73303

Road Sector Public Expenditure Review 2012

Investing in Indonesia's Roads

Improving Efficiency and Closing the Financing Gap

THE WORLD BANK OFFICE JAKARTA
Indonesia Stock Exchange Building Tower II/12th Fl.
Jl. Jend. Sudirman Kav. 52-53
Jakarta 12910
Tel: (6221) 5299-3000
Fax: (6221) 5299-3111
Website: www.worldbank.org/id

THE WORLD BANK
1818 H Street N.W.
Washington, D.C. 20433, U.S.A.
Tel: (202) 458-1876
Fax: (202) 522-1557/1560
Email: feedback@worldbank.org
Website: www.worldbank.org

Printed in June 2012

For any questions regarding this report please contact: Mustapha Benmaamar (mbenmaamar@worldbank.org)

Investing in Indonesia's Roads: Improving Efficiency and Closing the Financing Gap

Road Sector Public Expenditure Review 2012

FOREWORD

The development of Indonesia's road network is due in part to historical factors affecting investment in the sector. Until the late 1970s, there was no significant expansion of the pre-independence network. A sustained period of rapid network expansion followed in the 1980s. In the early 1990s, new investment declined when the economy was liberalized, and the focus of attention turned to toll roads, which did not add significantly to network density. After a steep decline during the Asian Economic Crisis, network expansion continued to be modest through the subsequent recovery and decentralization period (after 2001).

By 2010, road investment returned to the pre financial crisis level of 1.6 percent of GDP. This emphasis on roads investment is significant as overall infrastructure spending is still below the pre-financial crisis level. Despite increased investment, however, Indonesia's road network appears to be failing to deliver the level and quality of services needed to sustain economic growth.

Road vehicles are the predominant mode of transport in Indonesia, accounting for 70 percent of total freight ton-km and 82 percent of passenger km. Today, the total classified road network is reported to be over 477,000 km. It attracts 40 percent of total infrastructure spending and represents an asset value equivalent to more than 15 percent of Indonesia's GDP.

This roads Public Expenditure Review (PER) examines the size and composition, allocation, and implementation of public expenditure on roads and assesses the efficiency and effectiveness of these expenditures both at the national and sub-national levels. It also reviews the overall policy and institutional framework and the level of private sector participation. The analysis and recommendations are intended to demonstrate how public and private sector resources are currently mobilized, used and managed, and to suggest improvements.

The findings of this roads PER are fully aligned with the objectives of the World Bank's Country Partnership Strategy (CPS) 2009-12 for Indonesia, which places a strong emphasis on supporting Indonesian institutions. By working in partnership with government institutions, this review aims to assist in building capacity to analyze the efficiency of spending on infrastructure, and to allocate funds in a way that supports effectively Indonesia's development.

Franz Drees-Gross
Sector Manager,
Indonesia Sustainable Development Unit
The World Bank

ACKNOWLEDGMENT

Investing in Indonesia's Roads: Improving Efficiency and Closing the Financing Gaps forms part of the Indonesia Infrastructure Public Expenditure Review. The report was prepared with the collaboration of the Indonesia's Sustainable Development (SD) Unit and the Poverty Reduction and Economic Management (PREM) Unit. The Study Team comprises Mustapha Benmaamar (Task Team Leader), Peter Freeman, Rodrigo Archondo-Callao, Ahya Ihsan, Dewi Wandansari, Amilia Aldian, Enrique Blanco Armas, Anna Gueorguieva, Ashley Taylor, Dwi Endah Abriningrum, Yus Medina Pakpahan, and Arsianti, under the overall guidance of Franz Drees-Gross (Sector Manager Sustainable Development World Bank Indonesia) and Shubham Chaudhuri (Lead Economist World Bank Indonesia). The Team would like to acknowledge the assistance of, and comments and suggestions made by the reviewers (Steve Brushett and Baher El-Hafnawi, World Bank and Hugh Brown, AusAid).

This Sector Work is undertaken under the Initiative for Public Expenditure Analysis (IPEA). The IPEA is a joint effort by the Government of Indonesia (the Ministry of Finance, the National Development Planning Board/BAPPENAS, and the Coordinating Ministry for the Economy); the donors; and the World Bank, to improve the understanding of public spending in Indonesia. The conduct of this sector work has relied on the significant contribution made by those many public officials both in Jakarta and in three provinces and seven districts, who have given of their time and effort to participate in the surveys and associated discussions. The Study Team is very grateful for the information and insights provided. While every attempt has been made to reflect these views accurately in this report, the interpretation and presentation is that of the Study Team.

This Sector Work is carried out under the Indonesia Infrastructure Support Trust Fund, financed by AusAid and the Public Financial Management Multi-donor Trust Fund, with contributions from the European Commission, USAID, the Government of the Netherlands, and the Government of Switzerland.

TABLE OF CONTENT

LIST OF FIGURES

LIST OF TABLES

LIST OF BOXES

ABBREVIATIONS

APBN	Anggaran Pendapatan dan Belanja Negara (Central Government Budget)
APBD	Anggaran Pendapatan dan Belanja Daerah (Regional Budget)
BALAI BESAR	Directorate General of Highway (DGH) Regional Offices
BPAKD	Badan Pengelola Aset dan Keuangan Daerah (Regional Government Finance Bureau)
BAPPEDA	Badan Perencanaan Pembangunan Daerah (Regional Planning Office)
BAWASDA	Badan Pengawas Daerah (Provincial or Local Government Supervisory Agency)
BAPPENAS	Badan Perencanaan Pembangunan Nasional (National Development Planning Agency)
BBNKB	Bea Balik Nama Kendaraan Bermotor (Vehicle Transfer Ownership Fees)
BPHTB	Bea Perolehan Hak atas Tanah dan Bangunan (Land and Building Transfer Fees)
BPJT	Badan Pengatur Jalan Tol (Toll Road Regulatory Agency)
BPS	Badan Pusat Statistik (Central Bureau of Statistics)
CPS	Country Partnership Strategy
DAK	Dana Alokasi Khusus (Special Allocation Fund)
DAU	Dana Alokasi Umum (General Allocation Fund)
DBH	Dana Bagi Hasil (Revenue Sharing Fund)
DGH	Directorate-General of Highways (Bina Marga)
DID	Dana Insentif Daerah (Regional Incentives Fund)
EIRTP1	East Indonesia Road Transport Project
GDP	Gross Domestic Product
GOI	Government of Indonesia
IATA	International Air Transport Association
IDR	Indonesian Rupiah
IFN	Index Fiskal Netto (Net Fiscal Index)
IPER	Indonesia Infrastructure Public Expenditure Review
MOF	Ministry of Finance
MOHA	Ministry of Home Affairs
MPW	Ministry of Public Works
MTEF	Medium Term Expenditure Framework
PAD	Pendapatan Asli Daerah (Regional Government Own Source Revenue)
PBB	Performance Based Budgeting
PBBKB	Pajak Bahan Bakar Kendaraan Bermotor (Fuel tax)
PBC	Performance Based Contracts
PKB	Pajak Kendaraan Bermotor (Motor Vehicle Tax)
PPP	Public Private Partnership
RAI	Rural Accessibility Index
ROCKS	Road Cost Knowledge System (World Bank)
RONET	Road Network Evaluation Tool (World Bank)
RPER	Road Sub-sector Expenditure Review
RPJMN	Rencana Pembangunan Jangka Menengah Nasional (National Medium-term Development Plan)
SOE	State-owned Enterprise
TP	Tugas Pembantuan (Co-Assistance Taskforce for Districts)

EXECUTIVE SUMMARY

1. Context

a. A decade of under-investment has led to a deterioration in network quality and an undersupply of road infrastructure

Road vehicles are the predominant mode of transport in Indonesia

Road vehicles are the predominant mode of transport in Indonesia, accounting for 70 percent of freight ton-km and 82 percent of passenger km. The road sector plays a critical role in facilitating inter-urban passenger movements and in linking communities and markets throughout the country. Consequently, its efficient functioning is important for sustaining the country's international competitiveness as well as improving the availability of goods and services within the economy. Road transport is also a key factor in reducing poverty and providing access to education and health services, particularly for people living in rural areas.

Total classified road network was reported to be over 477,000 km and represents an asset value worth more than 15% of Indonesia's GDP

In 2009, the total length of the classified road network in Indonesia was reported at 477,079 km, and comprised 8.1 percent of national roads, 11.5 percent of provincial roads, 80.7 percent of district roads, and 0.2 percent toll roads. This is excluding non-engineered village and other roads amounting to a further 244,000 km. The functions and status of the road networks in Indonesia are regulated by Law No. 38/2004 and Government Regulation 34/2006. The functions of road networks are classified according to arterial roads, arterial/collector roads, local roads and neighborhood roads. Based on administrative status, road networks are classified by national roads, provincial roads, district/urban (*kabupaten/kota*) roads, and village (*desa*) roads.

The availability and quality of Indonesia's road infrastructure lags those of some regional peers

The demographic road density (1.5 km per 1,000 people) and spatial road density (190 km per 1,000 km^2) are about average when compared with regional and international benchmarks. Indonesia currently ranks only 84th out of 134 countries in the availability of road infrastructure. It has a lower quality of road infrastructure than Malaysia, Thailand, and China, but ranks ahead of India, the Philippines and Vietnam.[1]

Road investment returned to the pre-1997/1998 financial crisis level of 1.6 percent of GDP, but this level of investment no longer keeps pace with increasing demand and growth

After a steep decline in the late 1990s road investment returned to the pre-1997/1998 financial crisis level of 1.6 percent of GDP. However, this level of investment no longer keeps pace with increasing demand and output growth. The vehicle fleet has increased threefold since 2001. Traffic congestion in urban areas and on regional highways and deteriorating sub-national road conditions are of particular concern because these factors are restraining Indonesia's growth potential and competitiveness.

The Government of Indonesia recognizes these challenges and has made road infrastructure one of its main priorities

The Government has recognized that the Indonesian economy needs the support of a well-integrated and efficient transport sector, and thus has accorded it the main priority for infrastructure public spending. It has set ambitious targets to address the challenges including building 19,000 km of highway in the five main islands, developing integrated transportation networks (inter-modal and inter-island), and improving urban transport in metropolitan areas. Better road infrastructure is also a focus of the recently released "Master Plan for Acceleration and Expansion of Indonesia Economic Development" (MP3EI), which provides the basis for supporting the connectivity agenda.

b. National roads are in good condition, but heavily congested

National roads including tolled expressways, are mostly in good condition, but traffic congestion in urban areas and regional arterial roads is prevalent

National road condition has improved in recent years. About 86 percent of national roads are currently in good condition, which is well above the developing country average of 70 percent. This improvement in national road condition reflects a recent emphasis on national road maintenance. However, there is a strong concentration of traffic in the urban centers and on the regional roads because more than a third of the total traffic in vehicle-km is using the national roads. As a result, road travel speeds are relatively low, in the order of 40 to 45 km/hr on many national routes. Overloaded vehicles on regional main roads are common due to the low level of regulatory enforcement, while the extent of damage is exacerbated by ineffectual vehicle inspections, and poor vehicle maintenance.

[1] World Economic Forum Global Competitiveness Report 2010-2011

Toll road development has stagnated

Progress with expressway and toll road development[2] has been exceedingly slow. Some highway concessions have not reached financial closure even after 10 years have elapsed. By 2010, only 742 km of toll roads had been constructed and become operational even though the first toll road development was back in 1978. This is less than a third of the estimated needs for 2,400 km according to the Ministry of Public Works Strategic Plan and lags well behind several countries in the region in terms of expressway density (km/1,000 population) including China, Malaysia, Thailand, and the Philippines. Although progress has been made recently in streamlining the legislative and institutional frameworks for toll roads, the implementation of PPP (Public Private Partnership) projects has continued to be constrained by a complex land acquisition process, weak project preparation and selection, as well as the absence of an efficient toll roads viability gap funding mechanism.

c. Productivity and efficiency of national road management remains sub-optimal

The level of spending on national road maintenance and rehabilitation is close to the estimated needs, but more spending on capacity expansion is necessary

Central government spending on national roads represents about 60 percent of total transport spending (on all modes) or about 0.26 percent of GDP. Expenditure on national roads has nominally almost quadrupled from Rp 5.3 trillion in 2005 to Rp 19.3 trillion in 2009. During the period 2005-09, the national road network was mostly extended through the re-classification of 8,000 km of main roads, especially through betterment[3] interventions, to improve sub-standard roads considered strategically important.[4]

The significant increase in recent national road spending is, however, partly absorbed by increasing road unit costs

The significant increase in recent road spending is, however, partly absorbed by increasing road unit costs. Output costs grew from Rp 1.2 billion/km to Rp 3.6 billion/km for maintenance and from Rp 1.4 billion/km to almost Rp 6 billion/km for new construction between 2005 and 2010. Although general inflation and a sharp rise in petroleum costs (affecting asphalt prices) doubtless contributed to this increase, it is more likely that the rise in unit costs was largely driven by more expensive betterment works, small contract size, and the use of higher cost treatments, such as thicker construction, especially within the maintenance program. An analysis of DGH (Directorate General of Highways) data from 1,243 national road maintenance contracts shows the following: (i) the average size of the contracts is small and more than a half of the total routine maintenance contracts have a value of less than US$100,000; (ii) most of the periodic maintenance contacts have a value of less than US$500,000; and (iii) an average unit cost of US$4,455/km and US$159,920/km for routine and periodic maintenance, respectively. The unit costs are on the high side of the international range of US$2,000-US$5,000 for routine maintenance and US$70,000-US$100,000 for periodic maintenance.

Development funding will need to increase to meet growth in demand but the current policy of providing major capacity expansion through incremental widening is not optimal. And, Present funding is sufficient for preservation if applied with optimal policies

The DGH's Medium Term Expenditure Framework (MTEF) study conducted in 2010[5] identified a number of key issues relating to performance: (i) Funding of national roads tripled during the 2005-09 period, but there was little increase in annual output coverage and this resulted in steeply higher average costs for both preservation and development works. While this may have translated into higher technical standards, it prompts questions on the added value achieved and the efficiency of pricing in the recent program.(ii) The actual life and performance of the roads appears relatively short, and this results in comparatively heavy treatment requirements, based on the annual coverage of the program and the relatively neutral improvement in the condition of the network. There is a need to review the design life standards policy and the management of quality in both design and construction.(iii) The policy on improvement of sub-standard road width

[2] In principle a toll road is a subset of an expressway.

[3] In Indonesia, "betterment" typically involves the base course strengthening, minor widening, providing a new asphalt wearing course, and improving drainage. In most cases, the road already has an asphalt pavement.

[4] Strategic road (*jalan strategis*) is road network that is considered to be strategically important that serve national interest with strategic criteria: plays a role in provision of national unity and need, serves the dangerous area, part of regional or international routes, serve as border between countries, and considered a defense objective.

[5] Expenditure Planning and Performance-Based Budgeting in the Directorate General of Highways. 2010. Paterson, W and Harahap, G. Indonesia Infrastructure Initiative (IndII)

is expensive because of the high average cost of incremental widening, which includes most of the 8,000 km of strategic roads added to the network. A review is needed to consider the benefits of a longer-term policy for more comprehensive renewal and reconstruction of those roads that would have lower long-term cost implications. (iv) The policy of providing major capacity expansion on trunk routes may not be an optimal use of development funding. The long-term need is for widening to 4-lane divided standard and a separate integral expressway network where appropriate. The policy on major infrastructure development needs to extend to a longer, 50-year horizon so that adequate resources are allocated to accelerate the expressway development to meet high economic demand. (v) Present funding is sufficient for preservation if applied with optimal policies, but development funding will need to increase to meet forecast growth in demand.

The force-account approach for road maintenance is still commonly used

There is an extensive use of force-account labor for national road maintenance, which is increasingly out of line with international best practice. As a result, the national road agency retains a large number of workers which generally leads to less efficient maintenance work. International experience suggests that applying performance-based contracts can improve efficiency in road maintenance. Several countries in Latin America and Africa have phased out the force account approach and moved towards performance-based contracting. Some neighboring countries, such as the Philippines, Cambodia, Thailand and Vietnam, already have ongoing performance-based contract pilot projects. However, Indonesia has not yet commenced with a pilot of this nature although the debate about maintenance by forced account has been continuing for well over a decade. Four pilot sections have, however, been identified.

The ratio of staff to km of road network of DGH which is responsible for managing national roads, is higher than the international average

Although DGH is one of the best performing implementing agencies in Indonesia, it operates at a staff/network level of 11.2 staff/100 km which is more than six times higher than the international norm of two staff/100km. Although it can be argued that the appropriate ratio depends on country specific circumstances, this level is clearly too high. The majority of staff is stationed in the regional offices and staff/network levels in a number of regional offices is high. In addition, many qualified professionals are located in central government despite the decentralization transition. Furthermore, the inefficient in-house labor (force account) approach, which is increasingly abandoned in many countries, is still commonly used for road maintenance in Indonesia.

d. Implementation capacity needs substantial improvement

Timely budget execution and absorptive capacity of national road programs need to be improved

Low absorptive capacity and delays in budget execution remain a concern even though disbursements improved in 2008 reaching 95 percent of revised budget and reaching over 100 percent of the revised budget in 2009 due to additional stimulus programs to contain the impact of the 2008 crisis, However, it has deteriorated recently to around 85 percent of the budget expended in 2010. Complicated land acquisition processes for new projects and lengthy budget revisions and procurement processes are among the main constraints. This raises concerns since development targets may not be achieved and the recent increased allocation for roads may not be implemented. In addition, the spending pattern also tends to be skewed towards the end of the fiscal year (especially the last quarter of the year), which does not leave much time to carry out quality assurance activities and increases the risk of abuse of the system. Reforms to accelerate budget execution are underway including a newly introduced e-procurement system and the implementation of an early procurement process prior to start of the fiscal year.

e. Sub-national roads condition has deteriorated due to maintenance backlog

Decentralization has led to a substantial increase in length of district roads, but road condition has worsened

Since decentralization, sub-national governments have played a key role in managing the provincial and district road networks which now account for over 80 percent of Indonesia's total road network. Despite significant increases in sub-national road spending, however, the overall condition has not improved. Although available data fluctuate significantly and may not be fully reliable, there is general consensus that nearly a quarter of provincial roads and 40 percent of the district roads are currently in bad condition. District roads are gradually deteriorating as only 35 percent were in bad condition in 2001.

Districts prioritize construction of new

Since districts usually focus more on new road development, allocations for maintenance tend to be significantly under-budgeted. The limited financial resources made available

roads over maintenance

are often allocated to the rehabilitation of just a few segments of road. This partial approach has not improved the overall quality of the network and is leading to a maintenance backlog. Decision-makers at the local level are not necessarily unaware of the hidden costs of neglecting maintenance and of the cost implications of premature road failures, but determination of local priorities is heavily influenced by local politics and is seldom based on technical and economic methodology or proper condition surveys. Consequently, priorities are frequently resolved on the basis of equity and political negotiation rather than actual need.

f. Decentralization (regional autonomy) has led to fragmented and weak institutions managing sub-national roads

Public works departments at district level have limited capacity and lack training

The transfer of administrative and fiscal responsibility from central to local government was carried out over a short time period. Although in general there was no disruption in service delivery, lack of a proper transition in capacity development has had a serious implication for the capacity of local government, especially in the road sector. Since decentralization, there has been little technical training provided for local government public works staff, whereas in the past, such technical training was regularly conducted by the DG-Highways, Ministry of Public Works, through its regional offices (Balai Besar). According to various sources, and confirmed by the brief survey conducted for this report, most district public works departments experience a shortage of professionally qualified staff and an oversupply of support workers.

Standard technical assessments of sub-national road condition are no longer conducted

Since the implementation of decentralization (regional autonomy) in 2001, detailed technical assessments of sub-national road conditions are no longer carried out mainly due to a lack of technical skills, equipment, and funding at the local level. Needs assessments are conducted only superficially, based on visual inspections. There is also less incentive for sub-national governments to monitor road condition since formal regular reporting to central government (e.g. DGH) was stopped after decentralization. In the past, sub-national governments were obligated to provide detailed information on such conditions in a standardized format, which was used as inputs in allocating their budgets. The lack of proper assessments has resulted in inconsistent data for sub-national road conditions and created difficulties in monitoring outcomes and designing policy interventions. In contrast, the technical database of national road conditions is still well-maintained by DGH.

The force-account approach is also widely used for sub-national road maintenance

Similar to the approach used at the national level, sub-national governments also mostly apply force-account labor for road maintenance. Most[6] of the maintenance activities are undertaken through force accounts in the ten locations visited during the 2011 fieldwork. Sub-national road agencies generally lack technical skilled staff, which contributes to less efficient maintenance work.

Distirct roads may be over designed and certain district road sections may not be economically justified

A further issue is a preference for sealed roads as opposed to gravel even when the traffic volumes are quite low and sealed roads are not economically justified. This is reflected in the fact that over 50 percent of the district road network is paved using an asphalt mix. The standards applied currently should be reviewed to allow for more cost-effective solutions for roads carrying lower traffic volumes.

g. Road-user charges are a potential source of road financing, but the relationship with road maintenance is very weak

The opportunity cost of neglecting sub-national road maintenance is high

Every US dollar spent on road maintenance will generate US$4.6 in road user cost savings. It is therefore important to close the funding gap that has opened up and eliminate the backlog of maintenance, which is largely attributed to sub-national roads.

The RONET results also show that the estimated annual cost of properly maintaining national roads is Rp 6.9 trillion (or US$665 million)[7], which is close to the current spending level by DGH. However, this expenditure could be reduced if the current maintenance

[6] Eight out of 10 surveyed locations use force account to carry out road maintenance work.
[7] Exchange rate used was actual from budget assumption 2009 of IDR 10,408/US$

practices were made more efficient.

As for the sub-national roads, an estimated of IDR 32.5 trillion per year is needed to improve the current share of all sub-national roads in fair and good condition from 63 percent to 86 percent over five years. Current estimated annual expenditure is IDR14.9 trillion, hence the annual funding gap is IDR17.6 trillion.

There is a disconnect between revenues collected from road user charges and road maintenance expenditure.

Road-related user charges (RUCs), which include annual vehicle license fees (PKB), vehicle transaction/transfer fees (BBNKB), and a fuel levy (PBBKB), are significant sources of revenue for provincial governments, accounting for between 20 and 28 percent of total provincial revenue. Such charges, however, are regarded as regional taxes rather than user charges and are managed and collected by provincial government prior to their distribution between each province and its districts. The revenues collected from these taxes are equivalent to more than two thirds of road maintenance needs. However, there is a very weak link between road-user charges and road preservation. Currently, only 10 percent of the proceeds from the annual vehicle license fees are earmarked for road sector development which is only 5 percent of the estimated sub-national spending on maintenance of the road network. Because revenues from RUCs are considered as general taxation they are not ploughed back to preserve the sub-national road network.

There is a case for aligning road-user charges more closely to the costs incurred according to the different categories of vehicle

Heavy vehicles such as trucks do not pay sufficient user charges. Motorcyclists also do not contribute enough because of the additional air pollution and road safety costs they impose. Vehicles in general do not contribute enough towards provision of road infrastructure or to ensure road safety. There is, moreover, an imbalance between the rising vehicle population and the amounts allocated for the provision of new construction, public transport facilities, regulatory enforcement and safety. Thorough reviews of road-user charges and the implementation of a revised funding allocation system are necessary.

There is a financial and a legal basis for the establishment of a Road Preservation Fund at provincial levels

Financial sustainability for the preservation of road assets is potentially achievable but recent spending patterns reflect dependence on and vulnerability to public budget. Revenues raised from the road sector through various road user charges at local level (Province and Districts) exceed current road preservation expenditure. These revenues are however considered as general taxation and the previous legislation has prevented the creation of a sustainable financing mechanism that would secure adequate sources of finance. The amendment of the Traffic and Road Transport Law provides a new institutional space for the establishment of a road preservation fund (Article 30).

2. Recommendations

Addressing road infrastructure challenges is critical for supporting Indonesia's development

The Government of Indonesia recognizes the important role of road transport and has made transport infrastructure a key priority with ambitious targets to be achieved by 2014. In recent years, budget expenditures by central and sub-national governments have increased significantly, but there is evidence that the efficiency of such spending could be substantially improved. Effective and efficient functioning of road transport infrastructure is central to accelerating Indonesia's economic development and supporting a poverty reduction agenda. The findings and recommendations that follow address key questions such as whether adequate funding is being made available for the provision of road infrastructure; whether the available funds are being optimally allocated; and whether the country is getting value for money from its road investments.

National roads and expressways

a. Expand the capacity of the national road network by using adequate standards

Vehicle growth of five percent per year is expected to continue for

The Indonesian vehicle fleet is growing rapidly. It reached 70.7 million in 2009 of which three-quarters were motorcycles, With motorization at only 76 vehicles per 1,000 persons, but an average income of US$2,230 per capita,[8] growth in the vehicle fleet is predicted to

[8] Doing Business Indicators, 2010. The World Bank and the International Finance Corporation. Note that the rate of growth is rapid. Per capita income in 2005 was only US$1,304.

the foreseeable future

continue at around 9 percent per year for motorcycles and 5 percent per year for other motor vehicles for the foreseeable future, unless policies to dampen demand and restrain traffic growth are introduced.

The policy of providing major capacity expansion on trunk routes may not be an optimal use of development funding. The long term need is for widening to 4-lane divided standard and a separate integral expressway network where appropriate

The increasing demand for road space until recently has neither been supported by an appropriate increase in road expansion, nor, in cities, by travel demand management measures. Insufficient road infrastructure (both in quality and quantity) has been widely cited as a key factor constraining Indonesia's competitiveness. Congestion is likely to also diminishing the benefits of urban-led growth. Road users underpay for using the road system, and vehicle growth and use are encouraged by subsidized fuel.

However, expanding the current national network through reclassifying roads as national or special roads and devoting most of the budget to limited betterment and incremental widening of existing roads will not accomplish the development of a high standard arterial network that will best meet the needs of the economy. This has huge implications for DGH in terms of planning, project preparation, land acquisition and financing of physical works. The current administration recognizes this challenge and has set a target to expand the national road network in the Medium-Term National Development Plan (RPJMN) from 38,570 km in 2009 to 47,600 km by 2014. Achieving this target may necessitate accompanying improvements in budget execution and adopting simplified land acquisition and procurement processes. The future road network plan should consider appropriate standards for less densely populated (and trafficked) networks. One size fits all is not appropriate in the Indonesian context.

b. Improve management practices of national roads

Providing incentives for central technical staff at regional offices to work in sub-national government could improve productivity at all levels.

The relatively high ratio of staff to network size of DGH can be better utilized to support sub-national governments where the capacity and availability of technical staff is seriously lacking. Although there is no mechanism to redeploy staff, the introduction of incentive packages to encourage DGH staff to work in or with sub-national governments could better utilize existing resources and increase the productivity of staff at all levels.

Phasing out the force account approach in road maintenance and gradually moving to performance based contracts[9] could enhance efficiency

Improving road maintenance management by phasing out the force account approach and gradually moving to performance-based contracts (PBC) could further improve efficiency through competition, which could in turn improve quality at a lower cost. PBCs will be more attractive and applicable in and around urban areas to begin with because there is already an established small contractor market. A successful approach in other countries, however, has been to encourage force account units to become small contracting firms. Initially such firms are given special support and are guaranteed work for the first few years, but eventually they have to become fully competitive contractors. Some of these firms continue to expand and eventually can handle large-scale projects.

c. Streamline budget execution to improve timely project implementation

Improved budget execution is critical if development targets in the road sector are to be fully achieved

Although some reforms have been introduced to expedite budget execution such as: (i) the flexibility to carry out advance procurement before the fiscal year has begun; and (ii) the appointment of the implementing unit manager is no longer bound to a specific fiscal year, these measures are not yet been widely used in practice. In addition, reviewing and simplifying the lengthy budget revision processes is also expected to improve implementation practice. A new Law on Land Acquisition has recently been approved and is expected to accelerate the land acquisition process. Increasing the share of multi-year projects in the road sector could also improve implementation through reduced time and costs needed for administrative and procurement processes.

d. Accelerate toll road development by addressing constraints inhibiting Public Private Partnership (PPP) implementation

Improving PPP project

Although PPP arrangements are only feasible for a small percentage of the road network,

[9] In a traditional contract, the contractors are paid for the amount of work completed. Under a performance-based contract, the contractor works on a lump sum basis, usually receiving annual payments for meeting contractually binding performance requirements. International experience shows that PBCs can deliver higher quality results, often for a lower price.

selection and preparation by involving key related institutions (MoF) and providing adequate fiscal support through a viability gap is critical for successful implementation

this percentage is important because it includes the roads carrying the most traffic. To ensure the selected projects are viable and implementable, project identification and preparation needs to be improved by involving the Ministry of Finance and key related institutions from the beginning and throughout the process.

One of the factors slowing PPP implementation progress in Indonesia is that many PPP projects have been offered with inadequate due diligence undertaken prior to tendering. Budget preparation should be given priority and be supported appropriately with sufficient skills and resources. The project selection process also needs to be enhanced to ensure the selected projects receive high-level leadership support and risks are properly evaluated and shared.

A range of options could be adopted to institutionalize an improved project preparation process. For example, a Project Task Team could be set up for each individual PPP project, led by the contracting agency and made up of specialists from different government bodies to develop the project. A team of PPP experts could be established, comprising by and large investment bankers and lawyers, to help the contracting agencies and the Project Task Team to develop the PPP projects using international best practice. Other suggestions are to allocate appropriate resources to support project preparation as well as viability gap funding and to the resolution of land issues before commencing project procurement.

Focusing on the most strategic and viable PPP projects, and getting them transacted can be a powerful way to demonstrate government commitment to PPP implementation

The fundamental challenge for Indonesia in advancing its PPP agenda is re-establishing confidence (which was damaged during the Asian financial crisis) and getting commitment to undertake implementation. Rather than a long list of projects, a key success factor identified in other countries has been the ability of governments to prioritize a short list of well-developed projects that are clearly financially viable.

India's experience shows that while convening international gatherings can be a useful facility to promote PPP projects, focusing on the most strategic and viable projects and getting them implemented sends a more powerful signal to private investors in respect of the Government's willingness to support such partnerships and has proven successful in attracting greater private sector capital. Possible IFC participation in a 116 km toll road on the north coast of West Java Province on a build-own-operate-transfer basis is intended to respond to the GoI's request to invest large amounts in infrastructure.

The new land acquisition law clarifies roles and imposes time limits on each procedure but speedy implementation on the ground remains a challenge

The new land acquisition law clarifies roles, imposes time limits on each phase of procedures, and ensures safeguards for land-right holders. Most importantly, the law provides a clear mechanism for enforcing the principle of eminent domain, or revocation of land rights, to prevent small minorities from blocking projects that fulfill the public interest, such as expressway projects. However, the crucial power of revoking land rights will rest with provincial governors. Therefore, the feasibility of projects will vary somewhat, depending on the province and the inclination of the governor involved. Moreover, projects that cross provincial boundaries (i.e. expressways) will be more cumbersome than those contained within one province. Overall, the new law should significantly increase the feasibility of land acquisition projects.

Sub-national roads and institutional improvements

e. Improve institutional productivity and efficiency of sub-national road maintenance

Strengthening the institutional capacity at the provincial level, possibly through semi-autonomous road agencies, could enhance the efficiency of sub-national road management

Decentralization has led to fragmented and weak institutional capacity in managing sub-national roads. There are currently more than 500 entities responsible for sub-national road maintenance (33 provinces and 491 districts (Kabupaten/Kota), making it very difficult for a coordinated approach to address the maintenance backlog. Consideration should be given to the establishment of a semi-autonomous provincial road agency to strategically plan and manage the extended provincial road network including district roads. Districts could delegate the management of all or part of their road networks using a contract management approach. This institutional set up has been widely used with success in a number of countries in Latin America. The objectives of such a new institutional arrangement would be to increase regional coordination, benefit from economies of scale and improve the effectiveness and efficiency of public expenditure.

The proposal also addresses the technical and managerial capacity issue without undermining local decision-making authority. The new provincial road agency should not be perceived as a parallel institution to the existing arrangements. The personnel of the provincial road agency would be established from the existing Public Works staffs that are currently managing local government roads. Representatives of the provinces and districts would form an oversight board for the agency. The board would advise on the planning, budget allocation and management of the road network. The establishment of this semi-autonomous provincial road agency can be tested through a demonstration project.

f. Incentivize DAK allocation for sub-national road maintenance

Encourage more DAK allocation for road maintenance and low volume road construction

DAK is the only allocation that is earmarked for infrastructure including roads. However, this level of DAK funding for road is still very low (around IDR 4 trillion per year). The current DAK allocations can be used for new road construction and for maintenance work. Considering the current lack of funding of road maintenance, DAK resources could be directed to road preservation activities. In addition, DAK formula for the road sector can further be improved by excluding "unstable (poor and damage) road condition" as one of its technical criteria since this is a disincentive for timely road maintenance.

Road user charges and bridging the financing gap

g. Improve the effectiveness of road-user charges in addressing the road preservation funding gap

The average fuel levy needed to cover the sub-national road maintenance backlog requirements including rehabilitation work is IDR532/liter (5.32USc/liter)

The annual funding gap to preserve sub-national roads is IDR17.6 trillion. If the assumptions are made that the main source of revenue is a fuel levy and that any funding gap between revenue and preservation costs will be closed within five years, then the average fuel levy would be **IDR532/liter** to cover the additional amount needed of IDR17.6 trillion. Once the road network is back to a maintainable condition, this road maintenance funding gap will require only IDR156/liter. This is based on existing fuel consumption patterns. Since the price of fuel is subsidized by Government, on the one hand the taxpayer is paying for the provision of roads, on the other hand the same taxpayer is subsidizing users to impose wear and tear on them. If the fuel subsidy were to be phased out or reduced, the savings derived could potentially be used to fund the road maintenance requirements which would in turn contribute substantially towards improving Indonesia's competitiveness.

Road user charges can potentially cover more than 90 percent of the annual maintenance and rehabilitation needs of sub-national roads

The estimated total revenues generated from road-user charges (vehicle licenses, transaction fees, and fuel levies) can potentially cover more than 90 percent of the annual maintenance and rehabilitation needs of sub-national roads over the next five years, if, hypothetically, they are entirely earmarked for roads. Although sub-national governments have competing priorities for development, the current level of earmarking for roads is only about 10 percent of vehicle tax or about 5 percent of total revenue from road-user charges, which is far too low based on international experience. Thus, increasing dedicated revenue from road-user charges on a gradual basis can be considered. The amendment of the Traffic and Road Transport Law No 22/2009 (Article 30) provides a legal basis for the establishment of a road preservation fund at the provincial level. The road preservation fund should meet the key characteristics of Second Generation Road Funds[10]. A critical dimension of this form of road fund is the creation of a specific legal and institutional framework, which would assure proper management of the funds and accountability to users and government.

[10] The key characteristics of Second Generation Road Funds are (i) Sound legal basis – separate road fund administration, clear rules and regulations; (ii) Agency, which is a purchaser not a provider of road maintenance services; (iii) Strong oversight, board based private/public board; (iv) Revenues incremental to the budget, coming from charges related to road use and channeled directly to the Road Fund bank account; (v) Sound financial management systems, lean efficient administrative structure; and (vi) Regular independent technical and financial audits.

h. Closing the arterial roads and expressway development funding gap

The average fuel levy needed to cover the 5 year expressway and arterial roads program is 11.0 US c/liter

The Ministry of Public Works Strategic Plan estimates that Indonesia needs around 1,000 km of expressways and 10,000 km of arterial roads in the next five years. The resources required for the expressway and arterial road development program are estimated to be around US$18 billion,[11] or an average of US$3.6 billion/yr. If the assumptions are made that the main source of revenue is a fuel levy and that any funding gap between revenue and development costs will be closed within five years, then the average fuel levy would be 11.0 US c/liter. This financing mechanism could also be used as a basis for establishing a viability fund to increase private sector participation in infrastructure projects.

[11] Based on US$8.0 million/km of expressway and US$1.0 million/km of 2-lane highway

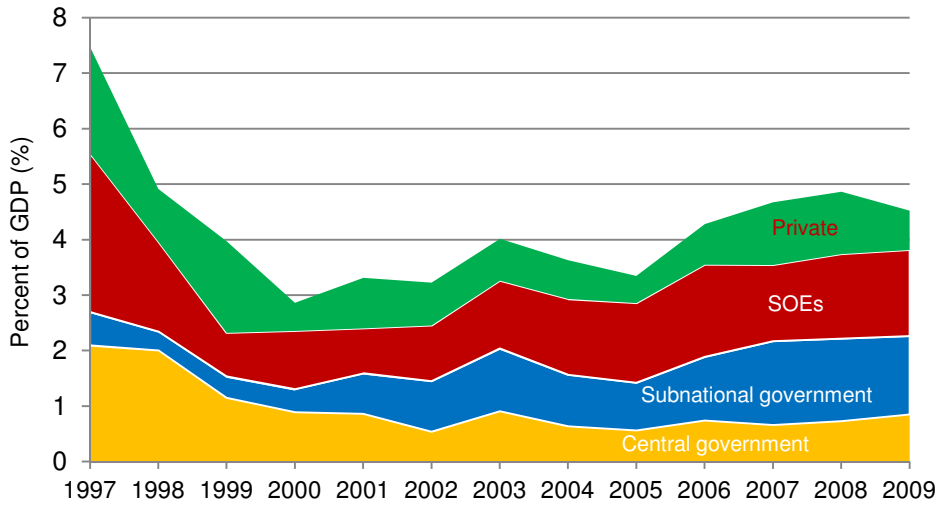
A. INTRODUCTION

1. Legacy of Infrastructure Underinvestment

Indonesia's investment in infrastructure fell sharply after the 1997/1998 Asian financial crisis and has only partially recovered

Indonesia faced major challenges in meeting the demand for infrastructure investment during the late 1990s. Infrastructure investment fell from above 7 percent of GDP in 1995 and 1996 to around 3 percent in 2000 as the Government focused on fiscal consolidation and cutting public debt following the 1997/1998 Asian financial crisis. Since then, the level of investment has recovered only moderately to slightly above 4 percent of GDP in 2009. The current level of investment still lags its pre-1997/1998 crisis levels and is relatively low compared with some countries in the region. Infrastructure investment to GDP in China, Thailand and Vietnam was estimated at over 7 percent.[12]

Figure 1: Investment in infrastructure in Indonesia by source (% of GDP) 1997-2009



***Sources*: Ministry of Finance (processed) for central and sub-national governments; Annual reports for state-owned enterprises; World Bank PPI database for private investment.**

This has resulted in deteriorating and undersupply of infrastructure

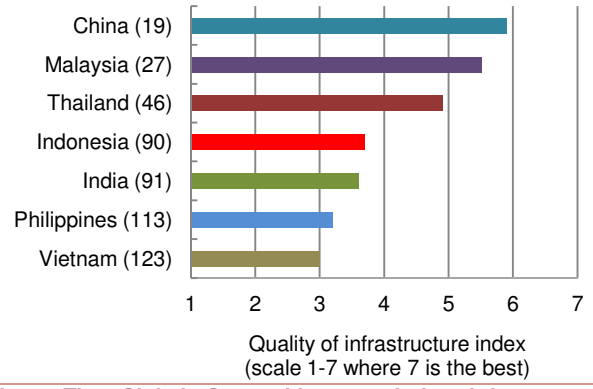
The impact of recent investment levels can be seen in the poor quality measures for infrastructure in Indonesia which ranks as one of the lowest in the region. This low quality of infrastructure is one factor constraining further improvements in Indonesia's competitiveness ranking.[13] These ratings reflect a worsening condition of roads, increasing traffic congestion in urban areas, limited port capacity, and the need for modernization of the railways.

Infrastructure weaknesses are one of the factors constraining Indonesia's growth prospects

Poor levels of infrastructure development are also holding back Indonesia's growth potential and poverty reduction progress. The symptoms of more than a decade of low infrastructure investment include increasing congestion in urban areas, high levels of inter-island cargo transport costs, and limited access to improved sanitation. Inadequate supply of infrastructure is consistently identified by firms as a constraint on their operations and investment. Poor infrastructure can also adversely affect the well-being of the population through a variety of other channels such that high transport costs impede access to health and education facilities. Weak infrastructure linkages between regions can also worsen the impact of shocks, such as weather-related events, exacerbating difficulties in moving products across regions.

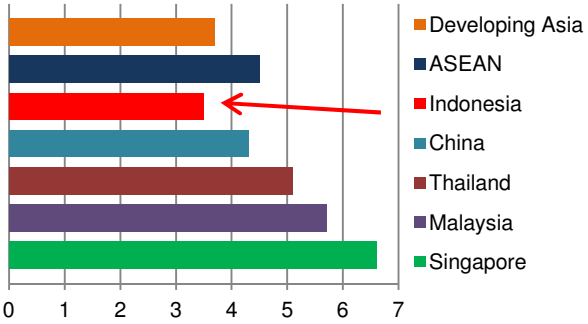
[12] "Connecting East Asia: A New Framework for Infrastructure" 2005 The World Bank, Asian Development Bank.
[13] Indonesia Competitiveness Report 2011. 2011. The World Economic Forum.

Figure 2: Indonesia ranks among the lowest in the region on quality of infrastructure indices…
(Overall quality of infrastructure index, 2010-2011)



Note: The Global Competitiveness Index infrastructure measure is based on executive survey responses on the quality of roads, railroads, ports, air transport, electricity supply plus data on fixed phone lines and mobile phone subscriptions and scheduled airline seat kilometers
***Source*: World Economic Forum Global Competitiveness Report 2010-2011**

Figure 3: …with low performance of road infrastructure
(Quality of road infrastructure, GCI 2011)



Note: The above indices are based on executive survey responses
***Source*: World Economic Forum Global Competitiveness Report 2010-2011**

The GoI recognizes the importance of addressing Indonesia's infrastructure challenges in longer-term plans

The Government has committed to address infrastructure challenges as one of its main priorities. This is emphasized in the current Medium-Term Development Plan (RPJMN) for 2010-14, which sets a range of infrastructure development targets to be achieved by 2014. These include building 19,000 km of highway network, increasing the electrification ratio from 65.8 percent in 2009 to 70.4 percent in 2014, and increasing access to water and sanitation to meet Millennium Development Goals (MDGs) targets. Improving infrastructure is also the main focus of the Master Plan for Acceleration and Expansion of Indonesia's Economic Development (MP3EI) 2011-2025, which was launched in May 2011. There have also been some supportive legislative developments such as the creation of the Risk Management Unit in the Ministry of Finance and the enactment of Presidential Regulation (Perpres No. 67/2005), which sets out the criteria that apply to Public Private Partnership (PPP) projects requiring government financial support. The Law on Land Acquisition has been passed to the Parliament. Many issues still remain to be addressed, not least in improving coordination of related policies across different levels and institutions within the Government.

2. Impact of Underinvestment on The Transport and Road Transport Sector

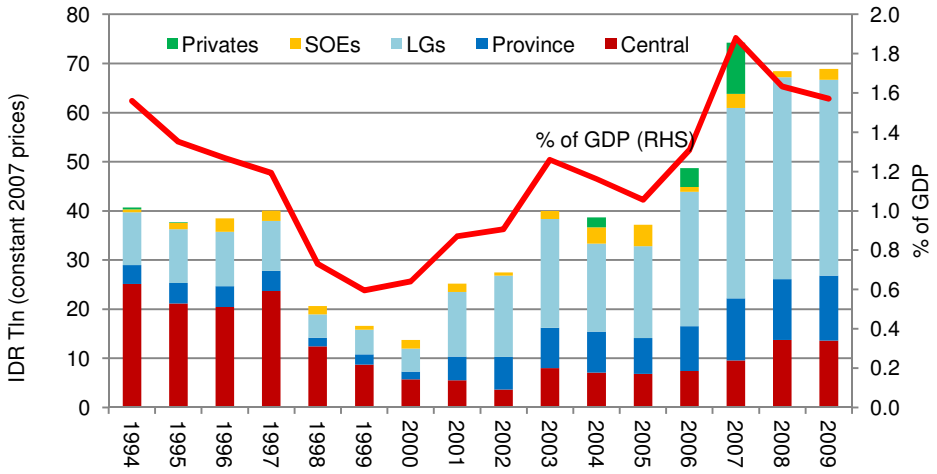
Investment in transport sector also declined sharply after the mid-1990s Asian crises

Overall investment in transport also declined from a high of 2.2 percent of GDP in 1994 to 0.9 percent in 2000, recovering moderately to 1.9 percent of GDP in 2009. Transport sector investment is the backbone of the economy, accounting for more than 40 percent of overall infrastructure investment. The public sector accounts for almost 90 percent of total transport investment. The role of the private sector is relatively small, concentrated on a few tolled highway projects and private rail lines.

Investment in the road sector returned to pre-1997/1998 crises level, but has not kept pace with increasing demand and output growth

Road investment has returned to the pre-financial crisis level, mainly driven by increasing sub-national government spending. The level of investment in 2009 was equal to that of the pre-crisis level of 1.6 percent of GDP (Figure 4). However, this level of investment has not kept pace with increasing demand and output growth. The vehicle fleet has increased threefold since 2001. Nonetheless, the Government recognizes that the Indonesian economy needs the support of a well-integrated and efficient transport sector, and has accorded it the main priority for infrastructure public spending. Road vehicles are the predominant mode of transport in Indonesia, accounting for 70 percent of freight ton-km. and 82 percent of passenger km. The road sector plays a critical role in facilitating inter-urban passenger movements and in linking communities and markets throughout the country. Its efficient functioning is important for sustaining international competitiveness as well as for improving the availability of goods and services within the economy.

Figure 4: Investment in roads in Indonesia (real terms 2007 Rp billion and % of GDP)



Source: Ministry of Finance (processed) for central and sub-national governments; Annual reports for state-owned enterprises; World Bank PPI database for private investment.

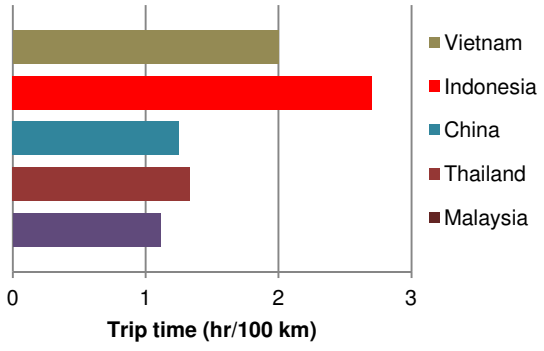
Despite recent increase in funding there is still a shortage of national road capacity and deteriorating conditions of sub-national roads

The public sector is largely responsible for road infrastructure investment in Indonesia, while private sector and state-owned enterprise roles are limited to toll road investments and their management, which have been stagnating in the past decade. Following decentralization, sub-national governments have played an increasingly important role, representing more than two thirds of road sector investment (Figure 4). However, despite recent funding increases for sub-national governments and a renewed emphasis on maintenance at the central level, Indonesia still lacks high standard, fast arterial road connections along major trade and commercial corridors and road conditions are not even close to the level experienced in the late 1990s.

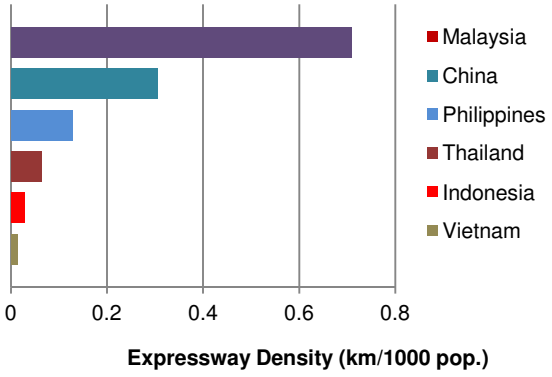
As a result, Indonesia's transport sector performance is still poor compared to some of its regional peers

Similar to the overall infrastructure quality ranking, Indonesia also ranks among the lowest in the availability of road infrastructure (ranking only 84th out of 134 countries).[14] The road transport cost, represented by trip time, is one of the highest in the region holding back Indonesia's competitiveness. Expressway development has stagnated and a serious backlog of needs has been established. The expressway density indicator is extremely low compared with most neighboring countries (Figure 5).

Figure 5: Transport cost and backlog in expressway development



Source: World Economic Forum Global Competitiveness Report 2010-2011



Source: World Economic Forum Global Competitiveness Report 2010-2011

[14] Global Competitiveness Index, World Economic Forum, 2011.

The GoI recognizes the challenges and has made efforts to address them

The Government has recognized the challenges of the road sector and has set an ambitious target in the medium term development plan (RPJMN). The road sector has also received increasing budget allocations, accounting for example more than 60 percent of total public expenditure on transport in 2008. At the same time, the Government has also initiated reforms of the fiscal and legislative framework to further improve road sector performance and management, as well as to attract greater private sector participation. For example, the separation of the regulatory and service delivery functions of toll roads through the restructuring of Jasa Marga and the creation of a new regulatory body (Badan Pengatur Jalan Tol (BPJT), 2005) and the amendment of the Traffic and Road Transport Law (Law No.22/2009), which provides the option for establishment of a road preservation fund and established regulatory and institutional framework for Public Private Partnership (PPP) implementation. A revised Presidential Regulation (Perpres No.13/2010, a revision of Perpres No. 67/2005) concerning public-private sector cooperation provides better clarity and support for the PPP framework and the provision of government support and guarantees. The Government has also set up various institutions and financing facilities to support PPP transactions, such as the KKPPI (Committee for the Acceleration of Infrastructure Provision) to assist with high-level coordination of PPP issues and a Risk Management Unit (RMU) in the Ministry of Finance to assess projects that require financial support from the Government.[15]

[15] Please see Andri Wibisono, Jeff Delmon, and Hongjoo Hahm (2011), *Unlocking the Public-Private Partnerships Deadlock in Indonesia*

B. INSTITUTIONAL AND POLICY FRAMEWORK FOR ROAD MANAGEMENT

1. Administrative Classification of The Road Network

The functions and status of road networks in Indonesia are regulated by Law No. 38/2004 and Government Regulation No. 34/2006

The functions and status of road networks in Indonesia are regulated by Law 38/2004 and Government Regulation 34/2006. Law 38/2004 is an amendment to the Law 13/1980 to reflect delegation of responsibilities after decentralization and to tailor to new developments in traffic management and engineering practices. The functions of road networks are classified according to arterial roads, arterial/collector roads, local roads and neighborhood roads. Based on status, road networks are classified as follows: national roads, provincial roads, district/urban (*kabupaten/kota*) roads, and village (*desa*) roads (Appendix 1).

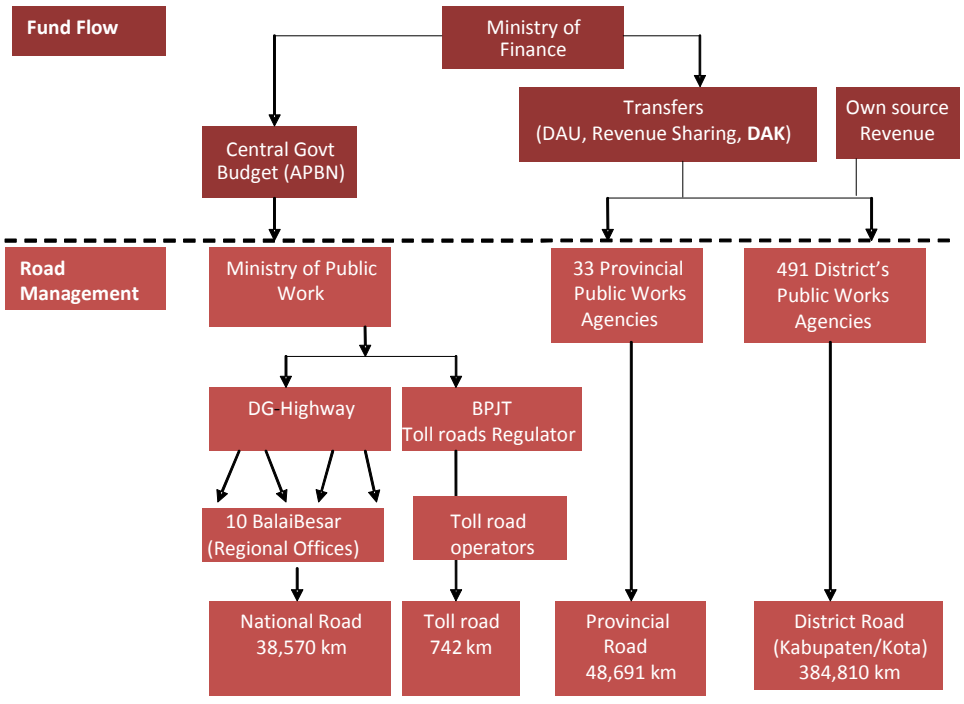
The road standards normally adopted are as follows:

- Expressway – 2 x 3 lanes with a 2 x 1 emergency lane
- National roads - two lanes, minimum width seven meters;
- Provincial roads – two lanes, minimum width six meters;
- District roads – vary with traffic volume between 3.5 and 6 meters

There is clear division of responsibility between levels of government in managing public road networks

Responsibilities for the financing, planning and implementation of road works in the public network are determined by administrative responsibilities. These responsibilities are also governed by Government Regulation 34/2006. Central government is responsible for the development and maintenance of national roads, but can delegate to provincial governments as part of a "deconcentration task" and to districts as part of an "assistance task". Provincial and district governments are responsible for the development and maintenance of provincial and district/city roads, (Figure 6).

Figure 6: Institutional arrangements for the road sub-sector in Indonesia



Source: Various laws and regulations and World Bank staff analysis
Note: DAU is Dana Alokasi Umum (General Block Grant), DAK is Dana Alokasi Khusus (Specific Block Grant), BPJT is Badan Pengelola Jalan Toll (Toll road regulator)

2. Central Government

The DGH is responsible for the management and development of the national road network

The Directorate-General of Highways (DGH), which is part of the Ministry of Public Works (MPW), has responsibility for the management and development of the national road network and a supporting advisory role to sub-national government agencies for the management of provincial, district (*kabupaten*) and urban (*kota*) roads. The Toll Road Regulatory Agency (BPJT), which is a related agency under MPW, is responsible for the regulation and for oversight of the management of designated toll roads, while DGH remains responsible for the technical regulation applying to expressways, including toll roads.

DGH has 10 regional offices (Balai Besar) across provinces

The ten regional offices are classified based on geographical distance of selected provinces. DGH has around 4,526 professional staff of which 45 percent have a degree or post graduate qualification. Some 14 percent of these staff is located centrally and the remaining 86 percent are distributed among the ten Balai Besar (i.e. regional offices based on groups of provinces). There are two directorates covering program and technical support and three directorates responsible for implementation support divided by Region I, Region II, and Region III.[16] The distribution of Balai by working areas and kilometres of road is shown in Table 1.

Table 1: Allocation of work areas to the ten Balai Besar

BBPJN*	Balai Location	Working Area	Staff	Road Length km	Staff/ 100km
I	Medan	Aceh, North Sumatra, Riau and Riau Islands	480	4,170	11.5
II	Padang	West Sumatra, Bengkulu, Lampung	446	2,655	16.8
III	Palembang	Jambi, South Sumatra, Bangka Belitung	208	3,764	5.5
IV	Jakarta	Banten, Jakarta, West Java	363	1,930	18.8
V	Surabaya	Central Java, Yogya, East Java	341	3,200	10.7
VI	Makassar	North Sulawesi, Gorontalo, West Sulawesi, Central Sulawesi, SE Sulawesi, South Sulawesi	880	7,089	12.4
VII	Banjarmasin	West Borneo, Central Borneo, S Borneo, E Borneo	505	5,704	8.9
VIII	Denpasar	Bali, West Nusa Tenggara, East Nusa Tenggara	378	2,380	15.9
IX	Ambon	Maluku, North Maluku	135	1,445	9.3
X	Jayapura	Papua and West Papua	149	2,303	6.5
		Total	3,885	34,640	11.2

Source: DGH-Ministry of Public Work

Note: * BBPJN (Balai Besar Pelaksanaan Jalan Nasional) or DGH regional office

As part of broader public financial management reform, DGH has adopted PBB and the MTEF framework in its medium-term plans

The Ministry of Public Work was selected as one of pilot ministries to implement the PBB and MTEF in its programming and planning in 2010.[17] DGH has applied medium-term planning systems for formulating annual and indicative forward programs within a defined fiscal envelope for more than a decade. In 2011, the reform was rolled out and required all line ministries to prepare a 3-year rolling budget in a performance-based budgeting (PBB) program structure within the Medium-Term Expenditure Framework (MTEF) for the 2011-13 period.[18] The objective was to develop a performance orientated budgeting system in

[16] Assessment of the Road Construction Industry in Indonesia. 2011.Prepared for the World Bank by Scott Wilson Ltd.

[17] The current reform of public financial management in Indonesia began after the Asian financial crisis of 1997-2000 and resulted in key legislation being passed in 2003 and 2004, including the State Finance Law (Law 17/2003), State Treasury Law (Law 1/2004) and State Audit Law (Law 15/2004). The key elements of the reforms comprised a framework for improved budgeting techniques through application of a unified budget, and the application of a rolling MTEF process with performance-based budgets which was introduced in selected line ministries beginning in 2010.

[18] Expenditure Planning and Performance-Based Budgeting in the Directorate General of Highways. 2010. Paterson, W and Harahap, G. Indonesia Infrastructure Initiative (INDII).

line with international practice, which would include details of all available budget resources for the sector.

3. Sub-national Government

Sub-national governments are responsible for maintaining and constructing sub-national roads

Following the implementation of decentralization in 2001, the responsibility for the management of sub-national roads (provincial and district roads) was shifted from a central to a provincial and district/city government mandate. The provinces and districts/cities have a somewhat similar institutional set up to that of the central government. Public works agencies (Dinas Bina Marga) in the provinces are now responsible for preserving and constructing the infrastructure of provincial roads, while district/city public works agencies are responsible for the maintenance and development of district/city roads. The transportation agencies (Dinas Perhubungan) are responsible for road traffic and transport functions and programs, including route licensing and tariff regulation for public passenger transport services (Table 2).

Table 2: Allocation of policy and regulatory responsibilities of sub-national roads

Agency	Function
Public Work Agency (Dinas Pekerjaan Umum) at provincial level	• Plans and implements maintenance and development of the provincial network • Provides support and assistance for cooperation among *kabupaten/kota* in the development of road and bridge infrastructure (including expressways) • Grants licenses for the development of expressways that cross *kabupaten/kota*, (but not provincial) boundaries
Transportation Agency (Dinas Perhubungan) at provincial level	• Provides and maintains road signs and traffic control safety equipment on provincial roads and manages vehicle weighbridges • Sets tariffs for economy class passenger transport services that cross *kabupaten/kota* boundaries within provinces
Public Work Agency (Dinas Pekerjaan Umum) at *kabupaten/kota* level	• Takes responsibility for road infrastructure functions that are not specifically assigned to central or provincial government
Transportation Agency (Dinas Perhubungan) at *kabupaten/kota* level	• Takes responsibility for road traffic and transport functions that are not specifically assigned to central or provincial government

Districts/cities have a critical role, responsible for managing 80 percent of total road network

Around half of the public investment in roads is currently carried out by local governments which are now responsible for 80 percent of the total road network. Despite this pivotal role, the institutional set up at the local level has become more fragmented. New local administrations have proliferated significantly following decentralization. The number of districts increased from 336 in 2001 to 491 in 2010.

C. ROAD SECTOR OVERVIEW

1. Network Size, Characteristics and Condition

Total classified road network was reported at 477,079 km in 2009

In 2009, the total length of the classified road network in Indonesia was reported to be 477,079 km, and comprised 8.1 percent national roads, 11.5 percent provincial roads, 80.7 percent district roads, and 0.2 percent toll roads. This excludes non-engineered village roads (*jalan desa/lingkungan*) in the order of 244,000 km. More than 60 percent of the classified road networks are paved with the following breakdown: national roads 91 percent, provincial roads 81 percent and about 55 percent of district roads. National roads have the highest network utilization (vehicle-km/year) of 34 percent, while the utilization of district roads is slightly lower at 33 percent.

The road network asset value represents 15.6 percent of Indonesia's GDP

The asset value of the road system represents a significant share of the country's economy at 15.6 percent of GDP (Table 3). District roads, representing 80 percent of the total road network and account for 10 percent of total GDP.

Table 3: Indonesian road network, extent paved, asset value, utilization and condition, 2009

Status	Length km	% 2 lane equiv alent	% Paved	Asset value as % of GDP	Network Utilization (% of total m veh-km/year)	Good & Fair Condition %	Bad & Poor Condition %
National	38,570	8.8	91	2.8	34	86	14
Provincial	48,691	9.7	81	2.3	19	63	27
District	384,810	79.9	55	10.1	33	43	57
Jakarta	6,266	1.3	79	0.3	10	64	36
Toll	742	0.3	100	0.1	4	96	4
Total	**477,079**	100	**61**	**15.6**	**100**	**54**	**46**

Source: DGH-Ministry of Public Work, BPS, and RONET

National roads are mostly in good condition, but a growing share of sub-national roads are in unstable condition

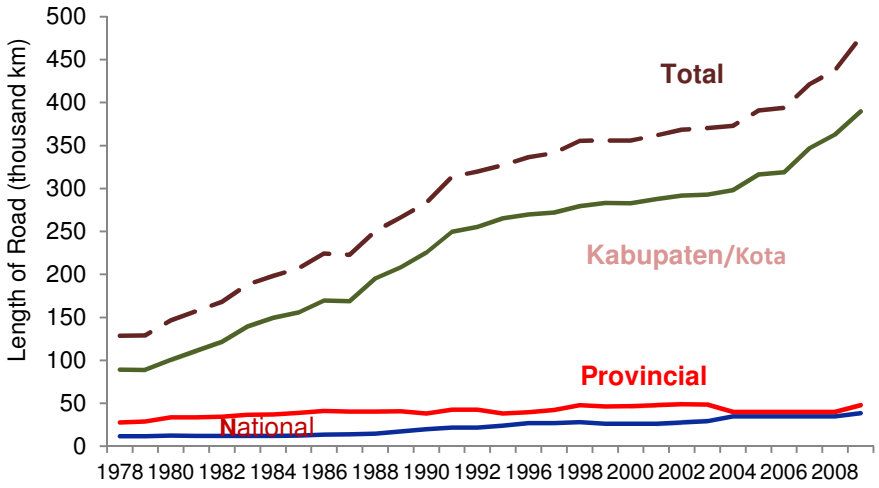
At the national level there seems to be less of a problem with quality and maintenance as 88 percent of national roads are in good condition. On the other hand, a significant share of sub-national roads is in unstable condition. About a quarter of provincial roads and over 40 percent of district/city-level roads are currently in a bad and poor condition. This sub-national road condition has deteriorated since decentralization, due to less attention given to maintenance.

The road network size has grown significantly, mainly at the district/city level

Road network size has grown significantly over the past three decades mainly at the district/city level (Figure 6). During the 1980s and early 1990s there was a significant extension of the farm-to-market road network which stabilized between 1994 and 2000. The length of district/city roads increased again recently after decentralization to reach 390,000 km in 2009 as new road construction received a higher priority than maintenance. By 2000, expenditure on district/city road maintenance had dropped from 30 to 10 percent of overall expenditure.[19]

[19] Making the New Indonesia Work for the Poor, World Bank, 2006.

Figure 7: Road network size has grown in recent years at district/city level (length of road network by level of government, km)



Source: BPS

While the length of the national road network has gradually increased, the provincial road network size has remained at about the same size

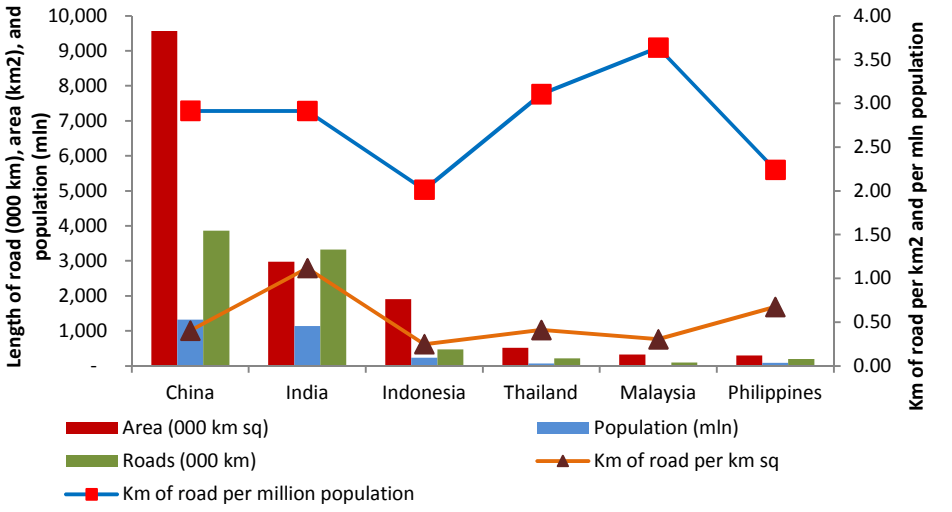
The length of national roads has gradually increased while that of provincial road has remained at about the same level. Some provincial roads were, however, reclassified as national roads. The current network size of national roads is still insufficient to serve increasing traffic demand. To improve inter-island connectivity and to reduce traffic concentration, the Government has set a target of extending the national road network from the current length of 38,570 km to 47,600 km by 2014. This is being achieved through either reclassification of existing roads or designation of additional "strategic" roads that have national, social, and economic or security significance.

Indonesia's road density (km of road/area) is relatively low compare with neighboring countries

Indonesia has one of the lowest road network densities in the region (Figure 8). Although the optimal level of road density depends on the traffic volume, Indonesia's road density of 0.25 km of road per square km of land area is quite low, which is reflected in the heavy congestion in urban centers and on regional arterial roads. This is in sharp contrast with India which has a ratio of 1.1 km of road per square km land area. Indonesia's road demographic density of 1.5 km/1,000 people, however, ranks favorably in comparison with other countries in the region.20

[20] Assessment of the Road Construction Industry in Indonesia. 2011.Prepared for the World Bank by Scott Wilson Ltd, and ROCKS WB Knowledge System.

Figure 8: Road network density is low in Indonesia compare with that of neighboring countries, 2008



Source: Assessment of the road construction industry in Indonesia (draft), 2011, the World Bank and ROCKS World Bank Knowledge System.

About 60 percent of the total road network is in Java and Sumatra

The most densely populated island of Java, with only 7 percent land area, has 25 percent of the road network. However, Java also has more than 60 percent of the vehicle population (excluding motorcycles). Sumatra has the highest share of the road network, but has fewer vehicles than Java. On the other hand, the main issue in eastern Indonesia is basic access which applies especially to the resource rich, but less populated islands such as Papua, Kalimantan, and Sulawesi (Table 4). The road asset to GDP ratio (a reflection of mobility) is lower in Sumatra and especially Java (where nearly 60 percent of the population lives) compared with the other regions.[21] The demographic density of the road network in Java-Bali remains low.

Table 4: Distribution of total road networks by main islands, 2009

	Share (%) of					Ratio per Km road network		
	road network	road in unstable condition	Population	Land Area	4 wheels and more vehicle	population (000)	land area (km2)	4 wheels and more vehicle (000)
Sumatera	34	37.6	21.4	25.2	18.2	3.2	0.3	47.5
Java&Bali	25	26.2	59.5	7.1	61.4	0.9	0.9	10.6
Kalimantan	11	37.0	5.6	28.5	9.1	4.0	0.1	31.2
Sulawesi	17	42.3	7.2	9.9	7.7	4.8	0.4	57.1
Maluku, NTT/NTB, Papua	13	47.5	6.1	29.4	3.5	4.4	0.1	96.4

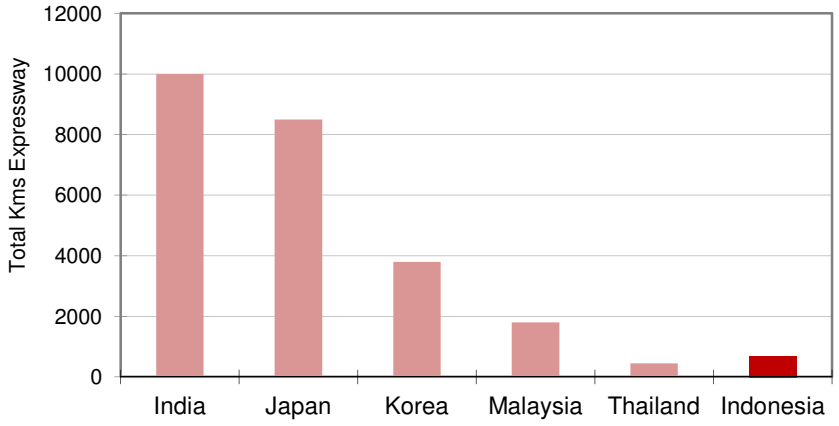
Source: BPS, DGH, and World Bank staff estimates

The development of toll roads has been slow

By 2010, only 742 km of toll roads had been constructed and were in operation, mainly in the larger urban areas. This is less than a third of the estimated needs of 2,400 km according to the Ministry of Public Works Strategic Plan. Indonesia lags behind many countries in the region in this regard including Malaysia (Figure 9). While progress has been made recently in streamlining the legislation for toll roads, the implementation of PPP projects has continued to be slow. Land acquisition and poor project selection and preparation are among many obstacles to such developments.

[21] Policy Paper on Road Fund Establishment: Support for Infrastructure Development, ADB TA 4728; February 2008

Figure 9: Length of expressway constructed since 1990 (km)



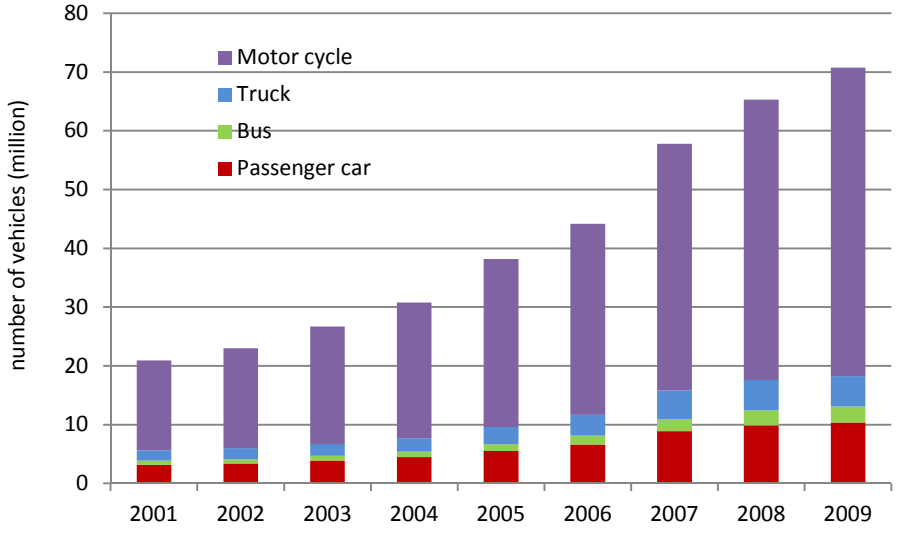
Source: Road Policy Note, 2009. World Bank

2. Demand for Road Services

The demand for road transport services have increased dramatically and will likely continue to rise in the near future

The demand for road transport is increasing rapidly as the vehicle fleet has tripled in the past ten years. Motor vehicle and motorcycle fleets are growing at 10 and 15 percent a year, respectively. The total vehicle fleet reached 70.7 million in 2009, of which three-quarters (52.4 million) were motorcycles, (Figure 10). With motorization at only 76 vehicles per 1,000 persons, but an income of US$2,230 per capita,[22] growth in the vehicle fleet is likely to continue at a rapid pace of around 9 percent per year for motorcycles and 5 percent per year for other motor vehicles unless there are policy interventions on vehicle ownership and use. Authorities face trade-offs between allowing market forces to prevail for vehicle ownership and use based on current taxation levels, or to intervene by reducing demand through higher taxation, a reduction in fuel subsidies and stricter regulation. International experience shows that urban congestion needs a combination of measures to optimize city travel including fiscal policy, traffic management and substantial investments in public transportation. Special regulations are also frequently needed to control two-wheeled traffic, especially motorcycles.

Figure 10: The vehicle fleet has tripled since 2001



Source: BPS

[22] Doing Business Indicators, 2010. The World Bank and International Finance Corporation. Note that the rate of growth is rapid. Per capita income in 2005 was only US$1,304.

Traffic concentration and congestion are prevalent in urban centers

There is a strong concentration of traffic in the urban centers and on the regional routes. Road travel speeds remain low in the order of 40 km/hr on the national road network. This is partly due to a high volume to capacity ratio on most road sections in the vicinity of major urban centers. Some additional factors that contribute to the low road travel speeds include road geometric standards, high levels of "side friction" arising from extensive ribbon development, and weak controls on land use.

Lack of enforcement of road axle controls contribute significantly to road deterioration

Lack of control of axle overloading by heavy trucks is a serious problem in Indonesia, reinforced by illegal modification of vehicles, poor vehicle maintenance, inadequate inspection and ineffective enforcement of regulations. A study showed that on average trucks overload by 45 percent, but only 21 percent of overloaded trucks stopped are officially fined because the majority of truck drivers routinely pay extra payments.[23] The structure of road user taxation does not discourage the use of vehicles whose axle load and configuration cause the most pavement damage. Since the damage imposed on the road pavement increases exponentially in relation to a vehicle's laden axle weight, a 13-ton truck will cause 240 times the road damage compared with that caused by the passage of a two-ton car, and yet the truck's contribution through the road tax (PKB) is only 1.3 times that of a car.[24]

Indonesia is facing serious road safety problems

Indonesia has a poor road safety record. The recent data indicate that about 55 fatalities occur each day on Indonesian roads, of which two-thirds are related to motorcycles and 15 percent involve pedestrians.[25] The reported fatality rate (5.1 deaths per 10,000 registered vehicles in 2008) is relatively high in comparison to neighboring countries such Malaysia (3.7) and Australia (1.2).[26] The annual cost of road accidents is equivalent to around 3 percent of Indonesia's GDP. A remarkable increase in motorcycles in recent years, heavily congested roads in urban areas and weak enforcement of traffic and road safety regulations, all contribute to the poor road safety record. Compliance with traffic rules such as speed limits and adherence to lane discipline are poor. Traditional markets, street vendors, and parked vehicles also frequently occupy pedestrian facilities, forcing pedestrians to walk in the street.

[23] The Cost of Moving Goods: Road Transportation, Regulations and Charges in Indonesia. 2008. The Asia Foundation. http://asiafoundation.org/resources/pdfs/movinggoodslightenglish.pdf
[24] Reforming Road Maintenance Management and Funding, technical assistance under IBRD loan No. 4643-IND, May, 2005.
[25] Statistics Indonesia, based on data from Indonesian Police; it is likely that these figures are under reported since not all road accidents are notified to the police and some people die later as a result of their injuries.
[26] Prakarsa, October 2011. IndII

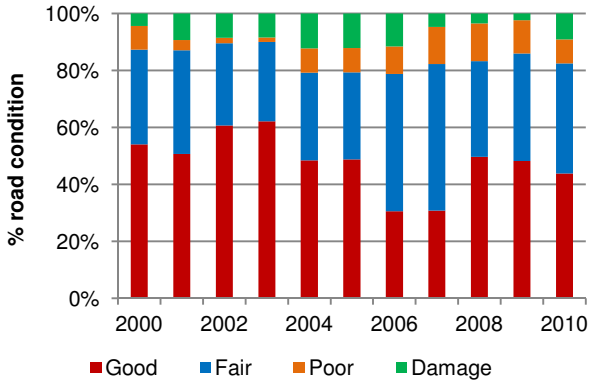
D. NATIONAL ROADS: EXPENDITURE AND CAPACITY

1. National Road Network

National road network is in good condition

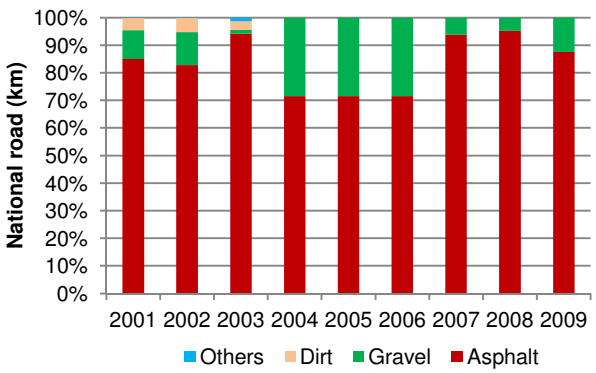
The national road network is in a good condition, but its size has been outpaced by the growing transport demand. National roads serve more than a third of traffic in vehicle-km but their length only represents 8 percent of the total road network. Although there has been some new road network extension, most of the increase in the size of the national road network is due to the reclassification of provincial roads as national roads.

Figure 11: Condition of…



Source: DGH-Ministry of Public Work

Figure 12: …and type of surface of national roads



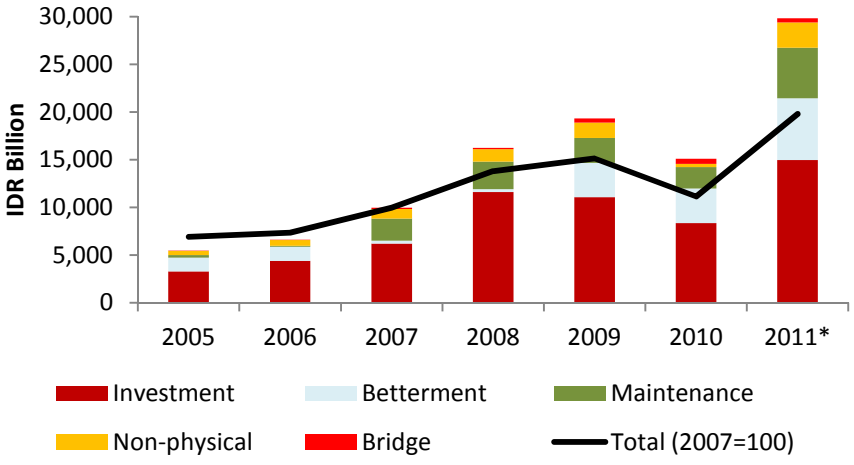
Source: DGH-Ministry of Public Work

2. Central Government Expenditure on Roads

Central government spending on national roads has been doubled (in real terms) in the past five years

Central government spending on national roads represents about 60 percent of total transport spending or about 0.26 percent of GDP. Spending on national roads has nominally almost quadrupled from Rp 5.3 trillion in 2005 to Rp 19.3 trillion in 2009 before declining to Rp 15.4 trillion in 2010, which was partly due to weak execution problems. Spending bounced back after 2010, almost doubling to Rp 29.8 trillion in 2011. The peak spending level in 2009 reflected an increased allocation from fiscal stimulus. In real terms, central spending on national roads has more than doubled over five years. About 85 percent of road investment is financed through domestic revenue (Figure 11). Central government spending on roads is expected to continue to increase in the near future, as improving connectivity remains a key priority for the Government.

Figure 13: Central government spending on roads doubled between 2005 and 2011



Source: Ministry of Finance, Ministry of Public Work, World Bank staff estimates.
Note: * 2011 are budget allocation

The level of spending on maintenance and rehabilitation is close to the estimated needs, but more spending on capacity expansion is necessary

In recent years, spending on maintenance and rehabilitation has received greater attention, increasing from 25 percent in 2005 to 37 percent of total expenditure on roads in 2009. The total spending on national roads increased by 50 percent between 2009 and 2011. This is reflected in an improvement in the extent of national roads in good condition from 78.7 percent to 88.0 percent during the same time period. The spending level on maintenance and rehabilitation in 2009 of Rp 7.3 trillion was higher, however, than the estimated annual cost needed to properly maintain national road condition of Rp 6.9 trillion (or US$665 million), pointing to possible inefficiencies.[27] Although spending on new road investment has quadrupled between 2005 and 2009, more spending on the development of new roads or capacity expansion is necessary to keep pace with increasing demand.

During the period 2005-09, the national road network was extended by 8,000 km through mostly betterment[28] interventions to improve sub-standard roads, which were considered strategically important. The average unit cost of betterment interventions appears high and may not reflect optimal solutions.

The GoI has outlined its commitment to expand the national road network in the near future

The Ministry of Public Works stated the Government's commitment to add an additional 12,300 km of national roads in its Medium-Term Development Plan for the road sector and accompanying draft strategy, which would bring the total network length to 46,900 km. The Government is also focusing on preservation, aiming to rehabilitate 4.5 to 6 percent of the network annually. However, this may be a stretch to accomplish given that the average life expected of national roads of 15-20 years has not yet been achieved, resulting in heavier and more expensive treatments than would have been the case if a state of equilibrium had been reached. Only about one tenth of the defective road network can thus be addressed on the basis of a budget for the coming five years (which is similar to that of the previous five years).[29]

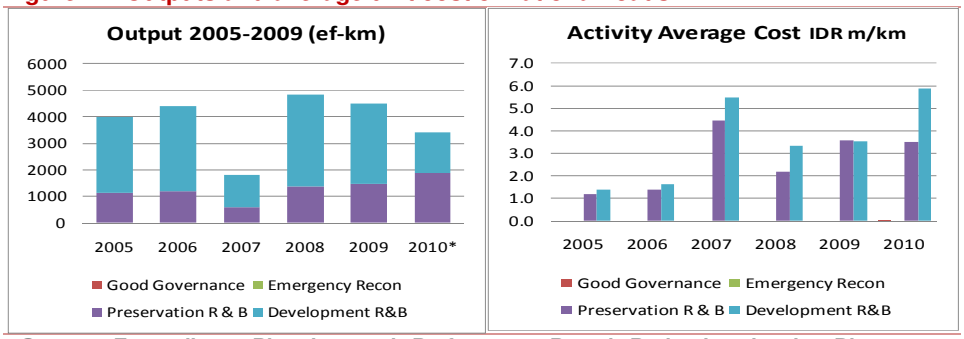
3. Efficiency and Productivity of National Road Can Be Further Improved

Preservation costs seem to be higher in Indonesia than international norms

A significant increase in road expenditure recently appears to be linked to increasing road work unit costs. Of concern is that output costs have grown from Rp 1.2 billion/km to Rp 3.6 billion/km for maintenance and from Rp 1.4 billion/km to almost Rp 6 billion/km for new construction over the past five years. Although the inflation factor and a sharp rise in petroleum costs (which affect asphalt prices) may have contributed to this increase, it is more likely the rise in unit costs is driven by additional betterment works and the greater use of higher cost treatments, such as thicker construction, especially within the maintenance program. The average cost of preservation treatment of over Rp 3 billion/km for 2009-10, i.e. US$300,000/km is relatively high in comparison with international averages. This unit cost of preservation is closer to the cost of reconstruction or major rehabilitation in 2009.[30]

[27] Exchange rate used was from budget assumption 2009 of Rp 10,408/US$.
28 In Indonesia; "betterment" typically involves the base course strengthening, minor widening, providing a new asphalt wearing course, and improving drainage. In most cases, the road already had an asphalt pavement.
[29] Expenditure Planning and Performance-Based Budgeting in the Directorate General of Highways. 2010. Paterson, W and Harahap, G. Indonesia Infrastructure Initiative (IndII).
[30] Expenditure Planning and Performance-Based Budgeting in the Directorate General of Highways. 2010. Paterson, W and Harahap, G. Indonesia Infrastructure Initiative (IndII).

Figure 14: Outputs and average unit cost of national roads



Source: Expenditure Planning and Performance-Based Budgeting in the Directorate General of Highways. 2010. Paterson, W and Harahap, G. Indonesia Infrastructure Initiative (IndII)

Average unit cost of routine and periodic maintenance are high compared with the international average

Comparing the unit costs of road construction and maintenance internationally is not an easy task. Most studies focus on specific maintenance activities such as patching and grass cutting and give costs per square or linear meter rather than average costs of maintenance per km.[31] However, an analysis of DGH data (Table 5) from 1,243 national road maintenance contracts shows the following findings:

- The average size of the contracts is small and more than a half of the total routine maintenance contracts have a value of less than US$100,000;
- Most of the periodic maintenance contacts have a value of less than US$500,000;
- An average unit cost of US$4,455/km and US$159,920/km for routine and periodic maintenance, respectively. The unit costs are on the high side of the international range of US$2,000-5,000 for routine maintenance and US$70,000-100,000 for periodic maintenance.

Table 5: Average contract value and unit cost of routine and periodic maintenance works

Contract Value	Number of projects/contracts in FY 2010				Total
	<USD 100,000	100,000 - 500,000	500,000 - 2,000,000	>200,0000	
Routine	403	290	45		738
Periodic	60	294	135	16	505
Total					1,243
Description	Periodic	Routine			
Average unit cost (USD/Km)	159,920	4,455			
Average contract value (USD)	449,431	135,214			
Average length of roads/contract (km)	3	31			

Source: DGH

This relatively high unit cost may be driven by inefficient road maintenance management

Improving road maintenance management, for example through performance-based contracting, could improve efficiency through competition, while at the same time phasing out force account work. Extending road preservation activities from annual to three-year programs and increasing the average size of procurement packages could reduce administrative cost and improve efficiency, as well as create more incentive for the private sector to participate.[32]

Timely budget execution

Low absorptive capacity and delays in budget execution remain a concern even though

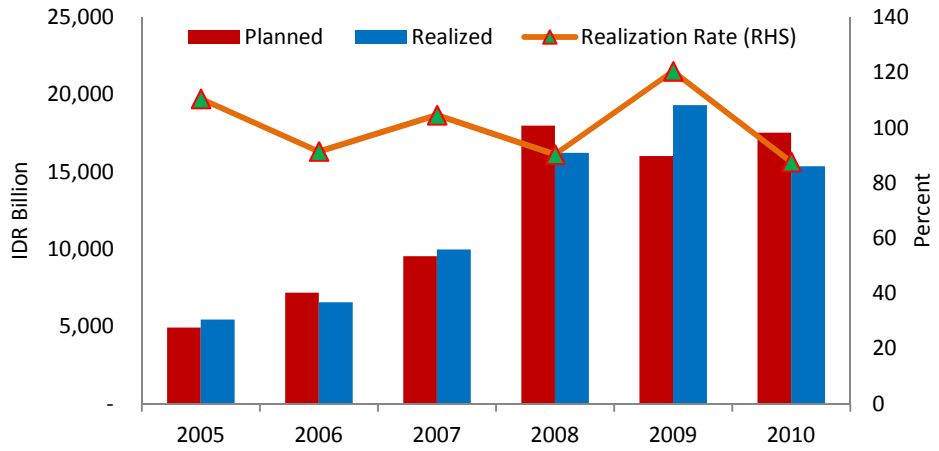
[31] See for example Little Black Book. Construction Benchmarks: Highway Construction and Asset Management, 2010-2011, Franklin and Andrews, London.

[32] In a traditional contract, the contractors are paid for the amount of work completed. Under a performance-based contract, the contractor works on a lump sum basis, usually receiving annual payments for meeting contractually binding performance requirements. International experience shows that Performance-Based Contracts can deliver higher quality results, often for a lower price.

and absorptive capacity of national road programs need to be improved

disbursements improved in 2008, reaching 95 percent of the revised budget. However, there was a deterioration recently to around 85 percent of the budget expended in 2010. Complicated land acquisition processes for new projects and complex budget revisions and procurement processes are among the main constraints to optimizing budgets. This raises concerns since development targets may not be achieved. In addition, the spending pattern also tends to be skewed towards the end of fiscal year (especially the last quarter of the year), which does not leave much time to carry out quality assurance activities and increases the risk of abuse of the system. Reforms to accelerate budget execution are underway including a newly introduced e-procurement system and the implementation of an early procurement process prior the start of the fiscal year. An improved budget execution and spending pattern could enhance the effectiveness of the projects.

Figure 15: Absorption capacity of national road sector spending has not improved



Source: Ministry of Finance and World Bank staff estimates

Ratio of staff/100 km of DGH is five times higher than international norms

Despite sustained and substantial investments in road management capacity-building over two decades, technical and managerial capacity still needs improvement. Programs and budget allocations sometimes lack objectivity, transparency and public consultation. These shortcomings are exacerbated by lengthy procurement procedures and poor control and supervision of the quality of road works. The cost of poor road service delivery is thus high, the works are sometimes of low quality, and collusion between contractors remains a problem.[33] As indicated in Table 6, DGH operates at a much higher staff/network length ratio in comparison to a range of authorities and agencies that contract out most or all of their construction and maintenance. The DGH staff/network level of 11.2 staff/100 km is more than five times higher than the internationally recommended efficiency level of two staff/100km. Staff/network levels of the Balai vary from 5.5 to 18.8 staff/100km (Table 6).

Table 6: Road agencies* staff efficiency

DGH Comparison to Roads Agencies*	Length of national network (km)	Total Number of Staff	Staff/100 km
Indonesia (DGH)	**38,570**	**4,316****	**11.2**
Uganda	20,800	916	4.2
Tanzania	33,012	719	2.2
Namibia	15,819	278	1.8
New Zealand	10,906	189	1.7
South Africa	16,170	195	1.2

Source: DGH

* Road Authorities with their construction and maintenance works contracted out to the private sector. ** Excluding support and contractual staff, but including 3,885 staff in the DGH regional offices (Balai) who work on national roads

[33] Roads to Growth and Development, Indonesia Rising, Policy Priorities for 2010 and Beyond, World Bank Road Policy Note No. 13, September, 2009.

4. Planning and Management

Road planning and management can be improved

There is scope for introducing more effective approaches to planning road network development covering strategic roads, arterial roads, trunk routes and expressways. This will include: (i) the preparation of long-range capacity expansion road master plans for the six economic corridors including the pipeline of projects and financing plans; (ii) modernization of assets through a road renewal program by updating the structural and functional aspects with road widening; (iii) adoption of modern alignment for baselines in low traffic regions; and (iv) increased budget allocation for road network development and capacity expansion.

There is also a need to introduce more efficient and business-oriented road management practices and to improve financial and managerial accountability. This will in turn require a focus on the shortage of technical staff and provision of a competitive remuneration structure. Addressing these constraints through improvements in the organization of road management services will be necessary to gain efficiencies and cost reductions that can be passed on to road users. Restructuring road institutions (e.g. establishment of a Road Agency) to improve the effectiveness and efficiency of delivery of road interventions may be a long process but is one that will gradually improve transport efficiency in Indonesia.

A study assessing the road construction industry in Indonesia (2011) found there was too much focus on cost control, rather than value for money.[34] At the top end of the market there are about 20 major companies capable of constructing and maintaining roads in accordance with good international practice. However, there are also thousands of small contractors with no proper management systems, few if any permanent staff or equipment, and little or no encouragement to develop as professionally managed entities.

The MTEF study conducted in 2010 found the following key issues relating to performance of national roads[35]:

- The performance and coverage was rather uneven across provinces. The road condition barely improved in most provinces and even deteriorated in some cases, raising questions as to the effectiveness of needs assessments and prioritization;
- Funding tripled during the period, but there was little increase in annual output coverage, which resulted in much higher average costs for both preservation and development works. While this may have translated into higher technical standards, it prompts questions on the added value achieved and the efficiency of pricing in the recent program;
- The actual life and performance of the road treatments appears relatively short, and this is resulting in comparatively heavy treatment requirements, based on the annual coverage of the program and the relatively neutral improvement in condition of the network. There is a need to review the design life standards policy and the management of quality in both design and construction;
- The policy on improvement of sub-standard road width is expensive because of the high average cost of incremental widening, which includes most of the 8,000 km of strategic roads added to the network. A review to consider the benefits of a longer-term policy for a more comprehensive renewal and reconstruction of those roads that would have lower long-term costs is needed;
- The provision of major capacity expansion on trunk routes may not be optimal. Widening to 4-lane divided standard provides congestion relief in the medium-term. However, the long-term need is for a separate integral tolled expressway network which is so far behind expectations. The policy on major infrastructure development needs a 50-year horizon so that adequate resources are allocated to accelerate the expressway development to meet economic demand; and
- Present funding is sufficient for preservation if applied with optimal policies, but development funding will need to increase to meet forecast growth in demand.

[34] Assessment of the Road Construction Industry in Indonesia. 2011.Prepared for the World Bank by Scott Wilson Ltd.
[35] Expenditure Planning and Performance-Based Budgeting in the Directorate General of Highways. 2010. Paterson, W and Harahap, G. Indonesia Infrastructure Initiative (IndII)

5. Expressway Development

Expressway development has stagnated in recent years

Progress in toll road development has been very slow. By 2011 there were only 742 km of toll roads constructed and operational, even though the first toll road development began in 1978.Considerable scope exists for the implementation of toll road PPPs, but progress has been hindered by poor project selection and preparation, and a complex land acquisition process. Some concessions had not reached financial closure after 10 years.

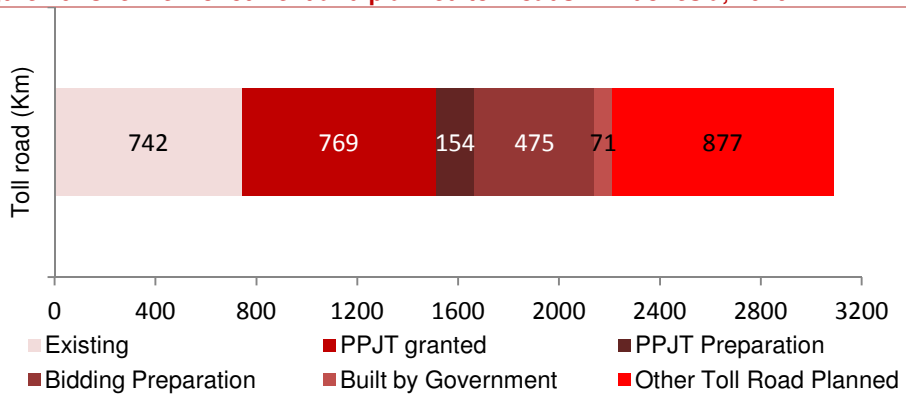
Mechanisms to accelerate PPP implementation are being put in place

Mechanisms to resolve these issues are being put in place including appropriate institutions, and a fiscal and legislative framework to accelerate Public Private Partnership (PPP) implementation, but it remains to be seen how well these arrangements will work.[36] A special facility to support land acquisition, the Land Revolving Fund, has also been set up to provide financial support for private land acquisition that exceeds 110 percent of values included in the concession agreement.

The GoI has targeted further expansion of highway development

A further 877 km of tolled expressways are planned for the next five years (Figure 16). According to the MTEF, the resources required for the expressway program between 2010 and 2014 are estimated to be Rp 34.4 trillion, or an average of Rp 6.9 trillion/yr. Land acquisition costs range from 10-30 percent of the total investment cost. Average urban construction costs, inclusive of land acquisition, are in the order of Rp 70-85 billion/km, which is 10 times higher than the construction costs of a 2-lane highway.

Figure 16: Overview of current and planned toll roads in Indonesia, 2010



Source: BPJT/The Indonesia toll road authority. PPJT, toll road concession agreement.

Indonesia is confronting trade-offs between increasing the capacity of existing highway or constructing expressways with limited access

An immediate spatial challenge facing the road sector in Indonesia is to provide better trans-regional connectivity and urban mobility, especially in Java and Sumatra. The predominant strategic issue under debate is how best to achieve this. The high level option is to construct expressways with limited access, while the more intermediate and less expensive option is to increase the capacity of existing highways. China and Malaysia have adopted the former model, while India has followed the intermediate choice. Experience in India, however, suggests that the benefits will be lower and for a shorter duration (about ten years) in a situation of very rapid traffic growth. Indonesia, with its dense population and rapid traffic growth will likely have to find a compromise between these two approaches, but inevitably the need for the limited access freeway is only deferred. Since the lead time required for a full expressway facility is a minimum of seven years, this indicates the need for an urgent expansion of the expressway program in the immediate future.

Strengthening of BPJT (toll road regulator) capacity and budget may be needed to enhance expressway development

The expressway development plan should be driven by connectivity and mobility requirements. As a priority, there is a need to accelerate land acquisition for expressway projects. This will require additional budget and strengthening of BPJT capacity to speed up the processing of projects. There is also a need to provide funding to cover the viability gap in some cases to attract PPP investors. (See Appendix 6 for more insights on PPP).

[36] Wibisono, A. et al. 2011. *Unlocking the PPP deadlock in Indonesia*, World Bank, Jakarta.

6. Conclusions and Recommendations

a. Expand the capacity of the national road network and review the design life standards and pavement renewal policy

Vehicle growth of 5 percent per year is expected to continue for the foreseeable future

The Indonesian vehicle fleet is growing rapidly. It reached 70.7 million in 2009 of which three quarters were motorcycles, With motorization at only 76 vehicles per 1,000 persons, but an average income of US$2,230 per capita,37 growth in the vehicle fleet is predicted to continue at around 9 percent per year for motorcycles and 4 percent per year for other motor vehicles for the foreseeable future, unless policies of restraint are introduced.

Capacity expansion of the national road network on congested regional routes is needed

There is an urgent need to increase investment for national road expansion, particularly in urban areas and on regional routes. The increasing demand for road space in recent years has not been supported by a commensurate increase in road expansion, nor, in cities, by travel demand management measures. Insufficient road infrastructure (both in quality and quantity) has been widely cited to be a key factor constraining Indonesia's competitiveness. The current administration recognizes this challenge and has set a target to expand the national road network from 38,570 km in 2009 to 47,600 km by 2014

b. Improve management practices of national roads

Provide incentives for central technical staff at regional offices to work in sub-national government to improve productivity at all levels

The relatively high ratio of staff to network size of DGH can be better utilized to support sub-national governments where the capacity and availability of technical staff is seriously lacking. Although there is no mechanism to redeploy staff, the introduction of incentive mechanisms to encourage DGH staff to work in sub-national governments could better utilize existing resources and increase the productivity of staff at all levels.

Phase out the force account approach in road maintenance and gradually move to performance based contacts

Improving road maintenance management by phasing out the force account approach and gradually moving to performance-based contracts (PBCs)38 could further improve efficiency through competition, which could in turn improve quality at a lower cost. However, PBCs will be more attractive and applicable in and around urban areas to begin with, because there is already an established small contractor market. In rural and remote areas the force account approach does have the advantage of quick response in emergencies and natural disasters. However, it tends to encourage road agencies to retain a larger number of staff than is justifiable which in the end is less cost effective. Force accounts in some other countries have been turned into private companies, with an initial guarantee of work for the first few years.

At the same time, address constraints to efficient use of the private sector participation in the road construction industry

The recent study on road construction industry in Indonesia recommends the increase of contract sizes, in parallel with stronger enforcement of site supervision and of the need for the contractor to take full responsibility for the work of its sub-contractors. The study also suggests the listed state owned enterprises to be fully privatized and to continue to explore and test the possible use of output and performance-based contracts. This is to increase accountability and move from process to performance-based road management.

c. Accelerate toll road development by addressing constraints inhibiting Public Private Partnership (PPP) implementation

Improve project preparation and identification by involving key related institutions and by providing adequate resources

To ensure the selected projects are viable and implementable, project identification and preparation needs to be improved by involving the Ministry of Finance and key related institutions from the beginning and throughout the process. One of the factors slowing PPP implementation progress in Indonesia is that many PPP projects are being offered with inadequate due diligence undertaken prior to tendering. Budget preparation should be given priority and be supported appropriately with sufficient skills and resources. The project selection process also needs to be enhanced to ensure the selected projects receive high level leadership support.

[37] World Bank, IFC, Doing Business Indicators, 2010. Note that the rate of growth is rapid. Per capita income in 2005 was only US$1,304.

[38] In a traditional contract, the contractors are paid for the amount of work completed. Under a performance-based contract, the contractor works on a lump sum basis, usually receiving annual payments for meeting contractually binding performance requirements. International experience shows that PBCs can deliver higher quality results, often for a lower price.

Focusing on the most strategic and viable PPP projects, and getting them transacted can be a powerful way to demonstrate government commitment to PPP implementation

The real challenge for Indonesia in advancing its PPP agenda is establishing confidence and commitment to undertake implementation. Rather than a long list of projects, a key success factor identified in other countries has been the ability of governments to prioritize a short-list of well-developed projects that are clearly financially viable. India's experience shows that while convening international gatherings can be a useful facility to promote PPP projects, focusing on the most strategic and viable projects and getting them implemented sends a more powerful signal to private investors in respect of the Government's willingness to support such partnerships and has proven successful in attracting greater private sector capital.

The new land acquisition law clarifies roles and imposes time limits on each procedure but speedy implementation on the ground remains a challenge

The new Law on Land Acquisition clarifies roles, imposes time limits on each phase of procedures, and ensures safeguards for land-right holders. Most importantly, the law provides a clear mechanism for enforcing the principle of eminent domain, or revocation of land rights, to prevent small minorities from blocking projects that fulfill the public interest, such as expressway projects. However, the crucial power of revoking land rights will rest with provincial governors. Therefore, the feasibility of projects will vary somewhat, depending on the province and the inclination of the governor involved. Moreover, projects that cross provincial boundaries (i.e. expressways) will be more cumbersome than those contained within one province. Overall, the new law should significantly increase the feasibility of land acquisition projects.

E. SUB-NATIONAL ROADS: EXPENDITURE AND CAPACITY

1. The Importance and Performance of Sub-national Roads

Sub-national roads play important role in Indonesia's land transport system

Sub-national roads play an important role in connectivity between cities, sub-districts, and villages in Indonesia, as well as providing access to urban and rural communities to basic services such as market, education and health facilities. Around half of public investment in roads is currently spent by district/city governments, which are now responsible for more than 80 percent of the total network.

Since the implementation of decentralization in 2001, the responsibility for managing provincial and district/city (sub-national) road networks has been transferred to the provincial and district governments, including both new development and preservation. This was part of a massive transfer of authority that also included health, education, public works, environment, communication, agriculture, industry and trade, capital investment, land, cooperatives, manpower, and infrastructure services.

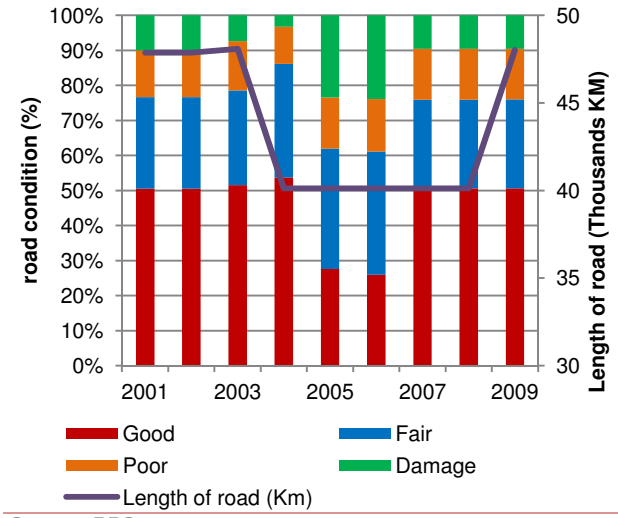
Decentralization has led to more district/city roads, but conditions have not improved

Since decentralization, district road networks have increased substantially. The length of district/city roads grew from 287,577 km in 2001 to 384,810 km in 2009 or an increase of about 11,352 km per year (Figure 18). The total asset value of the sub-national road network (excluding Jakarta) represents12.4 percent of national GDP. However, road conditions have not improved and have even slightly deteriorated. The share of district/city roads in poor or damaged condition was 40 percent in 2009, an increase of 5 percent over 2001. The share of district paved roads has stayed relatively stable, about half of the total network. These massive increases in the length of district/city roads are partly driven by local political preference over maintenance and a proliferation of districts after decentralization.

However, the length of provincial road stagnated until 2008

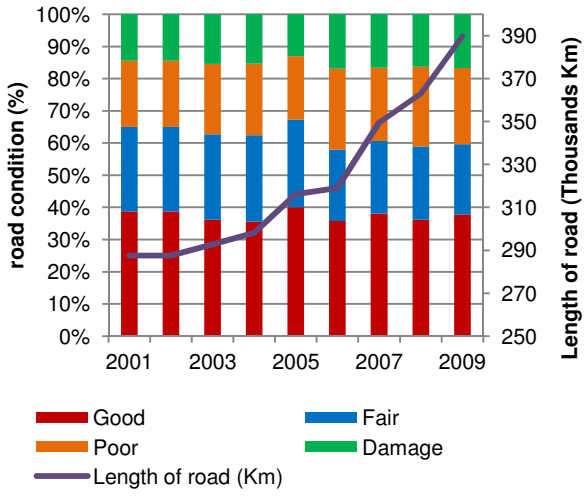
On the other hand, the length of provincial roads remained stagnate after almost 8000 km were re-classified as national roads in 2004, and only increased again from 2008. The majority of provincial roads are in stable condition (over 75 percent), but this level has been more or less constant since 2001. The share of provincial roads with a paved surface is higher than that of the district/city roads and has recently increased to 81 percent of the total provincial road network.

Figure 17: Length and condition of provincial roads



Source: BPS

Figure 18: Length and condition of district/city roads



Source: BPS

Table 7: Length or provincial and districts road by condition and type and surface

	Province			District/city		
	2001	2005	2009	2001	2005	2009
Length of road (Km)	47,877	40,125	48,691	287,577	316,254	389,747
Condition (%):						
Good	50.5	27.6	50.6	38.8	40.0	37.8
Fair	26.1	34.4	25.3	26.2	27.2	21.8
Poor	13.3	14.6	14.5	20.6	19.8	23.6
Damaged	10.0	23.4	9.5	14.4	13.0	16.7
Type of surface (%)						
Asphalt	76.4	57.8	81.3	52.3	52.8	50.9
Gravel	13.9	28.7	10.7	18.4	19.6	23.8
Dirt	8.8	12.2	7.5	18.4	18.6	20.6
Others	0.9	1.4	0.4	5.6	3.5	4.7

Source: BPS and World Bank staff estimates
Note: The sharp drop in the length of provincial data in2005 was due to re-classification to national. It is noteworthy that data on road condition are not consistent across sources. For example, the road construction industry study using data from Ministry of Transportation – DG Land Transportation, show that more than half of provincial and districts road are in poor or damaged condition.

Sub-national road network is mainly concentrated in Sumatra, Java/Bali

The sub-national road network is more concentrated in Sumatra, Java and Bali, accounting for almost 60 percent of the total. The remaining 40 percent is distributed across several of the larger islands in eastern Indonesia (Table 7). However, some remote areas, mostly in Eastern Indonesia, are still unconnected to the classified road network. Kalimantan, Papua, Maluku, NTT/NTB have a much higher ratio of land area per road network. Most districts in eastern Indonesia also have a higher share of roads in unstable condition. More than half of the road networks in Papua, Maluku, and NTT/NTB are either damaged or badly damaged, which may partly reflect geographical challenges, as well as the level of attention given to road maintenance.

2. Sub-national Expenditure on Roads

Sub-national spending on provincial and district /city roads increased substantially after decentralization

Following the transfer of fiscal responsibility to manage sub-national roads, provincial and district spending on roads doubled between 1999 and 2001. Spending has continuously increased since that time reaching Rp 53 trillion in 2009 compared with Rp 18 trillion in 2001 (in real terms) or 0.6 percent of GDP in 2001 to 1.2 percent of GDP in 2009. The second significant increase after 2001 was in 2006 and 2007, following a windfall of revenue from the high oil price. Provincial governments spent a higher share of their expenditure on roads (17 percent of total expenditure) than that of districts/cities (12 percent) in 2009 (Table 8).

Table 8: Sub-national spending on sub-national roads

Sub-national spending on road	1999	2001	2003	2005	2007	2009*
Province						
Nominal, Rp Billion	991	2,069	4,828	4,549	10,055	13,492
% of total province exp	8.6	10.0	14.8	12.9	18.3	16.9
District/city						
Nominal, Rp Billion	2,000	6,169	11,631	11,984	31,447	41,392
% of total district/city exp	7.4	8.6	10.7	9.1	13.6	12.4
Total Sub-national						
Real 2007 prices, Rp Bill	7,856	17,963	30,366	25,988	51,362	53,094
% of total sub-national exp	8.4	11.1	13.6	12.3	17.9	16.4
% of GDP	0.3	0.6	1.0	0.7	1.3	1.2

Source: BPS and World Bank staff estimates
Note: * 2009 data are estimates

Lack of maintenance is a serious concern…

Decentralization of responsibility for managing district/city roads has given more voice to district/city governments and communities when selecting development priorities, but the drop in efficiency in the management of the road system is a cause for concern. Maintenance and preservation, in most cases, is under-budgeted and of lower priority than new construction. This results in only small sections of the maintenance work being completed, increasing the maintenance backlog over time. For example, Kab. Solok (one of districts in the case studies)[39] can only allocate 100 km/year for routine maintenance for its 1,200 km road network. At this pace, it will take 12 years to apply routine maintenance to the whole network.

…as new development takes priority over maintenance

District/city governments spend more on new construction and upgrading than rehabilitation and maintenance. Findings from the case study (Appendix 3) show that, on average, district/city governments spend about 70 percent of road expenditure on new construction and development, while the remaining 30 percent is spent on maintenance and rehabilitation. Provincial governments allocate more on new development and rehabilitation, about 82 percent of overall road spending. This pattern may be explained by political considerations having more sway than technical considerations in budget allocation, as well as possibly a lack of understanding by sub-national decision-makers regarding the cost of neglecting road maintenance.[40]

Proper maintenance would require doubling the current spending level

Provincial and district/city governments currently allocate half of their estimated needs on road preservation. Therefore, to perform adequate maintenance works would require doubling the current spending level. These are the estimated needs to preserve the overall road network integrity, including rehabilitation works to bring damaged roads to a maintainable condition during the first five years.[41] This is also in line with a study by INDII (2010) which found that the needs for a proper maintenance system would consume 75 percent of the current aggregate road budgets of sub-national governments.[42]

Table 9: Sub-national spending on road maintenance versus needs

	Minimize Total Transport Cost Scenario (Years 1 to 5 Annual Road Works Costs (Rp billion/year))*				Estimated Sub-national Expenditure on Road Maintenance, 2009**	
	Routine Maintenance	Periodic Maintenance	Rehabilitation	Total	Rp billion/year	% of total road work costs
Province	1,476	216	3,276	4,959	2,429	49.0
Districts	6,399	630	20,466	27,486	12,418	45.2
Total	7,875	846	23,742	32,445	14,846	45.8

Source: BPS and World Bank staff estimates
Note: *Data are the outputs of RONET, (Exchange Rate at Rp 9,000/US$). ** Data are estimated based on case study districts and provinces detailed expenditures. The consolidated sub-national expenditure data from the MoF are not available broken down by construction and maintenance

3. Sources of Funding for Sub-national Roads

Transfers from central government are still the main source of funding, particularly for district/city governments

Since decentralization, sub-national governments rely heavily on transfers from the central government, particularly districts/cities, which rely on the center for more than 90 percent of their total revenues. Own-source revenue is relatively small for local government, accounting for 7-8 percent of total revenue, reflecting a relatively narrow base for local tax

[39] Because of the paucity of data in respect of the sub-national government, field case studies were undertaken to obtain a better understanding of the allocation of resources, as well as the planning, and prioritization procedures of the road sector. See Appendix 3 for more details.
[40] Due to lack of data availability for detail spending on road, for example new construction vs. maintenance, the case study was conducted in selected provinces and districts for data gathering and discussion with local government
[41] These preservation needs are generated from RONET. Please see Appendix 2 for details discussion
[42] Provincial and Kabupaten Road Maintenance Management Planning, Phase 1 Report, Review of current practice and opportunities, Indonesia Infrastructure Initiative, Australia Indonesia Partnership, October 2010

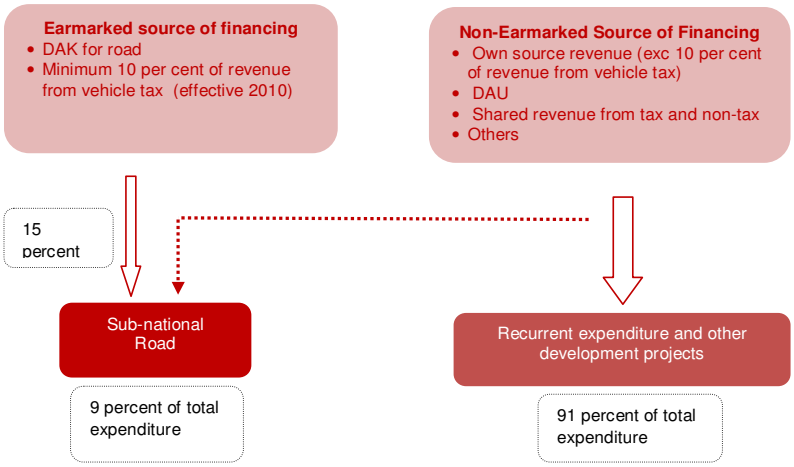
and user charges. The DAU (Dana Alokasi Umum, or General Allocation Grant) which is primarily used to finance recurrent expenditure including civil servant salaries represents more than 60 percent of total local government revenue. The DAK (Dana Alokasi Khusus, or Special Allocation Grant) aims to finance sub-national infrastructure development, but is still relatively small as a share of total revenue. However, provincial governments are less reliant on transfers from the central government. Own-source revenue is the main source of provincial revenue, accounting for almost half of total provincial revenue, mainly contributed by vehicle taxes and fuel-related user charges[43]. On average, sub-national governments spend about 9 percent of their total budget on road sector development, while the rest 91 percent of total expenditure is spent on recurrent and other development expenditures (Figure 19).

Development of sub-national roads is mainly financed by un-earmarked revenue

The financing sources for sub-national road development can broadly be classified into two categories: (i) **earmarked financing**, consisting of DAK for roads and a minimum of 10 percent from motor-vehicle revenue; and (ii) **non-earmarked financing** consisting of DAU, revenue sharing, own revenue, and others (Figure 19). Road-user charges comprising vehicle tax, vehicle transfer ownership fees, and fuel levies, do not directly finance the road work. The new Law on Regional Tax and User Charges, Law No. 22/2009, provides for additional earmarked financing for roads from a minimum 10 percent of revenue from the annual vehicle license fees, effective from January 2011.

Non-earmarked financing is the main source of funding for sub-national road development, representing on average more than 85 percent of road expenditure. This can include DAU, revenue-sharing, own-revenues, and other sources that can be used to finance road investment. Nevertheless, the extent to which these revenues are allocated for roads is at the discretion of provincial and district/city governments. Further analysis of expenditures by type of non-earmarked funding is constrained by data limitations. The available data on sub-national road expenditure are not recorded by source of funding. The earmarked source of revenues represent less than 15 percent of total spending on roads, and consist of DAK and the 10 percent minimum allocation from the annual vehicle license fees. The following section will further discuss DAK and road-user charges.

Figure 19: Fund flow of sub-national road financing



Source: Sub-national road case studies survey.

a. Special Allocation Fund (DAK)

DAK aims at financing sub-national infrastructure development, including roads

DAK is a conditional grant provided to sub-national government to finance each region's specific needs reflecting national priorities. DAK was intended as one of the major sources of funds for infrastructure investment including roads. DAK cannot be used for research, training, administration, or official travel. Districts/cities are required to provide a matching grant of a minimum of 10 percent of the project budget, except for those districts/cities with limited fiscal capacity. In 2011, the allocation of funds was increased to 23 sectors

[43] Please see Appendix 4 for more detail discussion on each type of intergovernmental transfers.

(previously 19).[44] Within infrastructure, DAK has four main subsectors: roads, irrigation, drinking water, and sanitation. In particular for the road sector, DAK can be used for the following activities: periodic maintenance, rehabilitation, upgrading and development. In 2011, a further activity was included, namely "completing existing construction."

DAK allocation has been increasing significantly, but the amount is still low accounting for less than 5% of total transfers

Although DAK allocations have been increasing significantly over the years, the amount is still small accounting for less than 5 percent of total transfers. In 2011, central government allocated Rp 25.3 trillion for total DAK allocation, with the road sector representing 15 percent of total DAK which is the highest amongst the other infrastructure sub-sectors.

Despite its important role in financing sub-national infrastructure, DAK still faces some challenges

A study conducted by SMERU (2008)[45] and a recent study by the Ministry of Finance,[46] outline a number of challenges concerning DAK, among others: (i) the minimum 10 percent co-financing requirement is difficult to fulfill for low fiscal capacity districts; (ii) lack of transparency in the complex allocation process such as the formulation of district selection and unpredictability of the allocation amount creates difficulties for districts in preparing their annual budgets; (iii) unclear objectives exist relating to sector coverage and allocation mechanisms that take into account equalization, (iv) weak monitoring and evaluation system; and (v) some line ministries are often late in releasing the annual technical guidance and regulations for using DAK, which then delays the implementation of the projects.

b. Road-user charges

Most road-user charges are provincial taxes and charges

Road user charges are mostly provincial taxes and charges managed and collected by the provincial government and then shared with respective local governments (districts).The province have the authority to set the base and the tariff rates and is responsible for revenue collection. Parking tax is an exception as this instrument belongs to the districts. In Indonesia, there are four types of taxes and charges that can be classified as road-user charges (Table 10):

- Annual vehicle license fee (Pajak Kendaraan Bermotor, PKB) is an annual tax on ownership and/or control of a motor vehicle;
- Transfer of vehicle fee (Bea Balik Nama Kendaraan Bermotor, BBNKB) is a fee that is charged if the ownership of the vehicle is transferred;
- Fuel levy Pajak Bahan Bakar Kendaraan Bermotor, PBBKB)is a tax on the consumption of fuel; and
- Parking tax is charged on parked vehicles.

[44]In 2011, there were five new sectors including rural electrification, housing & settlement, land transportation safety, rural transportation, and the infrastructure at the border areas.
[45]Usman,Syaiku et.al (2008). The specific allocation fund (DAK): Mechanisms & Uses, Research Report.
[46]DirektoratJenderalPerimbanganKeuangan, Monitoring and Evaluation of Specific Allocation Fund (DAK) 2010.

Table 10: Provincial and district/city government taxes and user charges classified as road-user charges

Type of road user charges	Tax rates	Collection base	Collector	Earmarked for road
Provincial tax and user charges				
Annual Vehicle License fee (PKB)	1-2% (First car); 2-10% (subsequent car)	Type and value of the vehicle	Single window unit at provincial police office (police and provincial tax office)	Minimum 10 percent
Vehicle ownership transfer fee (BBNKB)	Max 20% (new car); and max 1% for the subsequent car	Transaction of vehicles	Single window unit at provincial police office (police and provincial tax office)	N.A
Fuel levy (PBBKB)	Max 10%; Public transport max 50% of rate of the private car	Fuel consumption	Regional fuel distribution representative (Pertamina)	N.A
Local government tax and user charges				
Parking fee	Max 30%	Vehicle parking on certain public space	Registered Parking firm/officer	N.A

Source: Law No. 25/2009

The implementation of road-user charges may differ from province to province

Following Law No. 25/2009, provincial governments further regulate the management and administration of road-user charges in the form of regional regulations. The regional regulations further outline the tax rate and collection base, as well as the sharing arrangement between the province and districts and then among the districts (Table 11). Thus the sharing arrangement and formula used may differ across provinces.

Table 11: Sharing arrangements for road-user charges between provinces and districts/cities[47]

Road user charges	Sharing arrangement*		
	Province	LGs (%)	
Annual Vehicle License fee (PKB)	70	Minimum 30%	Distribution among LGs**: • 50% is allocated based on potential/actual revenue of each *kab/kota* • 50% is allocated equally
Vehicle ownership transfer fee (BBNKB)	70	Minimum 30%	
Fuel levy	30	Minimum 70%	
Parking fees		100	

Source: Law No. 25/2009

Road user charges represent about a quarter of total provincial revenue

Total revenues from road-user charges were estimated to be around Rp 31 trillion (US$3.0 billion) in 2009. This represents a significant share of provincial revenues, at around 20 to 28 percent. However, the share varies across provinces depending on the tax base (e.g., number of cars and fuel consumption). In nominal terms, it has increased by nearly 5 times between 2001 and 2009 (Table 12).

Table 12: Road User Charges (Rp billion)

	2001	2003	2005	2007	2009*	Average
Total	**6,411**	**13,319**	**22,235**	**26,678**	**30,736**	
Vehicle license fee	2,613	5,026	8,272	10,169	11,716	
Vehicle transfer fee	3,660	6,507	10,569	12,898	14,860	
Fuels levy	138	1,786	3,394	3,611	4,160	
Share of total (%)						
Vehicle license fee	40.8	37.7	37.2	38.1	38.1	38.1
Vehicle transfer fee	57.1	48.9	47.5	48.3	48.3	48.3
Fuels levy	2.1	13.4	15.3	13.5	13.5	13.5

Source: Ministry of Finance. Note: *2009 data are estimates

[47] The law only stipulates the minimum percentage that has to be shared to local governments (LGs). The actual sharing scheme may differ from province to province. For example, East Kalimantan Province shares 40 percent of revenue motor vehicle and motor vehicle ownership transfer fee to LGs.

Vehicle ownership transfer fees are the main contributor to road-user charges

Traditionally, motor vehicle ownership transfer fees have been the main contributor to road-user charges, representing almost half of the total road-user charges revenue. However, revenue from the annual vehicle license fees outperformed revenue from vehicle transfer fees in 2009 (Table 12). The increasing role of vehicle and fuel levies since 2005 is most likely driven by the growth in the vehicle fleet and the subsequent increase in fuel consumption.

The composition of user-charge revenue for the provinces and district/city governments varies, reflecting sharing arrangements between the provinces and districts/cities. On average, the vehicle ownership transfer fees are more important for the provinces representing more than 50 percent of total revenue from road-user charges, followed by the annual vehicle license fees and fuel levy of 42 and 7 percent, respectively.

At the district/city level, vehicle transfers and annual vehicle license fees represent 39 and 32 percent of road-user charges, respectively. In contrast with the provinces, the fuel levy plays a more important role for the districts/cities, representing 28 percent of road-user charges. Districts receive a 70 percent share of the revenue from the fuel levy against 30 percent for the provinces.

4. Capacity and Management of Sub-national Roads

District/city public works have limited capacity and lack of training

The significant transfer of administrative and financial staff from central to district/city government was carried out over a short time period. Although in general there was no disruption in service delivery, a lack of a proper transition in capacity development seems to have had serious implications for the capacity of district/city governments, especially in the road sector. Since decentralization, there has been little technical training provided for district/city government public works staff. Some districts indicated that training is especially lacking in the areas of quality control and project management. Prior to decentralization, such technical training was regularly conducted by the DG-Highway; Ministry of Public Works through its regional offices (Balai Besar). In contrast, in a highly effective decentralization initiative in Kerala, India, there was a massive training effort that cascaded down through master trainers over several years.[48]

There is a shortage of professional staff and oversupply of support workers at the district/city level

From the case studies, it was generally reported that there is a shortage of professionally qualified staff and an oversupply of support workers in both local government public works and planning departments. For example, on average only one quarter of staff have graduate and post-graduate degrees. Information and guidelines regarding recommended technical changes to existing guidelines are not always received at the district/city level or such advice is made available but late. As a result, many personnel are not well-informed of the latest technical updates.

Technical and detailed assessment of sub-national road condition is no longer carried out

Proper assessments of sub-national road condition are no longer carried out mainly due to lack of technical skills, equipment, and funding. The assessment was conducted only superficially, based on the completed road works as well as information from field staff for certain road sections. This approach is commonly applied in the case study districts. In addition, there is also less incentive for sub-national government to monitor road condition since formal reporting to the central government (e.g., DG-Highway) was stopped after decentralization. In the past, sub-national governments were obligated to provide detailed information on road condition regularly and in a specific format to the central government (DG-Highway), which was used as inputs in allocating the budget to sub-national governments. The lack of proper assessment and no centralized data system has resulted in inconsistent data on sub-national road condition, making it difficult to do any in-depth analysis. There are several sources of sub-national road data, such as the Central Bureau of Statistics and DG-Highway (as input for the DAK-specific allocation grant), but they are not consistent and are not maintained over time.

Internal audit function is also lacking

The internal audit function also suffers from a lack of trained manpower and unfilled vacant posts. In Central Kalimantan, for example, only three out of 28 auditors had

[48] Ramakantan, N.; 2009. Decentralization and Local Government Reforms in Kerala: Strategy for Capacity Building, CLGF Conference and Research Colloquium.

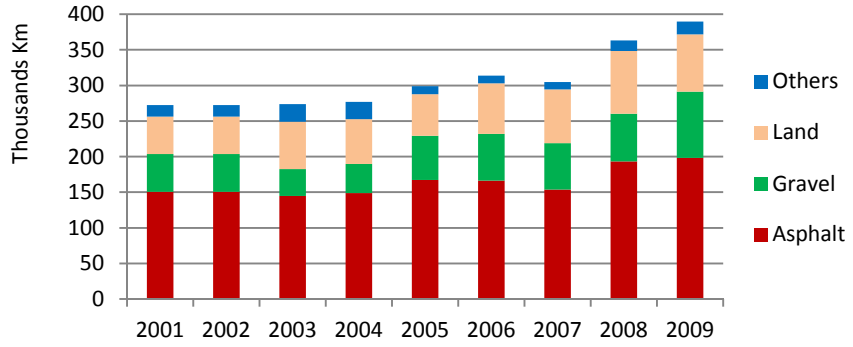
technical training. Lack of skills meant that inspectors were not always qualified to report on technical matters. They focused rather on comparing the specifications between the contracts and the actual work undertaken, flagging instances of late completion of works and noting where the volume of work done was not in line with the contract specifications. Audits were generally done on a randomized spot-check basis because of insufficient funds to undertake inspections more frequently.

5. Improving the Efficiency of Sub-national Roads

There is a preference for sealing district roads although often not economically justified

District road budgets tend to focus on new development rather than maintenance. Thus maintenance tends to be significantly under-budgeted. Determination of local priorities is heavily influenced by local political negotiations. Given that there is no scientific approach using cost benefit analysis or proper condition surveys, the priorities tend to be resolved on the basis of equity sharing and politics rather than actual need. For road maintenance this is a recipe for disaster as the decision-makers may be unaware of the hidden costs of neglecting routine maintenance and of the further cost implications for early rehabilitation and reconstruction. There is also a preference for sealed roads as opposed to gravel even when the traffic volumes are quite low and sealed roads are not economically justifiable. This is reflected in the fact that over 50 percent of the district road network is paved using an asphalt mix (Figure 20).

Figure 20: Length and structure of district/city roads, 2001–09



Source: BPS

More cost effective designs are needed for low volume roads

Standards used to rehabilitate local roads are higher than justified by the level of traffic. The limited financial resources are therefore allocated to the rehabilitation of a few segments of road without improving the overall quality of the network and increasing total transport costs. For example, rehabilitating a low volume road with an overlay of 80mm instead of 50mm will not only increase the rehabilitation costs by around 40 percent, but will also increase the present value of total transport costs (road agency plus road user costs) over a 20 year evaluation period by 2 percent; thus overdesigned standards penalize road-users in the long run. The design standards applied so far should be reviewed to also allow for more cost-effective designs for roads carrying lower traffic volumes. For example, thinner asphalt, surface dressings and slurry seals, as well as gravel pavements are all options that could be considered to provide good accessibility at a lower cost. In addition, funding of routine and periodic maintenance is very limited, resulting in faster-than-planned deterioration of road assets. This approach ends up being very expensive and unsustainable as the improved sections will deteriorate rapidly before the rest of the network is improved.

Despite negative international experience, the use of force-account labor units proliferates in Indonesia

The use of force account (in-house labor) for maintenance and small construction works is widespread at district/city government level. Convenience, the small size of potential contract awards (not warranting the effort of going through contracting procedures), and having an emergency task force immediately on hand are some rationales voiced by the local governments for continued use of the force-account methods. However, there was little understanding of the real cost implications of maintaining a force-account unit taking overhead costs into account. Employment has a higher value than productivity.

Strict annual budgeting

The strict annual budgeting system makes it difficult to achieve a predictable and timely

for maintenance work creates disincentive for the private sector to participate

flow of funds for multiyear horizons. In addition, there appears to be a general lack of confidence in the market resulting partially from a widespread perception of collusion between contractors and conflicts of interest affecting some public officials. The end result is that for much of the industry the workload is too small and too intermittent to justify investment in equipment and staff.[49]

Moving towards competitive contracting from force accounts, could improve efficiency

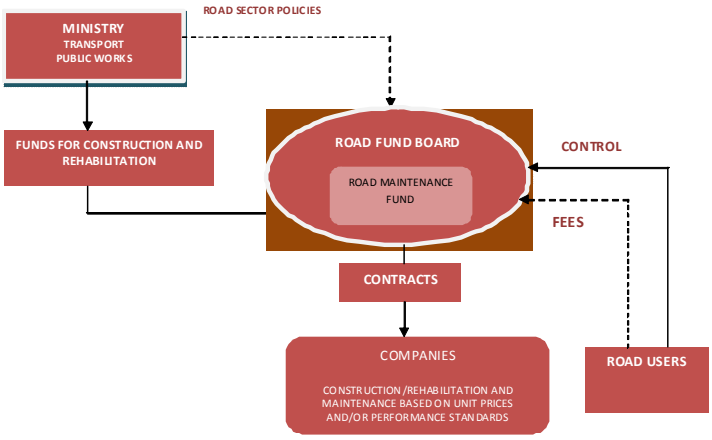
Mobilizing additional funds by changing from force account to contracting out road maintenance works can enlarge the amount of funding available. Some countries that have made this change report savings of between 10 and 15 percent on the costs of their unit rates of road maintenance. In other words the road maintenance budget can maintain more roads with the same amount of money.[50]

Box 1: Mobilizing additional funds for road maintenance, experience in Latin America Countries

Some countries in Latin America, i.e. El Salvador, Costa Rice, Guatemala, Honduras, Nicaragua, and four states in Brazil have started the initiative to change financing of road maintenance from a tax to a "fee-for-service" basis. This is a fairly new approach in managing and financing road maintenance. Based on the fact in these countries, road users presently face the consequence of poor road maintenance in the form of higher vehicle operating costs. Example from Honduras shows that investing 1/3 of the additional vehicle operating costs now spent on bad road maintenance, would save the road user the other 2/3. Because the road users finally will save more on vehicle operating costs than they will have to spend on road maintenance tariffs, and the government and the ultimately the taxpayers will have to spend less on future road rehabilitation as well. Experiences reveal that road users very often are willing to pay more if they can be assured that the proceeds will go to road maintenance only.

	Passenger car	Heavy truck
Vehicle operating costs in US$ driving on 100 km of bad roads	14	63.5
Vehicle operating costs in US$ driving on 100 km of good roads	10.5	51.7
Savings in vehicle operating cost in US$ on 100 km of roads	3.5	11.8
Equivalent of road user charges in US$ for driving 100 km	-1.0	-3.6
Resulting savings in US$ on 100 km of roads	2.5	8.2

In order to assure an effective and efficient management of road maintenance, these Latin America countries adopt an institution to safeguard the public interest in keeping roads in good condition, and to transfer the responsibility of road maintenance from the public to the private sector. In order to be effective and to ensure public support road users are given a control over where and how to spend the road user levies. One way is to create a Road Maintenance Board, a public institution with complete financial, administrative, and technical autonomy and with active road user participation.



The Road Maintenance Board/Fund has to channel and control funds to other agencies, moreover, there are several possibilities of how this Board can operate. The Board is responsible in taking the principal decision whether or not it is going to contract out work directly or whether it wants to make use of an existing road administration or agency. The administrative structure could be the Road Maintenance Board contracting all road maintenance to private agencies in charge of maintaining roads to a certain standard in a specific area on a long-term basis. For smaller countries, having one National Road Maintenance Board might be sufficient; for bigger countries, creating Provincial and Municipal Boards as well might be the better solution.

***Source*: Zietlow, G. 2004 "Road Funds in Latin America." Paper presented at the Senior Roads Executives Program, University of Birmingham (U.K.).**

[49] Assessment of the Road Construction Industry in Indonesia. 2011.Prepared for the World Bank by Scott Wilson Ltd.
[50] IEG A Decade of Action in Transport: An Evaluation of World Bank Assistance to the Transport Sector, world Bank, 2007.

6. Conclusions and Recommendations

Building awareness on the high cost of road maintenance backlog with sub-national policy-makers and stakeholders is important

The high cost of deferring maintenance and the need for a technical maintenance program are issues that are poorly understood at sub-national level by community leaders, politicians and the public at large. Creating awareness of the high cost of road maintenance backlogs with decision-makers and stakeholders would provide a better understanding of the potential opportunity costs and benefits of alternative policies. Eventually it is expected that road maintenance will receive greater attention in the budgetary planning process. This also extends to the use of appropriate standards for low volume roads.

a. Addressing the deterioration and maintenance backlogs of sub-national roads

Review design standards for roads with low traffic volume

Design standards for sub-national roads can be improved to be more cost-effective. Some road networks with low traffic volumes may not need to be sealed. Less expensive design standards should in these cases be encouraged. For example, thinner asphalt, surface dressings and slurry seals, as well as gravel pavements, are all options that could be considered to provide good accessibility at a lower cost.

Consider the use of performance-based contacts for road maintenance, especially in urban areas

Similar to national roads, moving from force account to performance-based contracts (PBCs) could improve the efficiency of road maintenance work. As mentioned, PBCs may be more attractive and applicable in urban areas as the market for small contractors is relatively more established. The force-account approach may have the advantage of quick response in emergencies and natural disasters in rural and remote areas. However, it tends to encourage road agencies to retain a larger number of staff than is justifiable, which in the end is less cost effective.

In addition, as discussed earlier, introducing a Road Maintenance Board/Fund at the provincial level, which could also carry out maintenance work for district roads on a contractual basis, could be an institutional model for improving sub-national road maintenance through business-oriented road management practices.

b. Provide technical support and improve monitoring and evaluation of the sub-national road network

Introduce a professional technical support system (centers of excellence) for sub-national government based on existing Balai Besar

Since decentralization, there has been little technical training provided for local government public works employees and this lack of capacity is not exclusive to the road sector. Activities at Balai Besar are currently mostly in the form of coordination meetings. Prior to decentralization, technical training was regularly conducted by the DG-Highway, Ministry of Public Works through its regional offices. The old system (pre-decentralization) of coaching and training is still perceived as being useful and could be re-introduced. By regulation, DG-Highway still carries the responsibility for providing capacity building for sub-national governments.

Improve monitoring and evaluation of sub-national road condition by providing incentives for better and standardized reporting to central government

A reliable and integrated data and information system for sub-national roads is critical to inform policy interventions. The pre-decentralization reporting mechanism can be re-introduced whereby sub-national governments are obligated to provide detailed information on road condition regularly and in a standardized format to the central government (DG-Highways) as part of the sub-national information system. This reporting system can be linked to simple funding incentive mechanisms to ensure its effectiveness. In addition, it would assist the government to continuously monitor the impact of central government transfers (such as DAK) on the output/outcomes in each region. Since decentralization, the Ministry of Home Affairs has been collecting information on sub-national road condition. However, this system is not working effectively as the information is not well utilized to inform policy intervention in the road sector.

c. Improve institutional productivity and efficiency of sub-national road maintenance

Introducing a provincial road agency to improve road management practices and accountability

Decentralization has led to fragmented and weak institutional capacity in managing sub-national roads. There are currently more than 500 entities responsible for sub-national road maintenance (33 provinces and 491 districts districts/cities), making it very difficult for a coordinated approach to address the maintenance backlog. A road maintenance demonstration project could be considered by establishing a semi-autonomous provincial

road agency to strategically plan and manage the extended provincial road network. In addition to the provincial roads under the responsibility of the respective province, districts/cities could delegate the management of all or part of their road networks using a contract management approach.

The implementation can be tested through a demonstration project

The objectives of such a new institutional arrangement would be to increase regional coordination, benefit from economies of scale and improve the effectiveness and efficiency of public expenditure. The proposal also addresses the technical and managerial capacity issue without undermining local decision-making authority. This institutional set up has been widely used with success in a number of countries in Latin America (Box 2).

The new provincial road agency should not be perceived as a parallel institution to the existing arrangements. The personnel of the provincial road agency would be established from the existing Public Works staff who are currently managing local government roads. Representatives of the provinces and districts would form an oversight board for the agency. The board would advise on the planning, budget allocation and management of the road network.

Box 2: Peru Provincial Road Institutes

Peru has experienced the same decentralization process as Indonesia in 2002. As a result, a three-tier structure is now in place with 24 elected regional governments and 2,006 municipalities (194 provinces and 1,812 districts). The World Bank and the Inter-American Development Bank have supported a substantial change in the decentralized management of sub-national roads. The first rural road project in Peru has helped establish the first decentralized "provincial road institute" (which are now established in every province). The Provincial Road Institute mandate is to design and implement province-wide road strategies that provide an effective means to coordinate between districts and local government, private sector providers and local communities. The Provincial Road Institute helped overcome weak financial and administrative capacity in districts to maintain roads. The Project has resulted in the rehabilitation of 15,000 km of district roads and 2,700 km of provincial roads. The proportion of the current sub-national roads in good condition has nearly doubled. Various studies show substantial positive impact of the improved roads, including reduction in average travel time by 50 percent, a 78 percent reduction in passenger travel fares, 18 percent in freight cost and an increased access to education. The project concept is being currently extended to cover other infrastructure sectors (water and sanitation, rural electricity) and health.

Source: World Bank staff

F. THE FUNDING GAP

1. Estimated Needs

Closing the maintenance gap is necessary to eliminate the maintenance backlog

The opportunity cost of neglecting road maintenance is high. The result of Road Network Evaluation Tools (RONET) (please see Appendix 2 for further discussion of RONET's results) shows that every US dollar spent on road maintenance will generate US$4.6 in road user cost savings. It is therefore important to close the funding gap that has opened up and eliminate the backlog of maintenance to the extent possible.

The roads in good and fair condition is projected to improve from 63 to 86 percent by 2020 under "minimize transport costs" scenario, while under "do minimum" scenario roads condition is projected to rapidly deteriorate from 63 to 45 percent

Table 13 presents the total network roads preservation annual requirements, considering the scenario that minimizes total transport costs for each road class, for rehabilitation, periodic maintenance and routine maintenance in years 1 to 5 and in years 6 to 20. In the minimize transport costs scenario the percentage of roads in good and fair condition will improve from 63 to 86 percent by 2020. However, under "do minimum" scenario the share of roads in good and fair condition will decline from 63 to 45 percent. In this analysis, the following definitions are employed:

- Periodic maintenance costs are the costs of road works applied to roads in good and fair condition
- Pavement rehabilitation costs are the costs of road works necessary for roads in poor or very poor condition.
- Routine maintenance costs are applied to all the roads.

Table 13: Minimize total transport cost scenario

Years 1 to 5 Annual Road Works Costs (US$ million/year)					
Network	Routine Maintenance	Periodic Maintenance	Rehabilitation	Total	Percent
Toll	8	19	0	27	1
National	238	50	377	665	15
Provincial	164	24	364	551	13
District	681	49	2,127	2,857	66
City	30	21	147	197	5
Total	1,120	163	3,015	4,297	100
Years 6 to 20 Annual Road Works Costs (US$ million/year)					
Network	Routine Maintenance	Periodic Maintenance	Rehabilitation	Total	Percent
Toll	8	12	0	20	1
National	240	126	105	471	18
Provincial	167	72	122	361	14
District	684	231	746	1,661	64
City	30	56	5	91	3
Total	1,129	497	978	2,604	100

***Source*: RONET**

The average fuel levy needed to cover the sub-national road maintenance backlog requirements including rehabilitation work is IDR532/liter (5.32USc/liter)

The estimated annual cost needed to properly maintain national roads is close to the current budget allocations. However, this expenditure could be reduced if the current maintenance practices were made more efficient. As for the sub-national roads, an estimated of IDR 32.5 trillion per year is needed to improve the current share of all sub-national roads in fair and good condition from 63 percent to 86 percent over five years. Current estimated annual expenditure is IDR14.9 trillion, hence the annual funding gap is IDR17.6 trillion.

If the assumptions are made that the main source of revenue is a fuel levy and that any funding gap between revenue and preservation costs will be closed within five years, then the average fuel levy would be **IDR532/liter** to cover the additional amount needed of IDR17.6 trillion (Table 14). Once the road network is back to a maintainable condition, this road maintenance funding gap will require only IDR156/liter. This is based on existing fuel consumption patterns. Since the price of fuel is subsidized by Government on the one hand the taxpayer is paying for the provision of roads, on the other hand the same taxpayer is subsidizing users to impose wear and tear on them. If the fuel subsidy were to

be phased out or reduced, the savings derived could potentially be used to fund the road maintenance requirements which would in turn contribute substantially towards improving Indonesia's competitiveness.

Table 14: Comparison of actual expenditures and funding requirements for sub-national roads[51]

	Actual Expenditure	Estimated Needs	Gap	Gap (%)
IDR billion/year	14,846	32,445	17,599	54
Fuel levy equivalent (IDR/l)	449	981	532	

Source: RONET

Road-user charges is a potential source to close the funding gaps for road preservation, particularly for sub-national road

Revenues from road user charges could also be potential funding sources to bridge the funding gaps at sub-national level. The total revenues generated from road-user charges (vehicle license and transaction fees and fuel levy) and collected by provincial governments and shared with districts is estimated to be around US$3.0 billion in 2009. These revenues, if entirely earmarked for roads, should cover more than 90 percent of the annual maintenance and rehabilitation needs of sub-national roads in the next five years. This cost recovery ratio becomes 1.3 from year 6 to 20 when the whole sub-national road network is brought back into stable and maintainable condition. In addition, revenues can be increased by introducing additional user charges or by increasing vehicle license fees for heavy vehicles in line with the damage they cause to the roads.

Globally, revenues from the road sector average 3 percent of GDP and revenues derived from road users generally exceed spending on road sector by two-to-one on average in Western Europe and even three-to-one in some countries[52].

International experience also suggests a common practice of using fuel levy to fund public transport and road rehabilitation. On a global average, some 80 to 90 percent of all transport sector revenues are raised via fuel taxes. There are some basic principles for fuel pricing based on observations and experience[53]: (i) fuel prices should cover production and distribution costs; (ii) fuel taxes should help finance the transport sector, according to user pays principles; (iii) fuel taxes should help internalize external costs and incentivise energy efficiency in transport, and (iv) fuel taxes should contribute to general revenues.

Indonesia's fuel price is lower than many neighbouring countries in the region

Indonesia is still heavily subsidized the pump price of fuel although it has become a net oil importer since 2005. The current retail price of fuel of Rp 4,500 per litre (or US$ 50 c/l) is still far below neighbouring in the regions (Table 15). However, subsidized fuel price adjustment may be difficult to implement as it is a politically sensitive issue.

Table 15: Pump price of fuel and GDP in selected SE Asian countries, 2010

Country	Diesel c/l	Gasoline c/l	GDP/Capita
Cambodia	115	134	830
Indonesia	**50**	**50**	**2,946**
Malaysia	66	68	8,373
Philippines	99	122	2,140
Thailand	111	165	4,608
Vietnam	84	103	1,224

Source: http://www.mytravelcost.com/petrol-prices/.
Note: Note: Pump prices are of March 2012 and GDP Per capita are of 2010

[51] The RONET results (Appendix 2) compare actual revenue and estimated needs for funding gaps analysis. However, considering the weak relationship between revenues from road user charges and expenditure on road preservation in Indonesia, actual expenditure is used.
[52] GTZ (2009), International Fuel Prices 2009. Available at http://www.gtz.de
[53] GTZ (2009), International Fuel Prices 2009. Available at http://www.gtz.de

2. Conclusions and Recommendations

a. Improve the effectiveness of road-user charges in addressing the road maintenance funding gap

Relate road-user charges for different vehicle types with the damage they impose on the roads

There needs to be a clear relationship between the user charges imposed for different vehicle types to reflect the damage they cause to the roads. Heavy vehicles in particular do not pay sufficient user charges and the enforcement of axle load regulations is weak. A thorough review of road-user charges and the implementation of a revised funding allocation system are necessary to better improve road user recovery in accordance with the costs imposed by different classes of vehicle. Stricter enforcement of existing axle control legislation and elimination of rent seeking practices is proposed.

b. Closing the road preservation funding gap

Gradually increase earmarking of revenue from road-user charges for road preservation

The estimated total revenues generated from road-user charges (vehicle licenses, transaction fees, and fuel levies) can potentially cover more than 90 percent of the annual maintenance and rehabilitation needs of sub-national roads over the next five years, if, hypothetically, they are entirely earmarked for roads. Although sub-national governments have competing priorities for development, the current level of earmarking for roads is only about 10 percent of vehicle tax or about 5 percent of total revenue from road-user charges, which is too low. Thus, increasing dedicated revenue from road-user charges gradually can be considered. If the fuel subsidy were to be phased out or reduced, the savings derived could potentially be used to fund the road maintenance requirements, which would in turn contribute substantially towards improving the nation's competitiveness. Currently, regulated fuel prices in Indonesia are among the cheapest in the region, but removing a subsidy is a delicate and sensitive matter and should preferably be done gradually at a time when the economy is improving.

c. Closing the arterial roads and expressway development funding gap

The average fuel levy needed to cover the 5 year expressway and arterial road program is 11.0 US c/liter

The Ministry of Public Works Strategic Plan estimates that Indonesia needs around 1,000 km of expressways and 10,000 km of arterial roads in the next five years. The resources required for the expressway and arterial rod development program are estimated to be around US$18 billion,[54] or an average of US$3.6 billion/year. If the assumptions are made that the main source of revenue is a fuel levy and that any funding gap between revenue and development costs will be closed within five years, then the average fuel levy would be 11.0 USc/liter. Box 3 presents the Japan's experience of its highway development program financed through earmarked road-charge levies, allocated to a special account over the 1953 to 2007 period.

Box 3: Japan's experience of highway development program

Japan financed 13 successive five-year highway development programs over the 1953-2007 period using earmarked road-user charges derived mainly from a fuel levy. The Japanese Government enacted special laws on urgent highway development program in 1953 to improve the capacity and condition of the road network. Motorists were subjected to road user charge. A Gasoline Tax was established in 1954. Since then, the tax base was expanded; the Government approved the Diesel Fuel Transaction Tax in 1956, the LPG (Liquefied Petroleum Gas) Tax in 1966, the Motor Vehicle Purchase Tax in 1968, and the Motor Vehicle Tonnage Tax in 1971. These taxes are imposed on road users at three stages: vehicle purchase, ownership, and use. The revenue from these taxes was transferred to a special account which was used exclusively to support the eleven successive five-year highway development plans over the 1953 to 2007 period. This road financing mechanism enabled Japan to mobilize around US$50 billion (2004) to develop its road network and meet the increased transport demand. Japan has also developed an expressway network (8,000 km) managed by public corporations that was recently privatized.

Source: World Bank.

[54] Based on US$8.0 million/km of expressway and US$1.0 million/km of 2-lane highway.

d. Incentivize DAK allocation for sub-national road maintenance

Encourage more DAK allocation for road maintenance and low volume road construction

DAK is the only allocation that is earmarked for infrastructure including roads. However, the level of funding is still very low (around IDR 4 trillion per year). The current DAK allocations are used for new road construction and for maintenance work. Considering the current lack of funding of road maintenance, DAK resources could be directed to road preservation activities. In addition, DAK formula for the road sector can further be improved by excluding "unstable road condition" as one of its technical criteria since this is a disincentive for timely road maintenance.

APPENDIX 1: CLASSIFICATIONS OF INDONESIA'S PUBLIC ROADS

Classification of Indonesia's public road network and links is governed by the 2004 Road Law and the 2009 Road Traffic and Transport Law:

- The Road Law classifies public road networks according to their role and groups road links according to their function and (administrative) status.
- Expressed simply, the Primary network connects urbanized areas / settlements and other transport 'nodes' while the Secondary network connects zones within urbanized nodes.
- Individual public road links are grouped according to their function as arterial, collector, local, and neighborhood (*lingkungan*) roads. The Road Law stipulates:
- Arterial roads serve long distance transport movements with high average speeds and restricted side access;
- Collector roads serve collection / distribution movements over medium distances with intermediate speeds and with some restriction on side access.
- Local roads serve short distance movements low average speeds and with no restriction on side access.
- Neighborhood roads serve short distance movements within neighborhoods with low average speeds and no restriction on side access.
- Links are further grouped by status as national, provincial, district, urban and village roads.

National roads comprise primary arterial and collector roads that connect provincial capitals, strategic roads, toll roads, together with other strategic national roads.

Provincial roads comprise primary collectors that connect between provincial capitals and district capitals and between district capitals/*ibukota*, together with other strategic provincial roads.

District roads are primary local roads that connect between the district (*kabupaten*) capital and sub-district (*kecamatan)* capitals, between *kecamatan* capitals, between *kecamatan* capitals and local centers of activity, between local centers of activity, together with other strategic *kabupaten* roads.

Urban roads are part of the secondary network and connect between service areas, settlement areas, and individual blocks within an urban area.

Village roads connect areas and settlements within villages and their neighborhoods.

The Road Traffic and Transport Law divides roads into Classes on the basis of vehicle weights and dimension limits and types of road infrastructure (which are described as expressways, main (*raya*) roads, intermediate (*sedang*) roads, and minor (*kecil*) roads).

Class I: Arterial and collector roads that can be used by vehicles with a maximum width of 2.5m, a maximum length of 18m, a maximum height of 4.2m, and a maximum axle load of 10 tons;

Class II: Arterial, collector and local roads that can be used by vehicles with a maximum width of 2.5m, a maximum length of 12m, a maximum height of 4.2m, and a maximum axle load of 8 tons;

Class III: Arterials, collectors, local and neighborhood roads that can be used by vehicles with a maximum width of 2.1m, a maximum length of 9m, a maximum height of 3.5m, and a maximum axle load of 8 tons;

Special Class: Arterial roads that can be used by vehicles with specifications exceeding those for Class I.

Where appropriate, axle load limits for Class III roads may be set below 8 tons.

Observations

The functional grouping has limited meaning in practice. For example, arterial roads serve a mix of short, medium and long distance traffics and their design standards do not provide for service roads. Moreover, there is no effective control over frontage development.

The status classification is the most important since it determines responsibility for financing of works, but the mapping between functional and status classifications is undermined by flexible interpretation of the term 'strategic road'.

The classification on the basis of VWDs is not very meaningful in the absence of associated signing / marking.

The Road Traffic and Transport law introduces a new set of terms (*raya, sedang, kecil*) for road infrastructure that do not link the groupings in the Road Law.

APPENDIX 2: THE ROAD NETWORK EVALUATION TOOLS (RONET)

The Road Network Evaluation Tools Model (RONET) is a tool for evaluating the performance of road maintenance and rehabilitation policies and the importance of the road sector to the economy

The Road Network Evaluation Tools Model (RONET) developed by the World Bank, was used to evaluate the preservation (maintenance and rehabilitation) requirements of the Indonesian road networks. RONET is a tool for evaluating the performance of road maintenance and rehabilitation policies and the importance of the road sector to the economy. It assesses the current network condition and traffic, and computes the asset value of the network and road network monitoring indicators. It uses country-specific relationships between maintenance spending and road condition and between road condition and road-user costs, to assess the performance over time of the network under different road works standards. It determines, for example, maintenance and rehabilitation road works that minimize total transport costs or the cost for sustaining the network in its current condition. It also estimates the savings or the costs to the economy to be obtained from maintaining the network at different levels of road condition. In addition, it determines the proper allocation of expenditures among recurrent maintenance, periodic maintenance, and rehabilitation road works. Finally, it can be used to determine the "funding gap," defined as the difference between current maintenance spending and required maintenance spending (to maintain the network at a given level of road condition), and the effect of under-spending on increased transport costs.

The model is developed from the same principles underlying the accepted economic evaluation model Highway Development and Management Model (HDM-4),[55] adopting simplified road-user costs relationships and simplified road-deterioration equations derived from the HDM-4 research to perform an economic evaluation of investment and maintenance alternatives. RONET performs a macro evaluation of the network for monitoring and strategic planning purposes by characterizing the road network using road categories of functional classification, surface type, condition and traffic. Thus, one of the main inputs to RONET is the distribution of the network length by different road categories, together with the average unit costs of road works and vehicle fleet characteristics.

1. Indonesia Road Network Evaluation

The available information is only sufficient for a macro evaluation of the network

The road network of Indonesia is classified by functional status as toll, National, Provincial, and District roads. Network road condition and traffic data are somewhat available in Indonesia for toll, National and Provincial roads, but are not readily available for District roads; therefore, the evaluation was undertaken using engineering estimates with similar characteristics to District roads. The available information is sufficient for a macro evaluation of the network to produce indicative figures of the preservation needs of the network. With better network data, this type of evaluation could be refined in the future using the HDM-4 or RONET to produce more precise results.

The total network length of Indonesia is around 477,079 km

The total network length of Indonesia is around 477,079 km of which National Roads account for 38,570 km and Provincial roads for 48,020 km. There are 742 km of toll roads in the country. District roads represent the majority (82 percent) of the total network length (389,747 km). The road network density is 263 km per 1,000 square land area and 2.01 km per 1,000 inhabitants. For the RONET evaluation, the length of the Provincial and District roads located in Jakarta (1,329 km and 4,937 km, respectively) were estimated and subtracted from the total Provincial and District roads. Also the network length was converted to a two-lane equivalent network length. Table 16 presents the 2010 road network length distribution by network type adopted for the RONET evaluation.

[55] http://www.hdmglobal.com/

Table 16: Network length (km)

Network	Total	Percent	Two-Lane Equivalent	Percent
Toll	742	0.2	1,484	0.3
National	38,570	8.1	42,522	8.8
Provincial	46,691	9.8	46,691	9.7
District	384,810	80.7	384,810	79.9
Jakarta	6,266	1.3	6,266	1.3
Total	477,079	100.0	481,773	100.0

Note: Jakarta roads are excluded from the Provincial and District roads

The percent of paved roads is almost 100 percent for toll and National roads, around 80 percent for Provincial and Jakarta roads, and 55 percent for District roads. The percent of roads in stable condition, defined as roads in good and fair condition that require only routine and periodic maintenance, was 88 percent for National roads, 76 percent for Provincial roads, 59 percent for District roads, and 64 percent for Jakarta roads (Table 18). The total network utilization is 343,969 million vehicle-km, of which 57 percent circulate on the toll, National and Provincial roads, while these roads account for only 19 percent of the total network length.

Table 17: Road condition and utilization

	Two-Lane Length	Percent Paved	Good/Fair Roads	Network Utilization	
Network	(km)	(%)	(%)	(M veh-km/year)	(%)
Toll	1,484	100	100	13,013	4
National	42,522	91	88	118,682	35
Provincial	46,691	81	76	65,517	19
District	384,810	55	59	112,643	33
Jakarta	6,266	79	64	34,114	10
Total	481,773	61	63	343,969	100

The total current network asset value[56] is US$84,175 million and the maximum asset value is US$110,022 million; thus, the loss in asset value due to the current network condition is US$25,847 million. The current asset value as a share the maximum asset value is 76.5 percent and the current asset value as a share of GDP is 15.6 percent. Table 18 presents the network asset value per network type.

Table 19 also presents the estimated road network length distribution by network type and condition. The percent of toll, National and Provincial roads (main roads) in good and fair condition is percent 82 percent. Based on World Bank data, the current average percent of main roads in good and fair condition in developing countries is around 70 percent, thus the Indonesia main roads condition is in line with this international benchmark.

[56] RONET computes the maximum asset value of a road network by multiplying the length of each road category by the unit cost of constructing a new road and then totaling the asset value of all road categories. RONET computes the current asset value of a road network by multiplying the length of each road category by the unit cost of constructing a new road minus the unit costs of the road work that is needed to bring that road category to very good condition.

Table 18: Network length by network type and road condition (km)

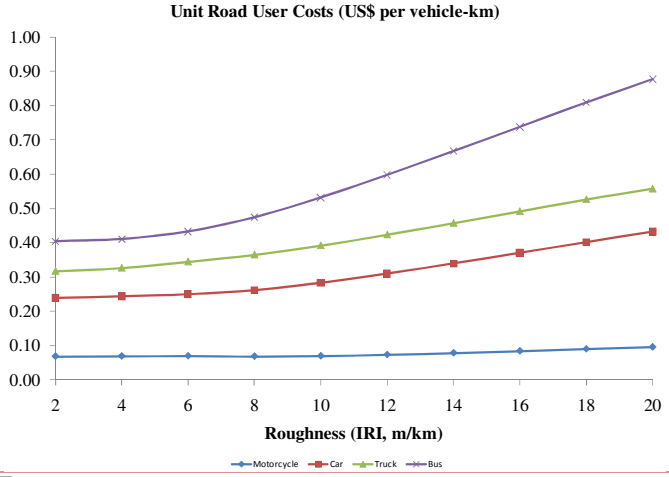
Network	Good	Fair	Poor	Very Poor	Total	Percent	Good and Fair
Toll	1,484	0	0	0	1,484	0	100
National	17,893	19,437	3,403	1,789	42,522	9	88
Provincial	23,812	11,673	6,537	4,669	46,691	10	76
District	142,380	84,658	92,354	65,418	384,810	80	59
Jakarta	2,569	1,441	1,316	940	6,266	1	64
Total	188,138	117,209	103,610	72,816	481,773	100	63
Percent	39	24	22	15	100		

RONET evaluated the network performance under different preservation standards in order to determine the optimal requirements for recurrent maintenance, periodic maintenance and rehabilitation. RONET identified for each road class the standard that minimizes the present value of total transport costs (road agency costs plus road user costs), at 12 percent discount rate, thus maximizing society net benefits (NPV). The RONET evaluation adopted the following assumptions: (i) traffic growth rate of 5 percent per year, considering the real GDP growth of between 5 and 6 percent annually between 2003 and 2008; (ii) discount rate of 12 percent; (iii) 20 years evaluation period; (iv) unit costs of road works based on current average road work costs in Indonesia; and (v) average unit road user costs based on current average vehicle fleet characteristics in Indonesia. Table 20 presents the adopted unit costs of road works that were based on a 2010 study of unit costs of road works in Indonesia. Table 20 presents the average unit road user costs, in US$ per vehicle-km, function of road roughness.

Table 19: Unit cost of road works for two-lane road

Capital Costs					
Surface Type	Current Condition	Road Work	National, Toll and Jakarta (US$/km)	Provincial (US$/km)	District (US$/km)
Asphalt Mix	Fair Condition	Resurfacing (Overlay)	90,000	78,300	60,300
	Poor Condition	Strengthening (Overlay)	200,000	174,000	134,000
	Very Poor Condition	Reconstruction	300,000	261,000	201,000
	No Road	New Construction	450,000	391,500	301,500
Surface	Fair Condition	Resurfacing (Reseal)	30,000	26,100	20,100
Treatment	Poor Condition	Strengthening (Overlay)	200,000	174,000	134,000
	Very Poor Condition	Reconstruction	250,000	217,500	167,500
	No Road	New Construction	400,000	348,000	268,000
Gravel	Fair Condition	Re-gravelling	20,000	17,400	13,400
	Poor Condition	Partial Reconstruction	40,000	34,800	26,800
	Very Poor Condition	Full Reconstruction	60,000	52,200	40,200
	No Road	New Construction	120,000	104,400	80,400
		Recurrent Costs			
		Road Work	(US$/km-year)	(US$/km-year)	(US$/km-year)
Paved	Good Condition	Routine Maintenance	5,500	3,800	2,400
	Fair Poor Condition	Routine Maintenance	6,600	4,560	2,880
Gravel	Good Condition	Routine Maintenance	1,500	1,036	947
	Fair Poor Condition	Routine Maintenance	1,800	1,244	1,137

Figure 21: Unit road-user costs



Source: RONET

2. Scenario to Minimize Transport Costs

Table 21 presents the total network roads preservation annual requirements, considering the scenario that minimizes total transport costs for each road class,[57] for rehabilitation, periodic maintenance and routine maintenance in years 1 to 5 and in years 6 to 20. Periodic maintenance costs are the costs of road works applied to roads in good and fair condition, while pavement rehabilitation costs are the costs of road works needed by roads in poor or very poor condition.

Routine maintenance costs are applied to all the roads. Under this optimal scenario, in years 1 to 5, US$4,297 million per year is needed for preservation works on the entire network (Figure 22), of which 28 percent is allocated to the National and Provincial roads and 70 percent is allocated to rehabilitation works. If this program is implemented during the first five years, in years 6 to 20, US$2,604 million per year is needed for preservation works on the entire network (Figure 23), of which 32 percent is allocated to the National and Provincial roads and 38 percent is allocated to rehabilitation works. The annualized present value of road agency costs over the 20-year evaluation period, at 12 percent discount rate, is US$4,464 million per year.

Table 20: Minimize total transport cost scenario

Years 1 to 5 Annual Road Works Costs (US$ million/year)					
Network	**Routine Maintenance**	**Periodic Maintenance**	**Rehabilitation**	**Total**	**Percent**
Toll	8	19	0	27	1
National	238	50	377	665	15
Provincial	164	24	364	551	13
District	681	49	2,127	2,857	66
City	30	21	147	197	5
Total	1,120	163	3,015	4,297	100
Years 6 to 20 Annual Road Works Costs (US$ million/year)					
Network	**Routine Maintenance**	**Periodic Maintenance**	**Rehabilitation**	**Total**	**Percent**
Toll	8	12	0	20	1
National	240	126	105	471	18

[57] RONET computes, for each road class and for different preservation standards, the present value of road agency costs, road user costs, and total transport costs (sum of road agency and road user costs); thus, the optimal standard per road class is the one that minimizes the present value of total transport costs.

Provincial	167	72	122	361	14
District	684	231	746	1,661	64
City	30	56	5	91	3
Total	1,129	497	978	2,604	100

Figure 22: Annual expenditures year 1 to 5

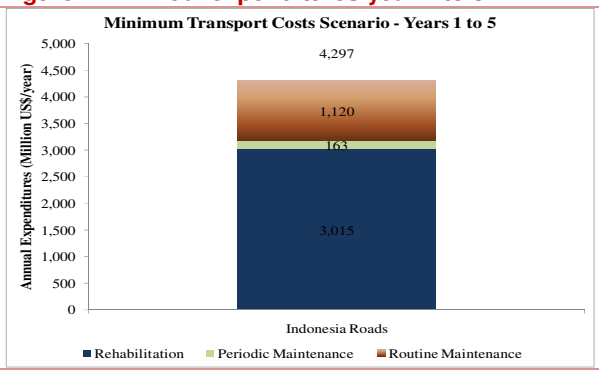


Figure 23: Annual expenditures years 6 to 20

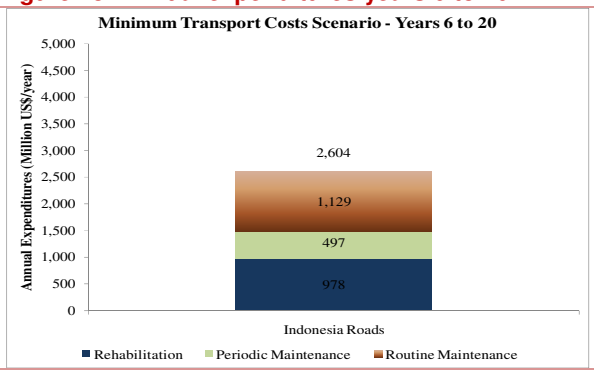


Table 22 presents for years 1 to 5 and 6 to 20: (i) total costs, in US$ million; (ii) annual costs, in US$ million per year; (iii) annual costs per network length, in US$ per year-km; (iv) annual costs per network utilization, in US$ per vehicle-km; (v) annual costs per liter of fuel consumption, in US cent per liter, considering an average fuel consumption of 0.09 liters per kilometer per vehicle; and (vi) annual costs per GDP in percent.

Table 21: Roads expenditures - minimum transport costs scenario

	Units	Units
Sum Road Works Costs (Years 1-5)	million US$	21,487
- Rehabilitation	million US$	15,074
- Periodic Maintenance	million US$	813
- Recurrent Maintenance	million US$	5,601
Annual Road Works Costs (Years 1-5)	million US$/year	4,297
- Rehabilitation	million US$/year	3,015
- Periodic Maintenance	million US$/year	163
- Recurrent Maintenance	million US$/year	1,120
Annual Road Works Costs per Km (Years 1-5)	US$/year-km	8,920
- Rehabilitation	US$/year-km	6,258
- Periodic Maintenance	US$/year-km	337
- Recurrent Maintenance	US$/year-km	2,325
Road Works Costs per Veh-Km (Years 1-5)	US$/vehicle-km	0.012
- Rehabilitation	US$/vehicle-km	0.009
- Periodic Maintenance	US$/vehicle-km	0.000
- Recurrent Maintenance	US$/vehicle-km	0.003
Road Works Costs per Liter (Years 1-5)	US$ cents/liter	14
- Rehabilitation	US$ cents/liter	10
- Periodic Maintenance	US$ cents/liter	1
- Recurrent Maintenance	US$ cents/liter	4
Annual Road Works Costs per GDP (Years 1-5)	(%)	0.8
- Rehabilitation	(%)	0.6
- Periodic Maintenance	(%)	0.0
- Recurrent Maintenance	(%)	0.2
Sum Road Works Costs (Years 6-20)	million US$	39,057
- Rehabilitation	million US$	14,664

- Periodic Maintenance	million US$	7,459
- Recurrent Maintenance	million US$	16,934
Annual Road Works Costs (Years 6-20)	million US$/year	2,604
- Rehabilitation	million US$/year	978
- Periodic Maintenance	million US$/year	497
- Recurrent Maintenance	million US$/year	1,129
Annual Road Works Costs per Km (Years 6-20)	US$/year-km	5,405
- Rehabilitation	US$/year-km	2,029
- Periodic Maintenance	US$/year-km	1,032
- Recurrent Maintenance	US$/year-km	2,343
Road Works Costs per Veh-Km (Years 6-20)	US$/vehicle-km	0.008
- Rehabilitation	US$/vehicle-km	0.003
- Periodic Maintenance	US$/vehicle-km	0.001
- Recurrent Maintenance	US$/vehicle-km	0.003
Road Works Costs per Liter (Years 6-20)	US$ cents/liter	8
- Rehabilitation	US$ cents/liter	3
- Periodic Maintenance	US$ cents/liter	2
- Recurrent Maintenance	US$ cents/liter	4
Annual Road Works Costs per GDP (Years 6-20)	(%)	0.5
- Rehabilitation	(%)	0.2
- Periodic Maintenance	(%)	0.1
- Recurrent Maintenance	(%)	0.2

Table 23 presents the annualized present value of road-agency, road-user and total transport costs over the next 20 years, at a 12 percent discount rate, for the "minimize transport costs" scenario and for a "do minimum" scenario. For the minimize total transport costs scenario, road user costs represent 94 percent of total transport costs and the annualized present value of total transport costs over the evaluation period is US$75,329 million per year (14 percent of GDP). The increase in annualized present value of total transport costs of "do minimum "corresponds to US$4,443 million per year. Compared with "minimize total transport costs" scenario, for every dollar saved by the road agency under the" do minimum" scenario, road user costs increase 4.6 times.

Table 22: Annualized costs years 1 to 20

Minimize Transport Costs Scenario (M US$/year)		
Road Agency	Road Users	Transport
4,464	70,865	75,329
Do Minimum Scenario (M US$/year)		
Road Agency	Road Users	Transport
3,226	76,547	79,772
Reduction in Costs Compared with Do Minimum (M US$/year)		
Road Agency	Road Users	Transport
-1,238	5,682	4,443
Increase in Road User Costs per Decrease in Agency Costs		
	4.6	

Table 24 presents the estimated percentage of the network in stable condition (good and fair condition) today and in 2020 for the scenario that minimizes transport costs and for the do minimum scenario. The current percentage of roads in good and fair condition today is 63 percent, and under the minimize transport costs scenario will increase to 86 percent by 2020, but under the do minimum scenario will decrease to 45 percent by 2020. The network asset value will increase to US$95,868 million by 2020 under the minimize transport costs scenario, representing a 14 percent increase compared with the current asset value.

Table 23: Percent in good and fair condition

Minimize Transport Costs Scenario	
Current	2020
63%	86%
Do Minimum Scenario	
Current	2020
63%	45%

3. Evaluation of Budget Scenarios

Table 24: Economic comparison of budget scenarios

Budget Scenario	Annualized Agency Costs (M US$/year)	Annualized Road User Costs (M US$/year)	Annualized Total Transport (M US$/year)	Asset Value 2020 (US$ Million)	Good & Fair 2020 (%)
Do Minimum	3,226	76,547	79,772	84,115	45%
Budget Constraint 3	3,626	73,985	77,612	88,051	60%
Budget Constraint 2	3,742	72,926	76,669	89,573	72%
Budget Constraint 1	3,977	72,031	76,008	90,752	78%
Minimize Transport Costs	4,464	70,865	75,329	95,868	86%
Budget Surplus 1	5,122	70,628	75,750	96,689	91%
Budget Surplus 2	6,661	70,138	76,799	108,596	100%

Figure 24: Economic comparison

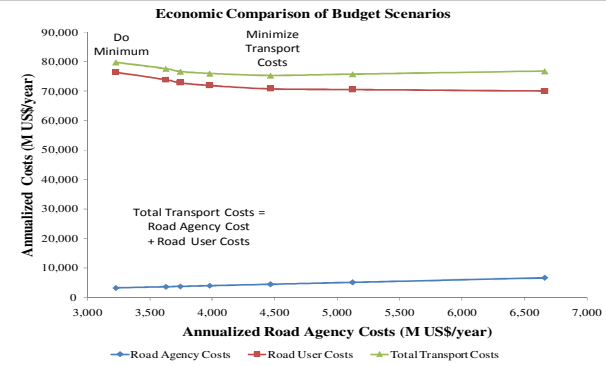


Figure 25: Network condition comparison

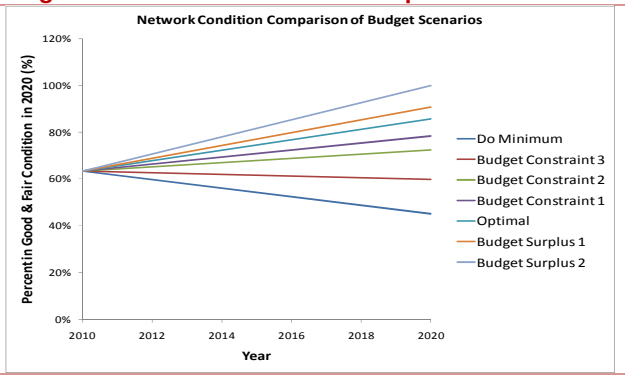


Figure 24 shows the economic comparison of the different budget scenarios, measured in terms of annualized present value of road agency, road-user and total transport costs. The figure shows that total transport costs increase if road agency expenditures are higher or lower that the ones for minimize total transport costs scenario. Figure 25 shows the percentage of the network in good and fair condition in 2020 under the different budget scenarios. To keep the network in 2020 at around the same road condition as today, the budget constraint scenario 3 should be implemented that corresponds to annualized expenditures of US$3,626 million per year or 81 percent of the expenditures under the minimize total transport costs scenario.

4. Fuel Levy Revenues

The 2010 gasoline consumption is estimated to be 21,454 million liters per year and the diesel consumption 11,251 million liters per year. Table 26 shows the fuel levy revenues, in US$ million per year, that could be collected from different levels of fuel levy per liter, in US$ cents per liter. To collect around US$4,297 million per year (the preservation needs under the minimize transport costs scenario for years 1 to 5), around US$13.1 cents per liter is needed for fuel levy (US$3.4 cents per liter for routine maintenance expenditures, US$0.5 cents per liter for periodic maintenance expenditures and US$9.2 cents per liter for rehabilitation expenditures).

Table 25: Fuel levy revenues sensitivity

Fuel Consumption							
Consumption (m liters/year)	Diesel 11,251	Gasoline 21,454	Total 32,705				
Fuel Levy (US cents/liter)	Revenue (US$ million/year)			Fuel Levy (US cents/liter)	Revenue (US$ million/year)		
	Diesel	Gasoline	Total		Diesel	Gasoline	Total
1	113	215	327	21	2,363	4,505	6,868
2	225	429	654	22	2,475	4,720	7,195
3	338	644	981	23	2,588	4,934	7,522
4	450	858	1,308	24	2,700	5,149	7,849
5	563	1,073	1,635	25	2,813	5,364	8,176
6	675	1,287	1,962	26	2,925	5,578	8,503
7	788	1,502	2,289	27	3,038	5,793	8,830
8	900	1,716	2,616	28	3,150	6,007	9,157
9	1,013	1,931	2,943	29	3,263	6,222	9,484
10	1,125	2,145	3,271	30	3,375	6,436	9,812
11	1,238	2,360	3,598	31	3,488	6,651	10,139
12	1,350	2,574	3,925	32	3,600	6,865	10,466
13	1,463	2,789	4,252	33	3,713	7,080	10,793
14	1,575	3,004	4,579	34	3,825	7,294	11,120
15	1,688	3,218	4,906	35	3,938	7,509	11,447
16	1,800	3,433	5,233	36	4,050	7,723	11,774
17	1,913	3,647	5,560	37	4,163	7,938	12,101
18	2,025	3,862	5,887	38	4,275	8,153	12,428
19	2,138	4,076	6,214	39	4,388	8,367	12,755
20	2,250	4,291	6,541	40	4,500	8,582	13,082

5. Cost Recovery

Having established how much is needed to preserve the Indonesian road system, the next issue is how to recover the cost and close the funding gap to reach the minimize transport costs optimum shown in Table 27. If the assumptions are made that the main source of revenue is a fuel levy and that any funding gap between revenue and preservation costs will be closed within five years then the additional amount needed based on current road condition is $1,484.43 million a year as shown in Table 27. After five years this extra amount would fall away and the estimated needs would balance revenues.

Table 26: Comparison of Total Revenues and Funding Requirements[58]

Actual Revenues	Estimated Needs	Gap	Gap
(US$ million/year)	(US$ million/year)	(US$ million/year)	(%)
2812.63	4,297.46	1,484.83	35%

Source: **RONET**

The average fuel levy would be 13.14 US c/l compared with 8.6 c/l currently. After five years the charge would revert to 8.6 c/l. This is based on existing fuel consumption patterns.

[58] Considering the weak linkage between revenues from road user charges in Indonesia and expenditure on road preservation in Indonesia, in the funding the actual revenues

Table 27: Fuel Levy Needed to Finance Funding Requirements

Annualized Funding Requirements Years 1-5 to be Covered by Road User Charges for Optimal Scenario (US$ million/year)			*Fuel Levy (US cents/liter)*
Routine Maintenance	Very Good, Good and Fair Roads	764.35	2.34
	Poor and Very Poor Roads	355.89	1.09
	Subtotal	1,120.24	3.43
Periodic Maintenance	Very Good, Good and Fair Roads	125.36	0.38
	Poor and Very Poor Roads	37.15	0.11
	Subtotal	162.52	0.50
Rehabilitation	Very Good, Good and Fair Roads	555.28	1.70
	Poor and Very Poor Roads	2,459.42	7.52
	Subtotal	3,014.71	9.22
Investments		0.00	0.00
Administration & Other		0.00	0.00
Total		4,297.46	13.14

6. Indonesia National Roads Evaluation

National roads were evaluated with RONET separately from the rest of the network. Table 29 presents the estimated National roads network length distribution by condition and traffic. The percent of the network on stable condition is 86 percent (good and fair condition) and the average network roughness is 6.0 IRI, m/km. The percent of the network that carries more than 3,000 vehicles per day is 52 percent and the average Annual Average Daily Traffic (AADT) is 7,647 vehicles per day, indicating a network with high traffic levels. The current asset value of the National roads network is US$14,879 million that corresponds to 2.8 percent of GDP and 83.7 percent of the maximum possible asset value.

Table 28: National roads distribution

Condition	Length *(km)*	Percent *(%)*
Good (< 4 IRI)	17,893	42%
Fair (4-8 IRI)	19,437	46%
Poor (>8 IRI)	5,192	12%
Total	42,522	100%
Traffic Level	*Length (km)*	*Percent (%)*
<300 AADT	3,331	8%
300-1,000 AADT	6,638	16%
1,000-3,000 AADT	10,161	24%
3,000-10,000 AADT	11,649	27%
>10,000 AADT	10,743	25%
	42,522	100%

Table 30 presents the annual road works costs needed under minimize total transport costs scenario for years 1 to 5 and 6 to 20, in US$ million per year, US$ per year per km. From years 1 to 5, US$665 million per year is needed for routine maintenance (36 percent), periodic maintenance (8 percent) and rehabilitation (57 percent) works, while in years 6 to 20; the needs are reduced to US$471 million per year.

Table 29: National roads minimize total transport cost scenario

Annual Road Works Costs (US$ million/year)				
Period	Routine Maintenance	Periodic Maintenance	Rehabilitation	Total
Year 1 to 5	238	50	377	665
Year 5 to 20	240	126	105	471
Annual Road Works Costs per Km (US$/year-km)				
Period	Routine Maintenance	Periodic Maintenance	Rehabilitation	Total
Year 1 to 5	5,586	1,182	8,861	15,630
Year 5 to 20	5,641	2,973	2,470	11,084

In 2020, under minimize transport costs scenario, the average network roughness will decrease to 4.9 IRI, m/km. In this case, the network asset value will increase by 1 percent in 2020 to US$15,030 million. RONET estimates that to keep the National roads network at around the same condition as today, US$620 million dollar per year is needed for preservation works in years 1 to 5 and US$446 million per years in years 6 to 20 (Table 31).

Table 30: National roads keep current condition scenario

Annual Road Works Costs (US$ million/year)				
Period	Routine Maintenance	Periodic Maintenance	Rehabilitation	Total
Year 1 to 5	241	3	376	620
Year 5 to 20	248	59	139	446
Annual Road Works Costs per Km (US$/year-km)				
Period	Routine Maintenance	Periodic Maintenance	Rehabilitation	Total
Year 1 to 5	5,679	74	8,834	14,588
Year 5 to 20	5,843	1,397	3,260	10,500

Finally, Table 32 presents the National roads preservation expenditures from 2007 to 2009, corresponding to the National Road Maintenance and National Road Rehabilitation programs, which do not include betterment works. In 2007 and 2008, preservation expenditures were around US$270 million per year, but in 2009, the preservation expenditures increased to US$415 million, which falls short of the US$665 million per year needed under minimize total transport costs scenario or the US$620 million per year to keep the network at the current condition. Thus, to at least keep the network condition the same as today, around US$620 million per year is required over the next five years for preservation works.

Table 31: National roads preservation expenditures

	2007	2008	2009	2010
GDP (US$ million)	432,105	510,502	540,274	*540,274*
Exchange Rate (IDR to US$)	9,141	9,699	10,390	9,090
National Road Rehabilitation (IDR billion)	261	287	1,861	3,923
National Road Maintenance (IDR billion)	2,094	2,421	2,447	1,504
Total (IDR billion)	2,355	2,708	4,308	5,427
National Road Rehabilitation (US$ million)	29	30	179	432
National Road Maintenance (US$ million)	229	250	236	165
Total (US$ million)	258	279	415	597
Preservation Expenditures per GDP	0.1%	0.1%	0.1%	0.1%

Note: 2010 Draft DGH Program

7. Indonesia Provincial Roads Evaluation

Provincial roads were evaluated with RONET separate from the rest of the network. Table 33 presents the estimated Provincial roads network length distribution by condition and traffic. The percent of the network on stable condition is 76 percent (good and fair condition) and the average network roughness is 7.2 IRI, m/km. The percent of the network that carries more than 3,000 vehicles per day is 35 percent and the average Annual Average Daily Traffic (AADT) is 3,844 vehicles per day. The current asset value of the Provincial roads network is US$12,560 million that corresponds to 2.3 percent of GDP and 80.8 percent of the maximum possible asset value.

Table 32: Provincial Roads Distribution

Condition	Length (km)	Percent (%)
Good	23,812	51%
Fair	11,673	25%
Poor	11,206	24%
Total	46,691	100%
Traffic Level	Length (km)	Percent (%)
<300 AADT	8,660	20%
300-1,000 AADT	10,773	25%
1,000-3,000 AADT	12,171	29%
3,000-10,000 AADT	11,937	28%
>10,000 AADT	3,149	7%
	46,691	110%

Table 34 presents the annual road works costs needed under minimize total transport costs scenario for years 1 to 5 and 6 to 20, in US$ million per year, US$ per year per km. From years 1 to 5, US$551 million per year is needed for routine maintenance (30 percent), periodic maintenance (4 percent) and rehabilitation (66 percent) works, while in years 6 to 20; the needs are reduced to US$ 361 million per year. To finance the minimize transport costs scenario (US$551 million per liter), a fuel levy of US$1.69 cents per liter is required.

Table 33: Provincial Roads Minimize Total Transport Cost Scenario

Annual Road Works Costs (US$ million/year)				
Period	Routine Maintenance	Periodic Maintenance	Rehabilitation	Total
Year 1 to 5	164	24	364	551
Year 5 to 20	167	72	122	361
Annual Road Works Costs per Km (US$/year-km)				
Period	Routine Maintenance	Periodic Maintenance	Rehabilitation	Total
Year 1 to 5	3,504	512	7,795	11,811
Year 5 to 20	3,582	1,540	2,609	7,731

In 2020, under minimize transport costs scenario, the average network roughness will decrease to 4.7 IRI, m/km, and the percent of roads in good or fair condition will increase to 93 percent. In this case, the network asset value will increase by 8 percent in 2020 to US$13,576 million. Under this scenario, the present value of road agency costs is US$4,468 million, of road user costs is US$100,470 million and of total transport costs US$104.938 million.

RONET estimates that to keep the Provincial; roads network at around the same condition as today, US$503 million dollar per year is needed for preservation works in years 1 to 5

and US$265 million per years in years 6 to 20 (Table 35). Under this scenario, the present value of road agency costs is US$3,333 million, of road user costs is US$104,356 million and of total transport costs US$107,689 million. Thus, total transport costs increase by US$2,758 million in relation to the minimize transport costs scenario.

Table 34: Provincial Roads Keep Current Condition Scenario

Annual Road Works Costs (US$ million/year)				
Period	Routine Maintenance	Periodic Maintenance	Rehabilitation	Total
Year 1 to 5	167	16	321	503
Year 5 to 20	174	26	65	265
Annual Road Works Costs per Km (US$/year-km)				
Period	Routine Maintenance	Periodic Maintenance	Rehabilitation	Total
Year 1 to 5	3,578	340	6,865	10,783
Year 5 to 20	3,731	559	1,387	5,677

8. Indonesia Regency Roads Evaluation

Regency roads were evaluated with RONET separate from the rest of the network. Table 36 presents the estimated Regency roads network length distribution by condition and traffic. The percent of the network on stable condition is 59 percent (good and fair condition) and the average network roughness is 10.5 IRI, m/km. The percent of the network that carries more than 3,000 vehicles per day is 4 percent and the average Annual Average Daily Traffic (AADT) is 802 vehicles per day. The current asset value of the Provincial roads network is US$54,300 million that corresponds to 10.1 percent of GDP and 73.7 percent of the maximum possible asset value.

Table 35: Regency Roads Distribution

Condition	Length (km)	Percent (%)
Good	142,380	37%
Fair	84,658	22%
Poor	157,772	41%
Total	384,810	100%
Traffic Level	Length (km)	Percent (%)
<300 AADT	220,988	57%
300-1,000 AADT	82,538	21%
1,000-3,000 AADT	64,400	17%
3,000-10,000 AADT	16,884	4%
>10,000 AADT	0	0%
	384,810	**100%**

Table 37 presents the annual road works costs needed under minimize total transport costs scenario for years 1 to 5 and 6 to 20, in US$ million per year, US$ per year per km. From years 1 to 5, US$2,857 million per year is needed for routine maintenance (24 percent), periodic maintenance (2 percent) and rehabilitation (74 percent) works, while in years 6 to 20; the needs are reduced to US$1,661 million per year. To finance the minimize transport costs scenario (US$2,857 million per liter), a fuel levy of US$8.74 cents per liter is required.

Table 36: Regency Roads Minimize Total Transport Cost Scenario

Annual Road Works Costs (US$ million/year)				
Period	Routine Maintenance	Periodic Maintenance	Rehabilitation	Total
Year 1 to 5	681	49	2,127	2,857
Year 5 to 20	684	231	746	1,661
Annual Road Works Costs per Km (US$/year-km)				
Period	Routine Maintenance	Periodic Maintenance	Rehabilitation	Total
Year 1 to 5	1,770	127	5,528	7,425
Year 5 to 20	1,777	600	1,939	4,316

In 2020, under minimize transport costs scenario, the average network roughness will decrease to 6.4 IRI, m/km, and the percent of roads in good or fair condition will increase to 85 percent. In this case, the network asset value will increase by 18 percent in 2020 to US$64,327 million. Under this scenario, the present value of road agency costs is US$22,076 million, of road user costs is US$177,012 million and of total transport costs US$199,088 million.

RONET estimates that to keep the Regency; roads network at around the same condition as today, US$2,735 million dollar per year is needed for preservation works in years 1 to 5 and US$1,478 million per years in years 6 to 20 (Table 38). Under this scenario, the present value of road agency costs is US$19,298 million, of road user costs is US$189,282 million and of total transport costs US$208,579 million. Thus, total transport costs increase by US$9,491 million in relation to the minimize transport costs scenario.

Table 37: Regency Roads Keep Current Condition Scenario

Annual Road Works Costs (US$ million/year)				
Period	Routine Maintenance	Periodic Maintenance	Rehabilitation	Total
Year 1 to 5	702	193	1,840	2,735
Year 5 to 20	712	144	622	1,478
Annual Road Works Costs per Km (US$/year-km)				
Period	Routine Maintenance	Periodic Maintenance	Rehabilitation	Total
Year 1 to 5	1,824	502	4,782	7,108
Year 5 to 20	1,851	374	1,616	3,841

9. Indonesia Sub National Roads Evaluation

Sub National roads (Provincial and Regency roads) were evaluated with RONET separate from the rest of the network. Table 39 presents the estimated Sub National roads network length distribution by condition and traffic. The percent of the network on stable condition is 61 percent (good and fair condition) and the average network roughness is 10.2 IRI, m/km. The percent of the network that carries more than 3,000 vehicles per day is 8 percent and the average Annual Average Daily Traffic (AADT) is 1,131 vehicles per day. The current asset value of the Provincial roads network is US$66,860 million that corresponds to 12.4 percent of GDP and 75.0 percent of the maximum possible asset value.

Table 38: Sub National Roads Distribution

Condition	Length (km)	Percent (%)
Good	166,192	39%
Fair	96,331	22%
Poor	168,978	39%
Total	431,501	100%
Traffic Level	Length (km)	Percent (%)
<300 AADT	229,648	60%
300-1,000 AADT	93,312	24%
1,000-3,000 AADT	76,571	20%
3,000-10,000 AADT	28,821	7%
>10,000 AADT	3,149	1%
	431,501	112%

Table 40 presents the annual road works costs needed under minimize total transport costs scenario for years 1 to 5 and 6 to 20, in US$ million per year, US$ per year per km. From years 1 to 5, US$3,409 million per year is needed for routine maintenance (30 percent), periodic maintenance (3 percent) and rehabilitation (87 percent) works, while in years 6 to 20; the needs are reduced to US$2,002 million per year. To finance the minimize transport costs scenario (US$3,409 million per liter), a fuel levy of US$10.43 cents per liter is required.

Table 39: Sub National Roads Minimize Total Transport Cost Scenario

Annual Road Works Costs (US$ million/year)				
Period	Routine Maintenance	Periodic Maintenance	Rehabilitation	Total
Year 1 to 5	845	73	2,491	3,409
Year 5 to 20	851	303	868	2,022
Annual Road Works Costs per Km (US$/year-km)				
Period	Routine Maintenance	Periodic Maintenance	Rehabilitation	Total
Year 1 to 5	1,958	168	5,773	7,899
Year 5 to 20	1,972	702	2,012	4,686

In 2020, under minimize transport costs scenario, the average network roughness will decrease to 7.7 IRI, m/km, and the percent of roads in good or fair condition will increase to 86 percent. In this case, the network asset value will increase by 17 percent in 2020 to US$77,903 million. Under this scenario, the present value of road agency costs is US$26,543 million, of road user costs is US$277,482 million and of total transport costs US$304,026 million.

RONET estimates that to keep the Sub Nationals roads network at around the same condition as today, US$3,239 million dollar per year is needed for preservation works in years 1 to 5 and US$1,743 million per years in years 6 to 20 (Table 41). Under this scenario, the present value of road agency costs is US$22,631 million, of road user costs is US$293,638 million and of total transport costs US$316,269 million. Thus, total transport costs increase by US$12,243 million in relation to the minimize transport costs scenario.

Table 40: Sub National Roads Keep Current Condition Scenario

Annual Road Works Costs (US$ million/year)				
Period	Routine Maintenance	Periodic Maintenance	Rehabilitation	Total
Year 1 to 5	869	209	2,161	3,239
Year 5 to 20	887	170	687	1,743
Annual Road Works Costs per Km (US$/year-km)				
Period	Routine Maintenance	Periodic Maintenance	Rehabilitation	Total
Year 1 to 5	2,014	485	5,008	7,506
Year 5 to 20	2,055	394	1,591	4,040

APPENDIX 3: SUB-NATIONAL ROAD CASE STUDY

1. Background and Methodology

The sub-national road case study aims to get a better understanding current practices and policy challenges related to sub-national road management

Because of the paucity of data in respect of the sub-national governments, field case studies were undertaken as part of the Indonesia Infrastructure PER to obtain a better understanding of the allocation of resources, as well as the planning, and prioritization procedures of the road sector. Due to time and resource constraints, these case studies covered only three provinces (out of 33) and seven districts (out of 491) and may not be fully representative. Nonetheless, the information and data gathered are useful in understanding current practices and policy challenges related to sub-national road management. The field work was conducted between January 16 and February 4, 2011.

The case study wasconducted through quantitative and qualitative approaches, as follows:

- Quantitative analysis: analyzing district level information and data (budget, outputs, outcomes) on roads;
- Qualitative analysis: in-depth interviews and data collection with relevant technical agencies in the selected districts/provinces. The case studies focused on four technical agencies. The table below outlines the technical agencies visited and areas of assessment:

Table 41: Summary of agencies and areas of assessment

No	Agencies	Area of assessment
1	Public Work Agency	Planning: provincial/district priorities in road sector and how the priorities are decided? Budgeting: how is the budget allocated, what is the balance between road maintenance and new construction, is there a financing gap? Implementation: what arethe challenges related to budget implementation? Monitoring: what kind of monitoring system is in place is the road network monitored regularly? Institutions: what is the institutional set up and capacity?
2	Bappeda/ Planning	Planning and coordination: what are the provincial/district development priorities; how are the priorities decided?
3	Bawasda/ Internal Audit	How are the audits of road projects being carried out?
4	BAKD/Finance	How are the revenues relating to roads and vehicles collected and distributed?

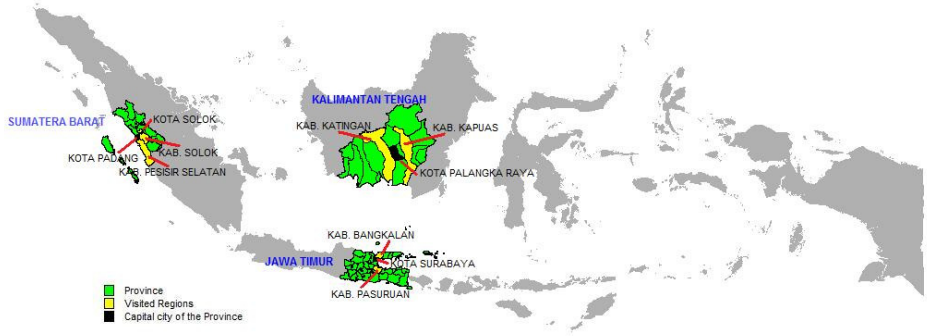
Case-study locations were selected primarily based on road condition and regional representation

The locations of the case studies, which were selected primarily according to road conditions and regional coverage, are Sumatra, Java and Bali, and eastern Indonesia. Specific considerations such as relative distance to the province and access to information were used in choosing the districts.

Table 42: Case study provinces and districts

	Name/ provinces/districts	Road Condition Category	Regional/Province
A	**Provinces**		
1	Province of East Java	Good	Java & Bali
2	Province of West Sumatera	Fair	Sumatera
3	Province of Central Kalimantan	Poor	Eastern
B	**Districts**		
1	Kab. Solok	Fair	West Sumatra
2	Kota Solok	Good	West Sumatra
3	Kab. Pesisir Selatan	Poor	West Sumatra
4	Kab. Pasuruan	Good	East Java
5	Kab. Bangkalan	Poor	East Java
6	Kab. Kapuas	Fair	Central Kalimantan
7	Kab. Katingan	Poor	Central Kalimantan

Figure 26: Map of case study provinces and districts



2. Revenues Composition of Case-study Provinces and Districts

Own -evenue and DAU are the main sources of revenue for provinces

The main source of revenue of the case-study provinces is own-sourced revenue (PAD), on average representing more than 50 percent of total revenue. More developed provinces such as East Java, which potentially have a greater tax base, generate a higher share of own revenue which makes up more than 70 percent of their total revenue. However, for a less developed province such as Central Kalimantan, DAU is still the main source of revenue, followed by revenue sharing. The DAK (specific allocation grant) is relatively minor for the provinces, as it is usually prioritized for the districts.

Figure 27: Revenue trends of the case study provinces

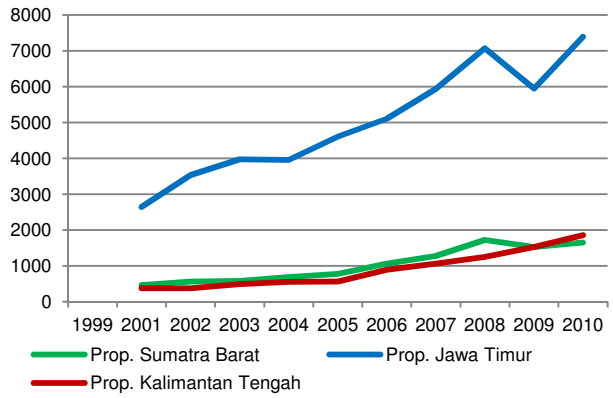
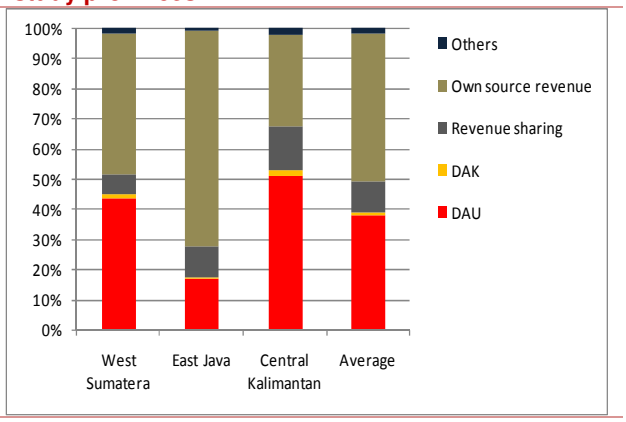


Figure 28: Composition of revenue of the case study provinces



DAU is the main source of revenue for districts

Unlike provinces, districts are more reliant on transfers from central government, primarily DAU. On average, DAU constitutes about 70 percent of total district revenue, followed by revenue sharing and DAK. Own-source revenue is insignificant for the districts, accounting for less than 5 percent of total revenue. This also reflects that the type of local taxes and levies assigned to the districts have a small base. With the exception of Kab Pasuruan in East Java, all districts surveyed have more than 70 percent of DAU in their total revenue stream. DAK which is mainly to finance infrastructure activities is also very small.

Figure 29: Revenue trends of the case-study districts

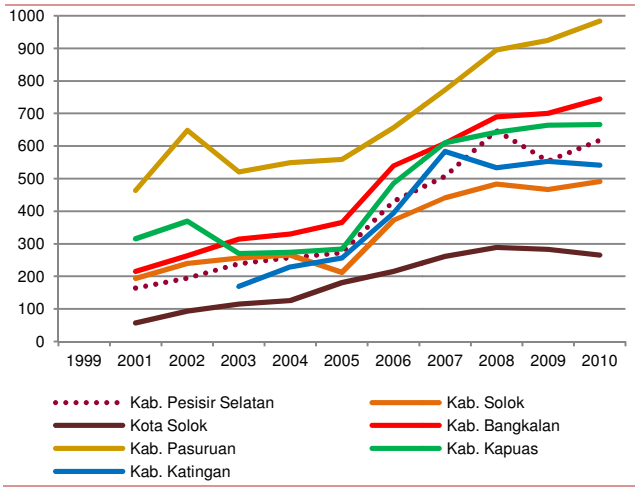
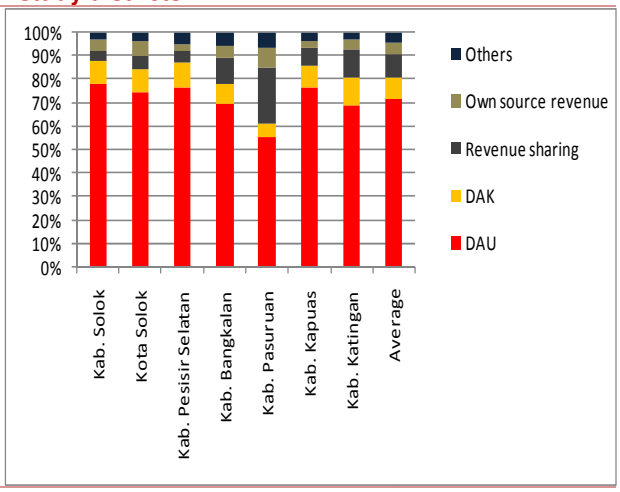


Figure 30: Composition of revenue of the case study districts



Transfers of funds from central to sub-national government are relatively timely

In general, the transfer system has been working relatively well in terms of the availability of funds and the making of timely disbursements from central government to the provinces and districts/cities. The staff at the Financial Bureaus of the case study provinces and districts/cities indicates that the revenue is generally transferred on time by the central government, with the exception of revenue-sharing. DAU is transferred every month as it is the main source of funding for provincial and district/city government administrations. DAK is transferred quarterly and is based on implementation progress. Revenue-sharing is transferred on a quarterly basis; however the final quarter is transferred based on the actual/realized revenue collection.

Road-user charges are managed and collected by provincial government, and are the main contributor to provincial own-revenue

Road-user charges are the main source of own-source revenue (PAD) for East Java and West Sumatra, accounting for 60 percent and 40 percent of total revenue. However, the contribution of road-user charges is relatively modest in the Central Kalimantan, accounting for less than 10 percent of total revenue. Road-user charges refer to taxes on motor vehicle (PKB), transfer ownership fees (BBNKB), and taxes on fuel consumption (PBBKB); these are administered and collected by the provincial government. The province issues regional regulations that provide technical guidance on the collection and management of road-user charges, following the Ministry of Home Affairs regulations. The regional regulation also stipulates the sharing arrangement between the province and the district.

Figure 31: User charges as a percentage of total revenue

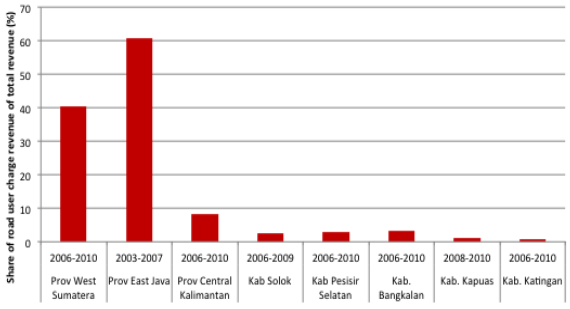
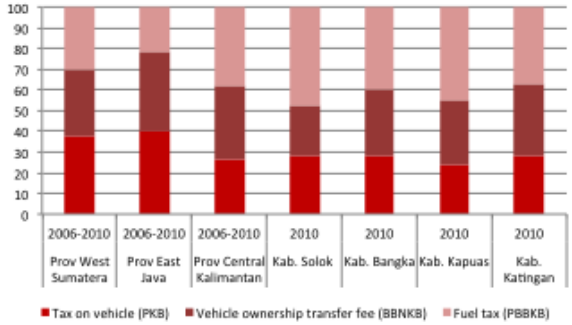


Figure 32: Composition of road-user charges revenue (%)



Source: Local budget (APBD) of case study locations

Road-user charges are shared between the province and districts government

Revenues from district level collections of road-user charges are relatively minor, representing less than 3 percent of total revenue. This also reflects the current sharing arrangement between the provinces and districts by which a higher share is granted for

the province (70 percent) for vehicle taxes and vehicle transfer ownership fees, while the district is only eligible for 30 percent of the revenue. However, districts are granted a higher share (70 percent) for the fuel levies, while the provinces retain the balance (30 percent).

Administration and collection of road-user charges are not an issue

The three case-study provincial governments indicated that the administration and collection of vehicle user charges are working well. Revenue collection is reasonably efficient and the amounts collected are close to the level anticipated. District governments also advised that the transfer of revenue sharing from road-user charges revenue is for the most part smooth and timely. While there are occasional delays in receiving the fuel tax revenue from the Pertamina regional office (state-owned oil and gas company), these are considered to be relatively minor irritations.

3. Expenditure on Sub-national Roads

Sub-national expenditure has also increased significantly

On average, total expenditures in the case study provinces and districts more than tripled between 2001 and 2010. The case study provinces spent an average of 30 percent on salary, 27 percent on materials and 19 percent on capital. However, spending composition varies widely across provinces. Central Kalimantan allocates more than 40 percent of its expenditure on capital and 23 percent on personnel. In contrast, East Java only allocates about 11 percent of its expenditure on capital and 32 percent on personnel.

Figure 33: Trends of expenditure of the case study provinces

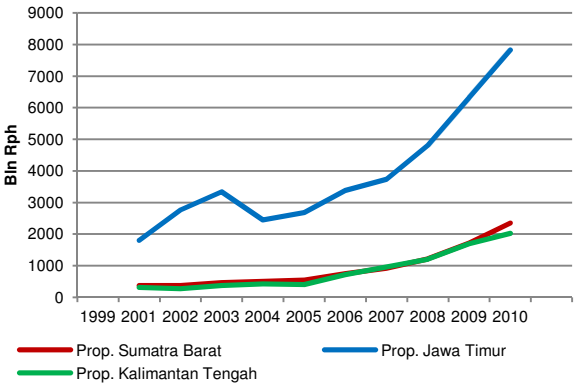
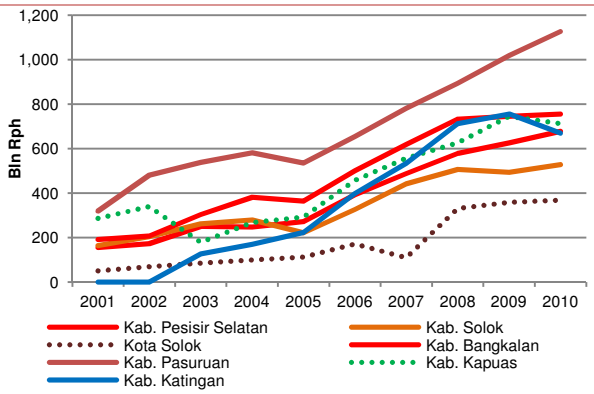


Figure 34: Trends of expenditure of the case study districts



Note: 2007-2008 = realized budget, 2009-2010 = planned budget. The expenditure of the province excludes revenue sharing and financial assistance to the districts.

Government administration is still the main spending priority

Some general trends in terms of sub-national spending of the case study provinces and districts are:

- Government administration and infrastructure are the main priorities for the provinces. Between 2006 and 2010 West Sumatra and Central Kalimantan allocated an increasing share of spending to infrastructure. In constrast East Java's infrastructure spending has decreased from 15 percent to 12 percent of total expenditure between 2001-05 and 2006-10.
- Districts allocate about half of their spending on salaries. Following decentralization, the salary of decentralized civil servants has become the responsibility of local government. Spending on salaries consumes almost 50 percent of total district spending, although it varies by district.
- In general, districts set infrastructure as their third priority (in terms of budget allocation) after education and government admnistration.
- On average, provincial spending on roads represents 74 percent of infrastructure expenditure or 12 percent of total expenditure.
- Districts spending on road represents 50 percent of infrastructure expenditure or 8 percent of total expenditure. Provinces allocate higher share of public spending on staff salaries than districts.

Table 43: Average spending on roads (2007-10) in the case-study provinces and districts

Province and Districts	Rph lic Work expBln	% Maintenance & rehabilitation	% New construction and upgrading	% of Public Work exp	% of total exp	% of staff cost of total public work
West Sematera	165	12.5	87.5	75.4	11.6	9.7
East Java	236	36.4	63.6	69.8	3.8	28.2
Central Kalimantan	308	3.6	96.4	77.4	20.7	4.8
Average Province		**17.5**	**82.5**	**74.2**	**12.0**	**14.2**
Kab. Pesisir Selatan	34	58.4	41.6	50.5	6.0	5.0
Kab. Solok	26	50.5	49.5	53.0	5.5	12.8
Kab. Pasuruan	17	9.4	90.6	37.5	8.1	5.2
Kab. Bangkalan	27	40.9	59.1	54.0	3.5	8.5
Kab. Kapuas	25	28.3	71.7	26.7	3.5	n.a
Kab Katingan	91	16.9	83.1	62.3	13.0	6.7
Average District		**30.8**	**69.2**	**50.4**	**7.9**	**6.7**

4. Quality and Condition of Sub-national Roads

Performance of provincial road condition varies

In West Sumatra, the road condition has deteriorated. The share of road network in stable condition (good and fair) declined from 87 percent in 2006 to 81 percent in 2010. In East Java there has also been a slight deterioration since 2006. However, the provincial road in Central Kalimantan has improved significantly because in 2010 about 84 km of the Central Kalimantan provincial road was upgraded and re-classified as a national "strategic" road.

Figure 35: Length and condition of provincial road of the case study provinces, by condition (km)

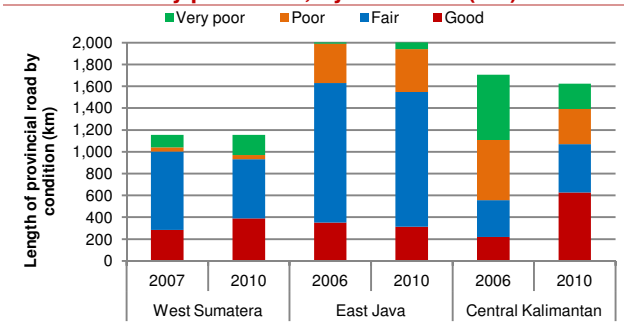
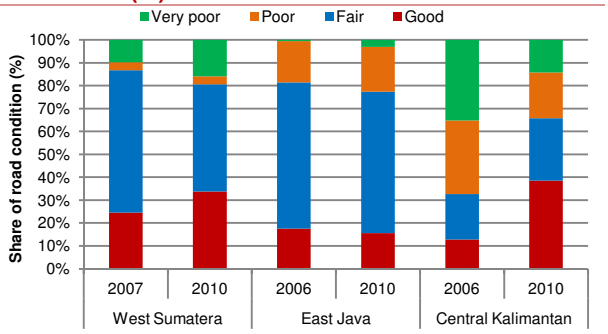


Figure 36: Composition of provincial road by condition (%)



Lengths of district roads have increased in most areas

Some districts featured in the study increased the size of their road networks between 2006 and 2009/2010. The length of district road in Kab. Pesisir Selatan and Kab. Pasuruan increased significantly in this regard. With the exception of Kab. Pasuruan in East Java, study district officials claimed improvements in road condition between 2006 and 2010. This should be treated with exteme caution since detailed assessments are no longer rigorously carried out. Instead of using scientific measurements, a visual method is normally used which often does not cover the whole district network. There may also be reporting issues in that it may be seen as "beneficial" to report a better condition for the system so that more funds can be spent on new development roads. While a road may still superficially look to be in reasonable condition, lack of proper routine and periodic maintenance quickly reduces the overall life of the facility. The small sample in the study was not condusive to resolving this issue and no independent survey was made of road conditions. Given the actual amounts expended on road maintenance (which appear to be very low) and the fact that the networks are expanding all the time, there is potentially a huge maintenenace backlog building up. Work carried out in a technical assistance component of the World Bank funded Eastern Indonesia Road Transport Project (EIRTP1) showed that routine maintenance had very little support because of lack of political visibility.

APPENDIX 4: INTERGOVERNMENTAL TRANSFER MECHANISMS

1. Transfer Mechanisms from Central Government to Sub-national Governments

Box 4: An overview of current transfer mechanisms in Indonesia from the central to sub-national governments

This box provides a brief description of the objectives and determination of the various transfer mechanisms from the central government to sub-national governments within Indonesia. These transfers represent the major source of financing for sub-national governments and thus, to a large extent, explain the level and composition of their spending.

General Allocation Fund (*Dana Alokasi Umum*, DAU)
DAU, according to Law 33/2004 Article 1 (21), is a fund sourced from the Central Budget (APBN) allocated to bring equality in the financial capacity among the regions to finance the need of the regions in implementation of decentralization. It is a discretionary block grant designed to equalize the fiscal capacities of sub-national governments. It is transferred monthly and directly from central to sub-national governments. DAU is allocated based on a national formula and is the sum of a basic allocation (which is a portion of the sub-national budget spending on public servant salaries) and the "fiscal gap" of the sub-national government. The basic allocation accounts for about 53 percent of the DAU in 2010. The "fiscal gap" is the difference between the estimated fiscal needs and fiscal capacity of each region. Fiscal needs are based on regional variables such as population, area, GDP per capita, and human development index. Fiscal capacity is measured by a region's own-source revenue and a fraction of total revenue-sharing. Based on Government Regulation 55/2005, provinces only receive 10 percent of the total DAU, while districts receive 90 percent.

Specific Allocation Fund (*Dana Alokasi Khusus*, DAK)
DAK, according to Law 33/2004 Article 1 (23), means a fund sourced from revenue in APBN allocated to a certain region with the aim of funding special activities of the region in accordance with national priorities. The DAK allocation policy involves the Parliament (DPR) Budget Committee and central government bodies, such as the Ministry of Finance, the Planning Agency Bappenas, the Ministry of Home Affairs, and line ministries associated with sectors receiving DAK. The final decision concerning the total amount of DAK allocation per sector and sub-national government depends on MoF after consultations with DPR. The DAK allocation has a formula component that takes into account the fiscal gap and has a 10 percent matching requirement. The DAK cannot be used for research, training, administration, or official travel. In 2011, 19 economic sectors received DAK allocations including, for example, education, health, agriculture, forestry, trade and various infrastructure sectors (road, irrigation, water, sanitation, rural electricity, housing and local government and remote areas infrastructure). DAK is transferred in three tranches, which depend on the depletion of the previous tranche. Although DAK is earmarked to fund capital spending, the government has shown some flexibility in defining capital spending.

Revenue Sharing Fund (*Dana Bagi Hasil*, DBH)
Unlike DAU, which is a horizontal equalization grant, DBH is a vertical equalization grant, which shares tax and natural resource revenues with all districts with a larger proportion of revenues going to resource-rich districts where the revenues originated. DBH consists of revenue sharing from natural resources and taxes. In 2007, most DBH natural resource revenues came from fuel (48 percent), natural gas and geothermal (36 percent), mining (10 percent), forestry (6 percent) and fisheries (0.7 percent). In the same year, the DBH tax revenue sharing came mainly from property tax (59 percent), acquisition tax of land and buildings (17 percent) and income tax (24 percent).

Special Autonomy and Adjustment Funds
Special Autonomy Funds include specific grants for Papua, Papua Barat and Aceh and additional funds for infrastructure development in Papua and Papua Barat. Special Adjustment Funds (*Dana Penyesuaian*) include additional allowances for teachers, professional benefits for teachers, School Operational Assistance program (*BantuanOperasionalSekolah*, or BOS), and local incentive grants (*Dana Insentif Daerah*, or DID).

Grants (*Hibah*)
Hibah is a source of sub-national government financing that can originate from foreign partners, central government, or domestic partners. It can be in the form of money (e.g. for the Water Hibah) or in goods and services, for example, training and assistance.

Central Government spending at the sub-national level not recorded in sub-national budgets (APBD)

De-concentration (*Dekonsentrasi*) and Co-Administered Tasks (*TugasPembantuan*, TP)

De-concentration funds originate from the central government's budget (APBN), are administered by the Provincial Governor and are to finance non-physical activities. This includes, among others, synchronization and planning coordination, facilitation, technical assistance, training, counseling, supervision, guidance, and control. Co-administered tasks (TP) are similar to de-concentration funds, but can be allocated to both provinces and districts, to finance spending on physical activities, such as for procuring goods, land, buildings, equipment and machinery, roadsand irrigation.

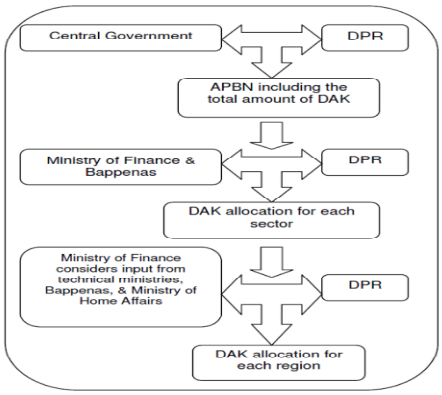
***Source*: MoF and various laws**

2. DAK Allocation Process

Several actors are involved in determining DAK allocations

There are several actors that involve in setting the DAK allocation policy. These include parliament (DPR) budget committee and the central government, such as the Ministry of Finance (MoF), National Development Agency (Bappenas), Ministry of Home Affairs, and technical ministries associated with sectors receiving DAK. The final decision concerning the total amount of DAK allocation per sector and sub-national governments depends on MOF after consultations with DPR.

Figure 37: Schematic illustration of DAK allocation policy

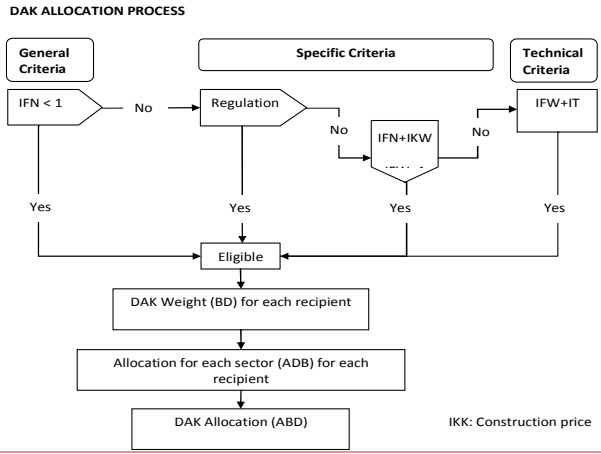


Source: SMERU, 2008

DAK allocations are determined based on general criteria, specific criteria, and technical criteria

General criteria are the first filters and identify districts/provinces with low fiscal capacity based on a net fiscal index (IFN)59. If a district/province has a low fiscal capacity (e.g., IFN < 1) then it is directly eligible for receiving DAK. However, for districts/provinces which do not meet this criterion, they will be further screened first by specific criteria and finally by technical criteria. The specific criterion takes into account any special conditions such as laws or government regulations that apply to districts/provinces in, for example, Papua and West Papua where the eligible recipients could receive an additional weighting. The technical criteria are only used if the districts/provinces which still do not meet eligibility requirements. After determining the eligible districts/provinces MOF allocates through a composite index of all the criteria and applies a construction price index.

Figure 38: DAK allocation process



[59]IFN <1 means that it has a lower fiscal capacity than the national average

Figure 39: General criteria of DAK allocations

GENERAL CRITERIA of DAK Allocation

$$Fiscal\ Capacity\ X_i = (PAD + DAU + DBH - DBHDR) - Salaries$$

$$Average\ of\ National\ Fiscal\ Capacity = \frac{\sum Fiscal\ Capacity\ X_i}{Number\ of\ Subnational\ Governments}$$

$$Net\ Fiscal\ Index\ X_i\ (IFN) = \frac{Fiscal\ Capacity\ X_i}{Average\ of\ National\ Fiscal\ Capacity}$$

PAD: Local own revenue
DAU: General allocated fund
DBH: Shared Revenue from central government

Source: SMERU, 2008

Table 44: The evolution of technical criteria in the DAK formula for roads and their respective weights

No.	Technical criteria	Description	2008	2009	2010	2011
1	Length of road	Length of road which is legally acknowledge through the decree of the head of local government	30%	25%	25%	25%
2	Road condition	Length of road with non-stable condition	30%	40%	35%	25%
3	Good road performance		20%			
4	Accessibility	Defined by the length of road divided by total area			20%	10%
5	Mobility	Length of road per 1000 population in the province/kabupaten			20%	10%
6	Ownership/concern by LG	Determined by the percentage of original APBD allocated to the road sector		20%		10%
7	Reporting	Consistency in submitting of quarterly report, physical progress, financial progress	20%	15%		20%

APPENDIX 5: ROAD-USER CHARGE RULED BY LAW No. 29/2009

Road user charges are managed and collected by provincial government

Law 28/2009 on Regional Tax and Levy, which is a revision of Law 34/2000, provides general guidance on the management and administration of regional taxes and levies, including road user charges nationwide. Provincial governments then need to further regulate the tax rate and collection base, as well as the sharing arrangement between the province and districts (Box 5). The Law only sets the general framework and lower and upper boundaries of the tax rate. Thus both the sharing arrangement and the formula used may differ across provinces The revenues collected from road user charges are not solely earmarked for road sector development. Law 28/2009 stipulates that only a minimum 10 percent of revenue from the annual vehicle license fee should be earmarked for road maintenance and investment or improving of public transport facilities. This became effective as of January 2010. This minimum earmarking is still considered low compared to the needs to properly maintain all sub-national road networks.

Box 5: New law on regional tax and levy

Law No. 28/2009 on Local Taxes and Charges was approved by the parliament in 2009. The Law stipulates that sub national governments are assigned the authority to levy 16 types of tax, consisting of five types of provincial tax and 11 types of district/city tax. Provincial and local governments are also given authority to exercise other taxes subject to meeting the criteria set out in the law. This law, which is a revision to Law No. 34/2000, aims to improve provincial and local government own source revenue generation power. It introduces some reforms with regard to local taxes and charges such as: decentralizing the property tax and property ownership fee from central to local government by 2014, ii) a move from "open list" to "closed list" approach on the type of local taxes and charges that local government can impose, iii) increasing the maximum tax rate and expanding the tax base.

Related to the road sector, Law No. 28/2009 re-enforces provincial and local taxes and user charges that are associated with the road sector: vehicle tax (Pajak Kendaraan Bermotor /PKB), vehicle ownership transfer fee (Bea Balik Nama Kendaraan Bermotor /BBNKB), fuel tax (Pajak Bahan Bakar Kendaraan Bermotor /PBBKB), and parking tax (Pajak Parkir). The Law increases the maximum tax rates of road user charges that can be applied by the province and local government as well as expanding the tax base for vehicle tax and vehicle ownership transfer fee to include government vehicle. In addition, the Law also requires the revenue from the annual vehicle fees to be earmarked at a minimum of 10 percent for the road sector. The table below provides comparison on road user charges tax rates between Law No. 34/2000 and Law No. 28/2009.

Key futures of Law 28/2009 related to road user charges

Type of road user charges	Previous (Law No. 34/2000)		New (Law No. 28/2009)	
	Tax rates	Earmarked for road	Tax rates	Earmarked for road
Annual Vehicle License fee (PKB)	0.5 - 1.5%	N.A	1-2% (First car); 2-10% (subsequent car)	Minimum 10 percent
Vehicle ownership transfer fee (BBNKB)	10 – 15% (new car); and 1% for the 2nd car	N.A	Max 20% (new car); and max 1% for the subsequent car	N.A
Fuel levy (PBBKB)	5-7.5%	N.A	Max 10%; Public transport max 50% of rate of the private car	N.A
Parking fees	Max 20%	N.A	Max 30%	N.A

Source: Various Laws and World Bank staff

APPENDIX 6: USING PPPS TO ADDRESS INDONESIA'S INFRASTRUCTURE CHALLENGES

1. PPPs are at the Core of Indonesia's Development Agenda

The infrastructure targets set out by the Government of Indonesia envisage a significant contribution from the private sector

As highlighted in the June 2011 IEQ, the Government has pledged its commitment to address infrastructure challenges as one of its main priorities to accelerate economic growth. This is seen in both the infrastructure development targets of the current medium term development plan (RPJMN) for 2010-2014 and the focus on infrastructure and connectivity within the Master Plan for the Acceleration and Expansion of Indonesia's Economic Development 2011-2015 (MP3EI).

Both the RPJMN and the MP3EI foresee private sector investment as a key driver in accelerating infrastructure service provision. The private sector was targeted to contribute more than 70 percent of USD 150 billion investment needs identified in the RPJMN and 51 percent of the Master Plan's investment plan of USD 468 billion between 2011 and 2025. One main way to mobilize this private financing for infrastructure investment is through Public-Private Partnerships (PPPs), i.e. contractual arrangements between public and private parties under which rights and responsibilities are shared during the duration of the contract. These contracts can potentially bring various benefits not just in terms of access to financing but also for the efficiency, performance risk management and quality assurance and monitoring (Box 6). Indeed, strengthening the framework and implementation for the PPP agenda, was highlighted as one policy priority in the proposed state budget (R-APBN) 2012.

Given the importance of PPPs for Indonesia's development agenda, this section aims to take stock of the progress made to date, highlight the remaining challenges ahead and offer suggestions to move forward in implementing PPPs in Indonesia.[60]

Box 6: Rationale for PPP

To meet ambitious development targets in infrastructure investment, governments commonly seek to mobilize financing from the private sector, including in the form of PPP, since public resources alone are limited. In addition to closing the financing gap for investment needs, private sector participation can also help to lower costs and improve efficiency. In general, PPPs, particularly those with long-term contracts, can, if well implemented, offer significant benefits in the delivery of public services, such as the following:

Greater efficiency in the use of resources. PPPs can allow risks to be managed optimally between public and private sectors, thus enabling a more efficient use of resources. Long-term contracts can also provide greater certainty in the price of service delivery.

Capital at performance risk. The explicit exposure of its capital to long term performance risk gives the private party an incentive to design and build the asset on time and within budget, and to take into account the costs of longer-term maintenance and renewal.

Quality assurance and scrutiny. The PPP process usually involves a much greater level of quality assurance than standard public procurement processes. The public authority will face scrutiny by private parties, outside government, whose capital will be at risk over the long term.

***Source*: Edward Farquharson, Clemencia Torres de Mastle, and E.R Yescombe with Javier Encinas (2010). How to Engage with the Private Sector in Public Private Partnerships in Emerging Markets. PPIAF- World Bank**

a Regulation has improved, but implementation is the main remaining challenge

Private sector infrastructure investment in Indonesia is still limited and has not recovered to pre-1997 crisis

Indonesia's private sector investment in infrastructure has only partially recovered after the sharp falls seen after the 1997-98 financial crisis from its 1996 peak of US$6.9 billion. Private sector investment dropped from US$5.5 billion on average between 1995-1997, to less than US$1.6 billion between 1998 and 2006, before recovering to slightly above US$4 billion between 2007 and 2010 (Figure 40). In 2010, Indonesia attracted private investment of US$3.4 billion, focusing mainly in the telecom and energy sectors. Private investment in the transport sector has been relatively small and mainly for toll road development (e.g., the Trans-Java highway), while water and sewage sectors attract very

[60] This section draws heavily on recent World Bank analysis by Andri Wibisono, Jeff Delmon, and Hongjoo Hahm (2011), *Unlocking the Public-Private Partnerships Deadlock in Indonesia*.

little interest from the private sector.

Other countries in the East Asia region such as Malaysia and Thailand also saw declines following the 1997-98 crisis, albeit to a lesser extent than Indonesia. In addition, looking at other countries such as India, Brazil, and Russia, private sector participation in Indonesia is still relatively limited (Figure 41). India and Brazil in particular seem to be quite successful in mobilizing private sector investment, attracting more than half of all private infrastructure investment to developing countries in 2010.

Figure 40: Indonesia's private infrastructure investment has only partially recovered since the 1997-98 crisis…
(US$ billion)

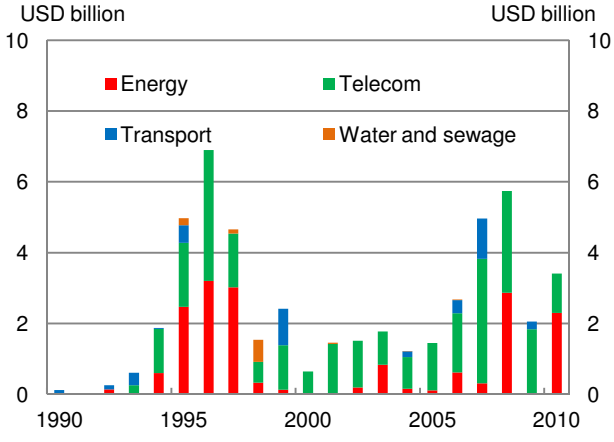
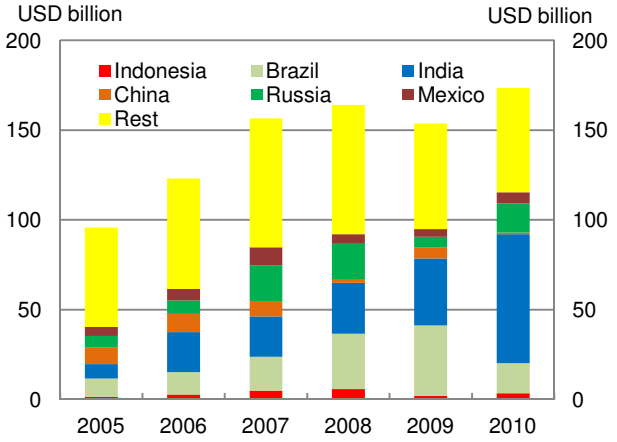


Figure 41: …and remains relatively low compared with other emerging economies, particularly Brazil and India
(US$ billion)



Source: World Bank and Public-Private Infrastructure Advisory Facility (PPIAF), Private Participation in Infrastructure (PPI) Project database

Source: World Bank and PPIAF, PPI Project database

In the past few years, the GoI has made progress in legislative developments supporting the PPP framework which establish the foundation for PPP implementation…

In an effort to attract private sector participation in infrastructure, the Government has revisited and revised many sector regulations and laws related to infrastructure service provision (including transport, electricity, telecommunication, and water and sanitation) and established regulatory and institutional framework for PPP implementation. Under the new legal framework, the infrastructure sector and market are opened to the private sector. The private sector can invest in the development and operation of financially viable infrastructure projects, without being obliged to enter into joint ventures with SOEs. A revised Presidential Regulation (Perpres No. 13/2010, a revision of Perpres No. 67/2005) concerning public-private sector cooperation is a positive development as it provides better clarity and support for PPP framework and the provision of government support and guarantees. A draft Land Acquisition Law, which is currently in parliamentary consultation and expected to be finalized in 2011, is intended to address some of the land acquisition challenges by making the process "faster" and "fairer".

…and has set up various institutions and financing facilities to support PPP transactions

The establishment of these institutions and financing facilities further strengthen the institutional and modalities framework necessary for PPP implementation. In Indonesia a range of institutional and financing facilities have been developed. In particular, the KKPPI (Committee for the Acceleration of Infrastructure Provision) was established in 2001 and is an inter-ministerial coordinating committee to assist with high level coordination of PPP issues. It is chaired by the Coordinating Ministry for Economic Affairs and co-chaired by the State Ministry of Development Planning (Bappenas).

Various other bodies have also been set up to assist with a range of issues, such as project preparation, selection, financing and public sector risk management. For example, the Project Development Facility (PDF) was created to fund project preparation (e.g., feasibility studies), while the Public Private Partnership Central Unit (P3CU) was established to support selection of well-developed PPP projects. In terms of facilitating financing, PT Sarana Multi Infrastruktur (PT SMI) is a non-banking financial institution dedicated specifically to infrastructure financing and PT Indonesia Infrastructure Financing Facility (PT IIF), a privately-owned subsidiary of PT. SMI, aims to mobilize long-term, local

currency financing for PPP projects. The PT. Penjaminan Infrastruktur Indonesia (PT. PII Persero) or the Indonesia Guarantee Fund, (IGF) has been set up to support the provision of guarantees for PPP projects. A Land Acquisition Revolving Fund (LARF) has been set up, combined with a cost-capping scheme in which the LARF would pay any land costs that exceed by more than 110 percent those agreed in the concession agreement. A Land Fund was also created to finance private companies acquiring land for 2010 and 2011. In addition, the Risk Management Unit (RMU) of the Ministry of Finance was also created in 2005 to manage government contingent liabilities associated with PPP projects.

Some progress has been made on project preparation…

The Bappenas 2011 PPP Book indicates that there are only 13 projects which are "ready for offer" out of 79 identified PPP projects worth a total of USD 53 billion (37). Few projects are in the advanced preparation stage. For example, the contract for Central Java Power Plant has recently been awarded and the contract for the PurukCahu-Bangkuang Coal Railway project is expected to be awarded this year (2011). The contract for Umbulan Water Supply in East Java is expected to be awarded in 2012. Meanwhile very little progress has been made on the Soekarno Hatta Airport railway development with the Ministry of Transport reformulating the Pre-Feasibility Study of due to revisions to the route, project structure and design. Furthermore, though a few selected projects are in the advanced preparation stage as mentioned above, this is still a long way from reaching financial closure.

Table 45: Ready-for-offer projects account for half the value of Indonesia's 2011 PPP projects plan

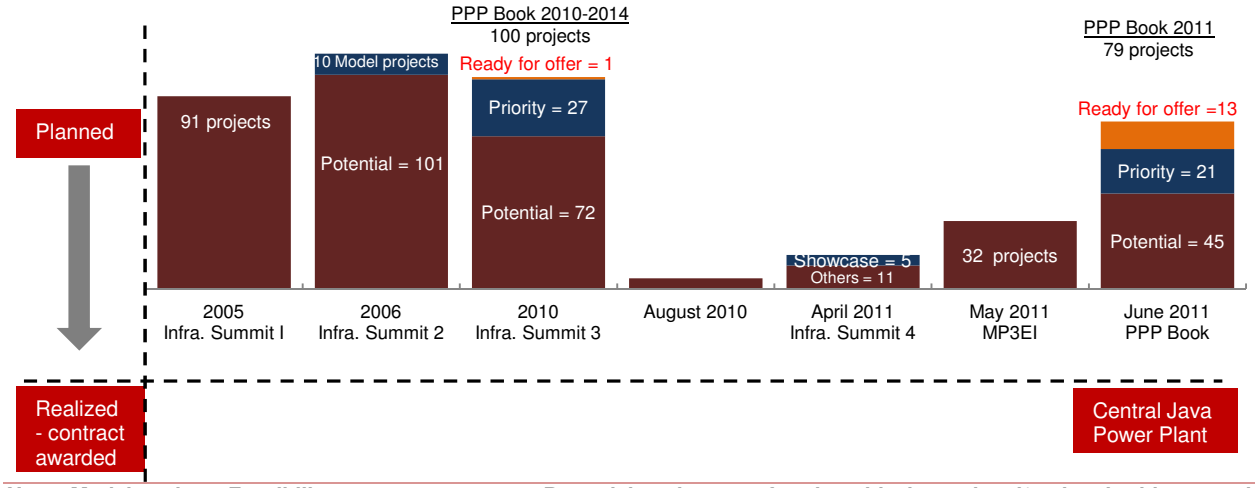
Sector/Sub-sector	I. Ready for offer projects		II. Priority projects		III. Potential projects		Total	
	No.	USD million	No.	USD million	No.	USD million	No.	USD million
Air transportation	1	214			7	1,973	8	2,186
Land transportation					2	274	2	274
Marine transportation	2	1,199			4	2,860	6	4,059
Railways					3	4,385	3	4,385
Toll road	2	25,670	17	8,221	3	1,811	22	35,702
Water resources								
Water supply	6	311			18	1,364	24	1,675
Solid waste and sanitation	2	130	2	120	4	50	8	300
Telecommunication								
Power			2	2,040	4	2,786	6	4,826
Oil and gas								
Total	**13**	**27,524**	**21**	**10,381**	**45**	**15,503**	**79**	**53,408**

Source: **Bappenas, PPP Book 2011**
Note: Potential project: conformity with the national/regional mid-term and sector plan and preliminary study stage; Priority project: pre-feasibility study stage and government support has been identified; Ready for offer projects: bidding document completed and government support has been approved (if required)

…however, little has been achieved on actual project transactions

The above institutional and legislative developments have laid the foundation for a PPP framework. But very little progress has been achieved on actual implementation under the official PPP framework. Since 2005, the Government has convened four Infrastructure Summits to promote potential PPP projects and attract private sector participation in the PPP scheme. In the first infrastructure summit (2005) the Government introduced 91 potential projects for the private sector under PPP scheme. The second infrastructure summit was conducted in 2006 and introduced 10 model projects and 101 potential projects. The third infrastructure summit was held in 2010 and introduced about 100 projects of which only 1 project held "ready for offer" status (complete bidding documents). The fourth infrastructure summit was convened in April 2011, where the government released the PPP Book 2011 (Figure 42). In conjunction with the launch of *MP3EI*, the government also announced 32 ready-for-offer PPP projects. It is important to note that these PPP projects lists are not always similar from one event to another. As discussed further below, rather than a long list of projects, a key success factor identified in other countries has been the ability of the government to prioritize a short list of well-developed projects which are clearly financially viable.

Figure 42: The realization of PPP projects in Indonesia has lagged behind announced plans



Note: Model project: Feasibility assessment stage; Potential project: conformity with the national/regional midterm and sector plan and preliminary study stage; Priority project: pre-feasibility study stage and government support has been identified; Ready for offer projects: bidding document completed and government support has been approved (if required)
***Source*: Adapted from SinthyaRoesly, 2011. Challenges in Developing a Robust Project Pipeline – Indonesia Case. Presentation at APEC Finance Ministers' Process Conference: The Framework and Options for Public and Private Financing of Infrastructure and PraptonoDjunedi, http://www.fiskal.depkeu.go.id/webbkf/kajian%5Cartikel_PPP_prap.pdf**

…reflecting ongoing institutional and coordination challenges

There are two main challenges that slow the progress in advancing offered PPP projects to implementation stage: poor project preparation and poor project selection process. This leads to too many less viable and difficult-to-implement projects being offered. For example, there are 33 projects dropped from the PPP Book 2010-2014 due to lack of progress made by the Contracting Agency. Projects need to be better developed, which may call for an increase in resources devoted to project preparation. Given the complexity of designing projects and contractual arrangements, capacity at the agency levels may be inadequate and in need of significant improvement. Contracting agencies need assistance from experts experienced in PPP to understand best practice and to structure projects in a manner that will attract investors.

In addition, lack of coordination during the selection process among involved agencies has resulted in multiple lists of projects which create confusion for potential investors. Coordination on PPPs at the central government level is complicated, with the KKPPI having a dual chairmanship (Coordinating Ministry for Economic Affairs and Bappenas). As discussed below, in countries with a successful PPP framework, strong coordination and leadership support is provided by the top government leadership (such as at the Presidential or Prime Ministerial level).

b International experience can offer lessons for successful PPP implementation

Attributes of successful PPP frameworks in other countries include firm policy foundations, long-term political commitment and a sound and predictable legal and regulatory environment

Experiences of countries which have successfully attracted private sector investment through PPP schemes suggest that PPPs need to be based on firm policy foundations, a long-term political commitment, and a sound and predictable legal and regulatory environment. In particular, the following factors have been found to be useful:

Strong political and leadership support. High level executive leadership support is essential to achieve effective coordination. In many countries, such as the Netherlands, Australia, and the United Kingdom, decisions on major PPP projects, as well as the overall PPP program, are made by the cabinet which is chaired by the Prime Minister or President. In India, the Cabinet Committee on Infrastructure, headed by the Prime Minister, decides on infrastructure sector projects and monitors their performance.

Strong lead agency and clear assignment of responsibilities. Countries with a strong PPP tradition have a single and strong agency that coordinates PPP decisions, ensuring

consistency in policy and development of PPP projects. In the Netherlands and South Africa, as well as the UK and Australia, the lead agency is housed within the Ministry of Finance. In Colombia, South Korea and the Philippines, PPP policy and decision-making is coordinated by the national planning agency.

Direct fiscal support to attract private sector investment and make projects commercially viable. In India, the Government provides direct fiscal support of up to 40 percent of the cost or the amount needed to make them commercially viable (whichever is less), provided the project is cost-benefit justified.

Clear and consistent rules, policies and detailed guidelines and regulations for PPP. The United Kingdom, Australia, and Colombia have gone through ongoing enhancement of their regulations and procedures through issuance or revision of detailed implementing rules and procedures as they gain experience in implementing PPP projects.

Integrated and structured project selection process. In countries with successful PPP implementation, a project must be shown to be both technically and economically feasible before being considered as a PPP candidate. The selection process of PPP projects is well coordinated. For example, in the Philippines, the planning agency runs a process which brings together the Department of Finance and the sector agency, and presents all relevant information to a committee of ministers, who decide simultaneously on whether a project should go ahead, whether it should be a PPP, and what fiscal support it should be given.

PPP projects should be flexible and require multi agency and multi-disciplinary teams

Enhanced capacities of implementing agencies to structure, procure, and manage PPP projects. Flexible, multi-agency, multi-disciplinary teams are the best way to develop and implement PPP projects. In Colombia and the Philippines, the planning agency officials work closely with their Ministry of Finance colleagues on multi-agency teams. Both also utilize sector specialists during the project development phase. The Netherlands and South Africa form similar working groups, but seem to rely more on the implementing agencies for the needed sector specialists. The UK arranges for secondments from commercial banks and law firms of staff with expertise in project finance. South Africa and Egypt initially hired long-term consultants to work in their PPP units to improve access to global best practices.

Box 7: The Indian Experience with PPPs

India's successful experience in developing and implementing PPPs presents a good case study for Indonesia. India and Indonesia share a lot of similarities in their development challenges. Both are growing economies trying to maintain and enhance historically high growth rates and have very large domestic markets. India and Indonesia have been quite successful in establishing democratic leadership with significant decentralized functioning at the State/Provincial level. To maintain high economic growth, both countries need large scale infrastructure investment, with significant opportunities for private sector to contribute.

India is running a USD 500 billion infrastructure development program. Despite being a "developing country" India is at the center stage of the global infrastructure investment sector. Domestic investors and developers are leading the infrastructure initiative, with specific sectors (such as ports and airports) witnessing higher FDI. Investment commitments to infrastructure projects with private participation in India have increased remarkably in the past five years from USD 20 billion in 2006 to almost USD 40 billion in 2010. With its unique approach, India has been able to address many of the complexities inherent in developing a successful PPP institutional framework.

To attract private sector participation, in the initial stages India focused on the preparation of a small number of viable projects, providing strong support until they were fully implemented and operational to showcase to the private sector. The Government of India developed integrated and comprehensive policies and guidelines to ensure private sector participation. Investors' confidence over policies is strengthened by transparent selection procedures and guidelines, standardized contract documents, and streamlined clearance procedures. Some measured actions to enhance project viability were applied using financing vehicles and additional revenue streams and mechanisms.

One important feature of successful PPP implementation in India is the establishment of independent quasi-judicial bodies for tariff determination across sectors such as the Telecom Regulatory Authority of India, the Tariff Authority for major Ports, the Central Water Commission, etc. Through this set up, user charges were determined independently by the bodies based on technical consideration (and outside the political arena) ensuring the sustainability of the services. Subsidies are provided for deserving consumers subject to approval by the respective commissions during the tariff determination process. Government intervention in developing institutional and capacity building and providing structured human resource development has also been successful in sustaining the development momentum.

***Source*: Feedback Ventures, 2010: Learning from PPP Experience in Indian Infrastructure**

c The way forward

Focusing on the most strategic and viable PPP projects, and getting them tendered and transacted can be a powerful approach to demonstrate government commitment to PPP implementation

As discussed above, the real challenge for Indonesia in advancing its PPP agenda is on the implementation. Although every country may have different institutional and regulatory set up and business environment to support successful PPP implementation, learning from India's experience could be a starting point. For example, while convening international forums and gatherings can be a useful facility to promote PPP projects, focusing on the most strategic and viable projects and getting them implemented could send a powerful signal to private investors on the Government's commitment to implement PPPs. India's experience of demonstrating the successful implementation of few viable PPP projects has proven successful in attracting private sector interests in the PPP scheme rather than promotion through international forums or gatherings.

To ensure the selected projects are viable and implementable, project identification and preparation needs to be improved by involving the MoF and key related institutions from the beginning and throughout the process

As highlighted above, one of the factors slowing PPP implementation progress in Indonesia is that many PPP projects are being offered with inadequate background analysis undertaken prior to tendering. The complexity of designing PPP projects and their contractual arrangements requires improving the capacity of the contracting agencies (line ministries, state-owned enterprises, and provincial and local governments) to help them prepare PPP projects better, faster and at less expense and requires involving the Ministry of Finance and related agencies early and throughout the process. A range of options could be adopted to institutionalize an improved project preparation process. For example, a Project Task Team could be set up for each individual PPP project, led by the contracting agency and made up of specialists from different Government bodies to develop the project. A team of PPP experts could be established, comprised by and large of investment bankers and lawyers, to help the contracting agencies and the Project Task Team to develop the PPP projects using international best practice. Other suggestions are to allocate necessary resource to support project preparation as well as viability gap funding and to resolve land issues before commencing project procurement. Also, given its complexity, PPP land acquisition should be supported by government

The project selection process needs to be enhanced to ensure the selected projects received high level leadership support

The focus on the most strategic and viable PPP projects could be achieved by establishing an integrated and coordinated PPP selection process within government. This process needs to be properly funded and staffed with experts familiar with PPP implementation. This would identify projects that need to be brought up to higher level decision making, for example at a limited cabinet meeting chaired by the President, to

ensure high level leadership support in a coordinated manner. Announcing a new list of PPP projects (outside of the prior mentioned process) should be avoided as it may create confusion among investors and risk government credibility.

Last but not least, to ensure strong preparation and implementation, the Government could identify a "project champion" for each selected project

Since implementing a PPP scheme will involve many parties and line ministries, lack of coordination and lengthy bureaucracy process are two risks for success. To ensure strong preparation and implementation and continued high level leadership support, the Government could identify a "project champion" for each priority PPP project equipped with convening power to move the project forward through the bureaucracy. In addition, the Government could also establish a credible monitoring body which could be tasked to UKP4 (a presidential supervisory and monitoring for development working unit) to closely monitor project preparation and implementation.



THE WORLD BANK, JAKARTA OFFICE
Indonesia Stock Exchange Building Tower II/12th Floor
Jl. Jend. Sudirman Kav. 52-53
Jakarta 12910
Tel: (6221) 5299-3000
Fax: (6221) 5299-3111
Website: www.worldbank.org/id