 trillion Rp /year); and therefore, additional funding resources like DAK, HIBAH, and newly implemented RPF should be secured.

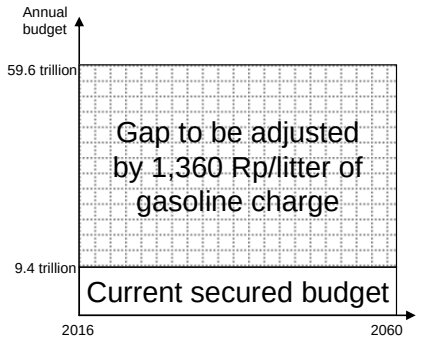
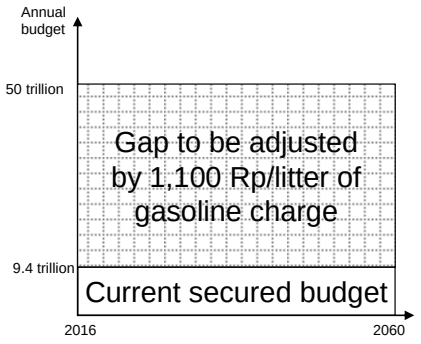
The following simple calculation provides an answer for the question; ‘If the gap between the demand and supply is adjusted by increase of the current gasoline charge, how much the additional gasoline charge per litter is going to be?’

Since the volume of the current gasoline consumption per year is around 36.9 billion litter[1] in Indonesia based on the data from BINA MARGA, the additional gasoline charge will be calculated around 1,100-1,400 Rp per litter.

$$\text{Gasoline Charge (Rp/litter)} = \frac{\text{Additional Maintenance Cost (Rp/year)}}{\text{Annual amount of Gasoline Consumption (litter/year)}}$$

$$= \frac{\text{Total Maintenance Cost (Rp/year)} - \text{Current Maintenance Cost (Rp/year)}}{\text{Annual amount of Gasoline Consumption (litter/year)}}$$

Table3.5 Scale of gasoline charge for road preservation

	Fully meet the Demands	Optimistic Case
Additional Gasoline Charge	1,360 Rp / litter =(59.6 Rp/year – 9.4 Rp/ year) / 36.9 billion litter/year	1,100 Rp / litter =(50 Rp/year – 9.4 Rp/ year) / 36.9 billion litter/year
Image		

3.5.3 Necessity of collecting basic data

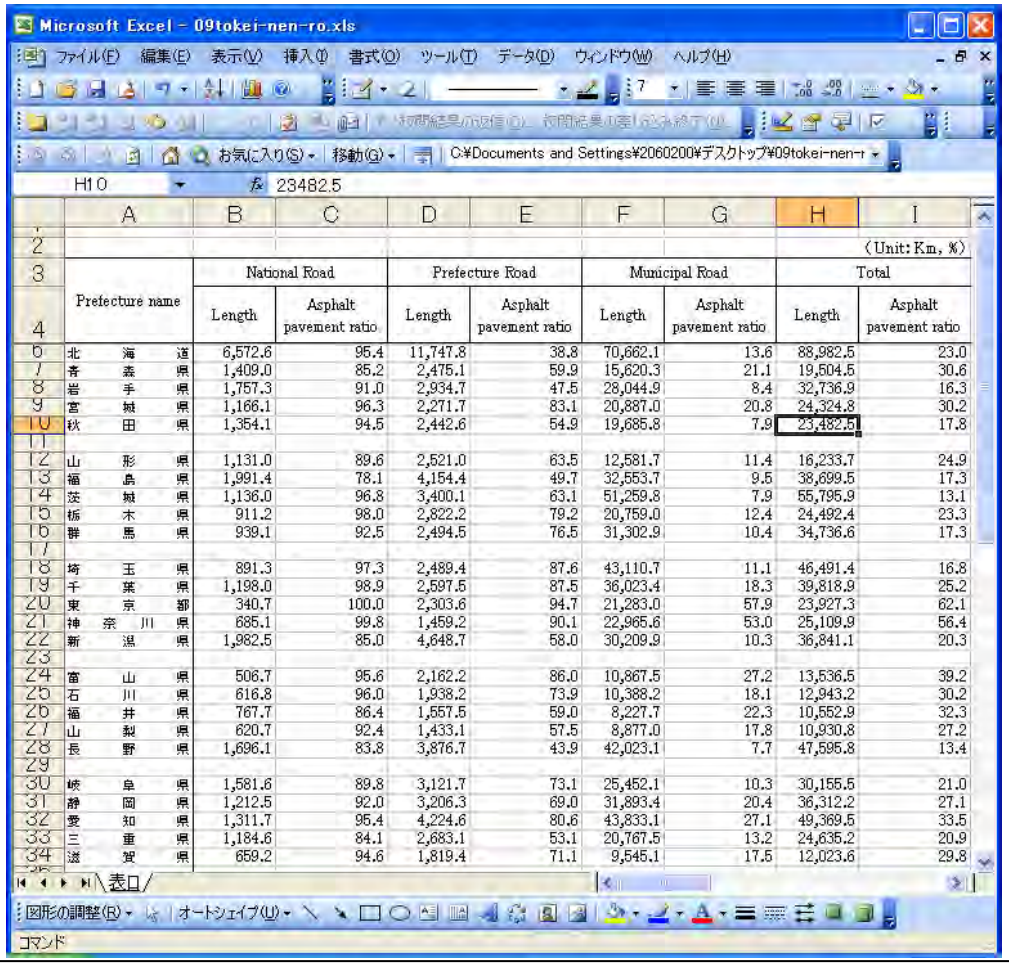
Toward an implementation of road preservation fund, it is necessary to perform various financial analyses in addition to the simple simulation conducted in this study. In order to conduct more detailed analyses, it is essential to collect many kinds of basic data with regard to road development and preservation in Indonesia.

In Indonesia, the study team found that it is easy to access to the data or statistics of national road to a certain extent; however, the access to those of provincial and kabupaten / municipal road is quite limited. Also, more detailed demand and supply analysis requires the exact data for the current and future estimated traffic volumes. Especially, it is quite important to collect

[1] It is natural to be considered the change of consumption in future. The gasoline consumption seems to be increasing. However, there exists negative factors; electronic vehicles implementation, energy-efficient improvement of gasoline cars and so on. Thus, increase of gasoline consumption in future is not taken into account.

the traffic volumes of heavy trucks and trailers, since it is the main cause of the road infrastructure deterioration.

With regard to the data categories that ought to be collected, the 'road statistics' annually issued by Ministry of Land, Infrastructure, Transport and Tourism in Japan is thought to be a good reference. The 'road statistics' contain many kinds of physical and financial data for roads in chronological basis such as length of road and bridge for each type of road, expense of road development and preservation works, and etc.



- ✓ In Japan, the statics for only road is issued by road bureau
- ✓ It includes road length, bridge length, road maintenance cost, road construction cost and asphalt pavement ratio of each kind of road (such as national road, provincial road, municipal road)
- ✓ Also, above data is classified by prefectures
- ✓ Anybody in the world can access the data by internet
- ✓ Such kind of data seems to help to Earmarked Revenues for Road Development

Resource) Ministry of Land, Infrastructure, Transportation and Tourism of Japan Website

Chart 3.11 Extracts from 'road statistics' in Japan

3.5.4 Consideration on priority of preservation works

Road preservation works should be conducted strategically under the budget restrictions. In this simulation, the study team simply assumed that the remedial works would be started from the more damaged road pavement and bridges. However, in order to do the preservation works in more strategic manner, more realistic priority measures have to taken considering the importance of the road from the viewpoints of road network, traffic volumes, and the use in an emergency.

In the future detailed simulation, it is recommended that the above priority measures have to be taken into account for the effective and efficient use of road preservation fund.

3.5.5 Consideration on the Ripple Effect

For instance, if additional taxes or charges are imposed to the road users after the implementation of road preservation fund, the road user's disposable income will be decreased. As a result, consumption of other living goods will be decreased, and it will put bad influence on the Indonesian economy.

On the other hand, once the road preservation fund is implemented, the road facilities would be properly preserved, and it will shorten the travel time of people and goods. As a result, it will lead to the increase of economic activity, and activate the Indonesian economy.

Therefore, implementation of road preservation fund will bring both positive and negative effects to the Indonesian economy. It is suggested that comprehensive analysis for economical effect of both sides should be carried out in more detail.