

## ASCERTAINING THE APPROPRIATENESS OF ESTABLISHING A ROAD FUND IN INDONESIA

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**Abstract** : Road funds, financed from user charges, have been practiced in many countries in securing more reliable funding for roads. The idea of an off-budget source of funding is appealing. But they are most effective where they form part of a broader strategy to manage roads in a more business-like way on a fee-for-service basis: the link between user charges – tariffs for road use – and road expenditures, reinforced by user participation in their oversight, creates a sense of ownership and puts pressure on road agencies for greater transparency, accountability, and efficiency. This is in tune with Indonesia's moves towards better governance and democratic accountability under decentralization. But success elsewhere is no guarantee to Indonesia's special conditions – notably the current decentralization process and embryonic arrangements for regional autonomy; the condition and division of responsibilities for the road network; the way road works are planned, financed and implemented; and the potential sources of revenue for a system of cost recovery – that could complicate prospects for implementation. The paper summarizes the results of a study to investigate the appropriateness of establishing a road fund in Indonesia and introduced several options for possible implementation, although it was found that with decentralization in its early stages, the prospects for implementing road fund in Indonesia are not yet clear.

**Key Words** : road funds, decentralization, fuel tax, road expenditures, road user charges.

### 1. INTRODUCTION

#### 1.1 Background

In recent years, particularly since the economic crisis of 1997, road maintenance and development in Indonesia have been under-funded. With the Government's priorities focussed on macroeconomic stabilization, financial restructuring, and social safety nets, budget allocations for roads have fallen. For the 9-month fiscal year 2000, only Rp 3.5 trillion (including foreign assistance) was allocated to road works from the national budget. This is well below the average of Rp 6 to 7 trillion estimated to be the minimum needed annually to prevent further deterioration of the roads, let alone add new links or expand capacity. Poorly maintained roads has resulted in the higher road user costs, worsened road congestion, raised prices throughout the country, and hindered economic development.

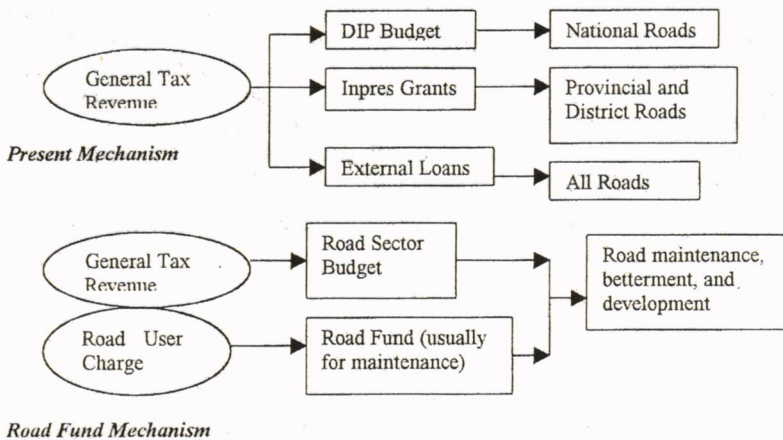
With little prospect of a substantial increase in future government spending, alternative ways of securing sustainable road funding are examined. One possibility is to get road users themselves to contribute. Under this concept, the user charges are in the nature of a fee or

tariff for road use, rather than a general tax – a way for road users to secure a level of funding that would guarantee better-quality roads and lower user costs. And provided the revenues were allocated and used effectively for roads alone and not any other purpose, users should benefit overall; their own cost savings should be greater than any extra charges they face. This is important in justifying the concept to decision-makers and the public.

**1.2 Objectives and Role of Road Funds**

Figure 1 schematically shows the difference between conventional road funding and road fund scheme based on the road user charge. Currently, like many other sectors, road development in Indonesia is funded through state general budget (*Anggaran Pendapatan dan Belanja Negara*, or APBN) which consists of project list budget (*Daftar Isian Proyek*, or DIP) for national roads, *presidential instruction*, or Inpres, grants for provincial and district roads, and external loans that can be used for any road works in needed. In Road Fund scheme, in addition to APBN, alternative funding is created from road user charge as the source of revenues. The objective of Road Fund, therefore, is to secure road development budget, particularly for road maintenance, without too much relying on general budget.

**Figure 1: Road Funding : Present and Road Fund Mechanisms**



After a stable 7-percent average economic growth for more than two decades before the crisis, Indonesia has now come to realize the difficulties of meeting rapidly growing demand for road development and maintenance through normal budget channels. Although road expenditures have grown more than 330 percent in the ten years between 1984/85 and 1994/95, it was not sufficient to accommodate a 7-10 percent annual growth in road traffic. In 2000 about 63 percent of the district road network is in poor or bad condition and only 19 percent of the whole network (national, provincial, district, and municipal roads) is in good and stable condition. Budget allocations have consistently been less than estimates of funding needs. In 2000, according to estimates made using the Strategic Expenditure Planning Module of the Indonesia Integrated Road Management System (SEPM-IIRMS), road users in Indonesia spent some Rp 186 trillion travelling on the road system. This is far more than the Rp 4.3 trillion budgeted by national, provincial and local governments, excluding toll roads.



And relatively small increases in the level of road funding, particularly for maintenance, can achieve disproportionate savings in user costs: the rate of return from a marginal increase in funding at an annual budget level of Rp 5 trillion is over 60 percent per annum.

Establishing a stable, adequate source of maintenance funds undoubtedly offers high economic returns. Under the right conditions, road funds can help secure this reliable funding. But they are only one of the broader strategy to reform the management of roads. Apart from the difficult practical problems of introducing them, a key question is whether, as in other countries, the introduction of road funds could also help secure these wider sector reforms in Indonesia. With appropriate legal framework, management arrangements, and financial controls, they could potentially be a powerful tool for promoting transparency, accountability, and efficiency in road sector management. Moreover, through the participation of user representatives in their oversight, they could conceivably make road management in Indonesia more responsive to the needs of roads' "customers", whose willingness to pay for better roads could be reflected in a fee-for-service link between revenues and expenditures. This would be in tune with moves towards better governance and greater accountability under decentralization.

## 2. OVERSEAS EXPERIENCE WITH ROAD FUNDS

### 2.1 Types of Road Fund

Road funds have been of many different kinds: trust funds as in post-war Japan and the US, where they are used mostly for new road development; funds designed to protect road budgets from the claims of competing sectors, as in much of Africa during the 1960s and 1970s; funds established in the former Soviet Union in response to a general lack of budget resources; funds, financed from general tax revenues, established in conjunction with autonomous or semi-autonomous road agencies, as in the UK; and funds, financed at least in part from user charges, managed on an agency basis, as in New Zealand, Sweden, Zambia and Malawi.

Table 1 summarizes the features of a representative cross-section of them. Most funds have been set up under special legislation, the most common option, or under ministerial and presidential decrees (in West Africa, Mozambique, Yemen). A few (e.g. Lesotho, Tanzania, Zambia) have relied on taxation powers under an existing finance act. Separate legislation offers the strongest degree of protection from raids and improper but can be inflexible if drafted without adequate foresight (as in Romania, where cost-sharing and the fuel levy rate cannot be easily changed).

Most funds are national in scope and are supervised by an oversight board, usually with both public-sector and private members, the latter representing the interests of road transport industries, chambers of commerce, farmers, consumer groups etc. Unquestionably, the more successful funds are those that minimize government interference, hold their boards fully accountable for the quality of the road network using quantified performance measures and publish details of their activities and accounts in the press (e.g. Zambia, Latvia, New Zealand, Kenya). Several road funds are still managed by the road agency itself (e.g. Hungary, Japan, Latvia, Romania, Russia) but most have moved or are moving towards establishing a separate entity headed by a secretary or chief executive appointed by the board and supported by a small secretariat. Rarely now are road funds managed within the treasury or operated simply as a bank account. Some funds, especially in Latin America, finance only road maintenance; others give priority to maintenance but allow a limited amount of rehabilitation, upgrading and new works; while yet others finance all road expenditures.

Table 1: Characteristics of Selected Road Funds

Country	Legal basis	Oversight	Type of entity	What does it finance	Main source of revenues
Ghana	Decree 1985, legislation 1996	Public/private board	Separate agency	All expenditures	Fuel levy, transit fees, vehicle fees
Guatemala	Legislation 1993	Public/private board	Separate agency	Maintenance of national roads only	Fuel taxes, vehicle fees, tolls, miscellaneous
Hungary	Cabinet decree 1989, state law 1992	Road agency	Division of road agency	All expenditures on state roads plus transfers to municipalities	Fuel levy, weight-related vehicle tax, donor finance
Japan	Special account law 1954	Road council	Division in Road Bureau	All expenditures on national roads plus transfers to local governments	Gasoline tax, LPG tax, vehicle tonnage tax, general budget
Korea	Special account law 1989, amended 1994	Ministry of Construction & Transport	n.a.	All expenditures on national roads, some on expressways and provincial roads	Fuel tax, excise tax, tolls, general budget
Latvia	Cabinet decree 1994	Public/private advisory board	Division of road agency	All expenditures on state roads plus transfers to municipalities	Fuel tax, vehicle fees, general budget
New Zealand	Legislation 1953, amended 1996	Primarily private board	Separate agency	All expenditures	Weight-distance charges, fuel levy, vehicle fees
Malawi	Legislation 1997	Public/private board	Separate agency	All expenditures, maintenance priority	Fuel levy, vehicle licences, transit fees, overload fines
Romania	Legislation 1996	Ministry of Transport	Division of Ministry of Transport	All expenditures plus transfers to counties and villages	Fuel levy, vehicle sales tax
Russia	Legislation 1992	Federal Highway Department	Division in Highway Department	All road expenditures plus transfers to regions	Fuel and lubricant tax, vehicle sales tax
South Africa	Legislation 1935, plus amendments	Public/private board	Staff in director's office	All expenditures on national roads	General budget since 1986
United States	Legislation 1956	Committees of Congress	Accounting mechanism managed by Treasury	Primarily capital works on federal-aided highways	Fuel tax, vehicle sales tax, heavy-vehicle tax
Yemen	Presidential decree 1995, ratified by Parliament	Civil service board <sup>c</sup>	Separate agency	Maintenance only	Gasoline levy, overload fines, general budget

Source : Heggie and Vickers, 1998; n.a. : not applicable

There are several different approaches to setting user tariffs: (i) as part of the overall budget debate (as in the US); (ii) in the national budget on the recommendation of the oversight board (Lesotho, Yemen, Zambia); (iii) on the basis of a road plan prepared by the national road agency (Japan); (iv) on the basis of the funds required to meet (Malawi, Namibia); require an amendment to the road fund legislation (Georgia and Romania); and requires a complex process of consultation and approval involving several ministries (e.g. Mozambique).

A growing number of countries (e.g. Ghana, Malawi, New Zealand, Romania, Yemen) allow road tariffs to be deposited directly into the road fund. Some funds are simply lines of credit under a single national budget heading (Japan, US). For some (e.g. Mozambique, Tanzania),



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revenues are transferred from the government's consolidated fund, but this puts the fund at risk from competing budget claims. Lesotho and Sierra Leone deposit revenues directly into the road fund, but have paper transactions through the consolidated fund. Most funds have detailed regulations governing the operation of the fund, but some (usually the less successful) simply rely on government audit procedures. Increasingly, independent audits and transparent reporting arrangements are required.

### 2.2 Attempts to Establish Road Funds

Although road funds have existed for a quite some times, interest in them grew considerably following a 1988 review of the effectiveness of World Bank lending for roads. The Bank report *Road Deterioration in Developing Countries* showed how inadequate road maintenance had resulted in the loss of nearly 15 percent of the capital invested in roads in 85 countries examined, equivalent to 2 percent of GNP. Some US\$40-45 billion of reconstruction costs worldwide – and a very much larger amount in excessive user costs – could have been saved by spending only \$12 billion on preventive maintenance. The failure to maintain the valuable economic assets that roads represent was due partly to a lack of financial resources but largely to institutional arrangements that provided neither incentive nor accountability for improved network management.

Mostly introduced during the 1970s and 1980s, early attempts at establishing road funds tended to have the limited aim of protecting road funding from budget cuts at times of fiscal constraint. Stand-alone accounts were set up outside the normal budgetary process, funded by earmarked general tax revenues. Most of these “first generation” funds were not successful. They were typically characterised by : (i) weak protection in law, hence an inability to secure the funds' proceeds from raids for other uses; (ii) a reliance on earmarked general tax revenues, diverting funds away from other sectors and creating no clear link with road user tariffs; (iii) weak arrangements for supervision, financial control, and technical and financial audit that allowed funds to be spent for purposes other than intended or to be diverted for political or personal benefit; and (iv) unsatisfactory day-to-day management, often by a national road agency with no incentive to minimize costs and promote efficiency in planning and implementation.

A new generation of funds began to be established during the 1980s and 1990s. They recognized that roads had been badly managed and under-funded largely because of weak institutional arrangements. In most cases, in contrast with first-generation funds, their aim was to *commercialize* roads and manage them as valuable assets in a more business-like way on a fee-for-service basis. They generally had the following features:

- their revenues were primarily from road user charges – an explicit road tariff or fee-for-service – usually made up of (i) a vehicle-related component levied at the time of vehicle registration to reflect the relative pavement-damage and congestion costs caused by different types of vehicle and (ii) a use-related component, usually levied as a surcharge on the price of fuel;
- except where government allocations were converted into an equivalent user charge, they tended not to involve transfers from the government budget but drew on *additional* tariff payments made by road users;
- these tariffs created an explicit link between what users paid for roads and the quality of roads that resulted: a form of quasi-market discipline that encouraged users to demand value for money and allowed expenditures on roads to reflect users' willingness to pay;

- the tariff revenues were deposited into a road fund managed and supervised in a fully transparent way by an independent board (supported by a small secretariat) representing the interests of users – the very people who paid the tariff and who therefore had a vested interest in obtaining maximum value for money.

The advantages of these mostly successful arrangements stem mainly from the link between what users pay (by way of road tariffs) and what they get back (by way of better constructed and maintained roads). The road fund acts as purchaser of road-related services (planning, design, construction, maintenance, supervision) on behalf of users, with users' representatives closely involved in the decision-making process. Users are able to influence the costs and quality of these services (through competitive tendering) as well as the overall level of road funding (through decisions about the level of tariffs they are willing to pay). They are more likely to be willing to pay road tariffs if they can see that they directly result in lower user costs and that the funds are managed responsibly and transparently in their interests.

### 2.3 Road Funds in a Decentralized Environment

The majority of road funds are national in scope and finance all roads – national and regional, often including urban – since revenues from fuel levies and vehicle registration fees, the most common sources, relate to road use over all parts of the network. Often local governments provide counterpart funds for their roads, supplementing grants from the national road fund or contributing on a cost-sharing basis. Local government support is also more likely if they are involved in the fund's revenue-sharing arrangements. The alternative – confining the fund's interests to only part of the network risks neglect of the other parts outside its scope, unless there are also counterpart road funds at the regional or local level (as is the case with the Latvian system).

But the kind of cost-sharing arrangements found to work well in other countries (e.g. Ghana, Zambia, New Zealand, Latvia) do not sit well with the division of responsibilities for revenue collection between levels of government in Indonesia. Provincial governments collect the annual vehicle registration tax (PKB), vehicle ownership transfer tax (BBN-KB) and regional fuel levy, while the national government subsidizes fuel sales (especially diesel). These revenues are then redistributed to local governments under the provisions of Law 18/1997 as amended by Law 34/2000. Funding responsibilities for roads in no way reflect this revenue balance.

## 3. ROAD MANAGEMENT AND EXPENDITURES

### 3.1 The Road Network

In 1999/2000, the country's road network amounted to 291,500 km, out of which 25,919 km (8.9 percent) were national roads, 37,372 km (12.8 percent) provincial roads, 213,064 km (73.0 percent) district roads and 15,214 km (5.2 percent) municipal roads. About 42 percent of the network is paved (90 percent of national roads, 75 percent of provincial roads, and only 32 percent of district roads). Government expenditure has concentrated mainly on maintenance and betterment of existing roads. In 1994, 90 percent of the then 20,000 km of national roads were in good and fair condition, but by 2000 this had increased to 96.8 percent of 25,919 km. The corresponding figures for the 37,372 km of provincial roads are 85 percent in 1994 and 89.2 percent in 2000. The condition of district roads, however, has deteriorated: only 37.0 percent is in good and fair condition, leaving more than 134,000 km in unstable



condition (i.e. unable to be maintained on a routine basis). Table 2 summarizes the condition of the country's public network, excluding some 500 km of privately-constructed toll roads.

### 3.2 Road Management and Planning

A new Directorate General of Regional Infrastructures (DGRI) under a new Ministry of Settlements and Regional Development (MSRD) is now responsible for the provision of general policy and guidance of road development. But under decentralization law, its detailed functions, organisation structure, arrangements for policy coordination and relationships with lower levels of government have yet to be fully clarified. Despite of decentralization, however, a gradual transfer of road functions to provincial and district regional governments has been underway since 1987. The provinces were given responsibility for development and maintenance of primary collector roads; district regions looked after urban secondary roads and primary local roads. But this decentralization of functions has received a dramatic shake-up with the passage of Laws 22 and 25 of 1999. Now, the vertical offices of central government agencies are being merged with the respective agencies of the regional governments, with all relevant staff and assets transferred to regional control.

DGRI based its budget proposals on the IIRMS. This was used as an evaluation tool following consultations at the district, provincial and national levels. The system has undergone progressive development since the early 1980s. It now comprises modules for planning and programming national and provincial inter-urban roads and bridges, district roads and urban roads. These generate multi-year works programs that optimize the economic returns from expenditure within the constraint of available budgets. A module (SEPM) integrates the outputs from the various sub-modules and prepares an overall sector expenditure plan, including budget allocations between administrative and functional classes, work programs and regions, as well as network performance indicators.

**Table 2: Road Conditions in 2000**  
(percent of total length, excluding toll roads)

Road Class	Length (km)	Good	Fair	Poor	Bad
National Roads	25,919	66.4	30.4	1.8	1.4
Provincial Roads	37,372	56.4	32.8	7.2	3.5
District Roads	213,064	7.3	29.7	10.2	52.9
Municipal Roads	15,214	9.3	86.8	3.8	0.0
Total	291,569	18.9	33.1	8.7	39.3

Source : DGRI, September 2000

### 3.3 Road Expenditures

Figure 2 shows that government expenditures on roads have increased steadily during the last 16 years from Rp. 946.6 billion in 1984/85 to Rp.5,683.9 billion in 1999/2000, including investment in toll roads. Roads have always accounted for a significant share of government development expenditure, a share that has rarely been below 10 percent but has been as high as 22.1 percent in 1993/94. After 1993/94 there was a fall in expenditures on road maintenance and betterment. Only in the last years have budgets picked up, with some evidence of recovery from the crisis of 1997.

A disturbing feature of expenditure trends has been a fall in the budget for national and provincial road maintenance, both in nominal terms and as a proportion of the total, as shown in Figure 3. With several recent years of cuts also in the betterment budget, a further deterioration in road conditions can be expected. The cuts have been necessitated by the need to focus on social safety net, food security and basic health, education and job creation programs since 1997. It is largely these reductions in funding, with their impacts on user costs that give rise to proposals to establish a road fund.

Figure 2 : Road Expenditure as compared with Total Government Expenditures

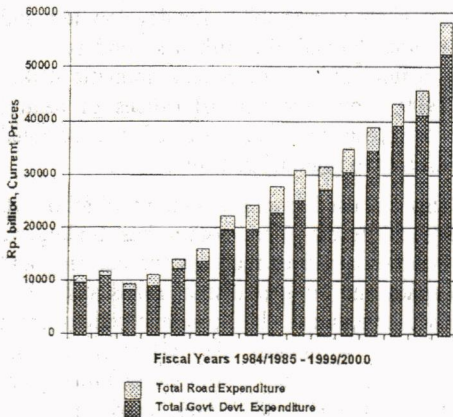
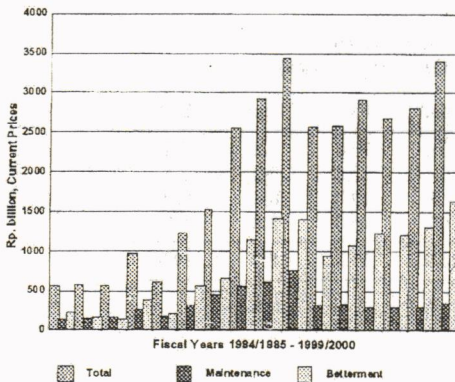


Figure 3 : Government Expenditures on N & P Roads



Since 1998, fuel subsidy has mushroomed, reflecting the currency's collapse and recent hikes in the world price of oil. Assuming a crude world price of US\$30 per barrel and Rp 9,000 to the US dollar, even after the 12 percent October 2000 price increase, gasoline is now subsidized by Rp 1,175 per litre sold and diesel by Rp 1,696 per litre. Indonesia's fuel prices are among the lowest in the world. In all, at present crude oil prices and exchange rates, the subsidy amounts to about Rp 49 trillion, of which Rp 38 trillion is from diesel and Rp 11 trillion from gasoline.

### 3.4 Road Cost Recovery

The Government has long claimed a commitment to cost recovery in the transport sector, since even before the first policy statement and action plan (PSAP) for land transport in 1989. The latest detailed analysis of cost recovery was in 1998. Like others before it, it found that the contribution made through PKB, BBN-KB and the (then) surplus on fuel sales was less than the cost of developing and maintaining road infrastructure. Only cars and pickups covered their attributable costs and heavy road vehicles were heavily subsidized, largely through the diesel fuel subsidy. It recommended a restructuring of PKB to reflect the potential pavement-damaging power of vehicles, a reduction in the significance of BBN-KB and a series of progressive increases in the price of diesel. The aim would be to make each type of vehicle face its share of the road costs it was responsible for. For several reasons linked with the economic crisis, these recommendations were not implemented, but the commitment to cost recovery and earmarking of user charges for road maintenance continues to feature in the draft PSAP3 and the draft of a new National Road Law currently under preparation.



Law 18/1997, now amended by Law 34/2000, governs the local taxes and charges that can be levied at district and provincial levels. Provincial governments are empowered to levy the vehicle registration tax (PKB), the vehicle ownership transfer fee (BBN-KB) and a surcharge on fuel sales for road transport (PBB-KB). The amended law regulates the rates for each of these and specifies that not less than 30 percent of PKB and BBN-KB revenues and not less than 70 percent of PBB-KB revenues should be passed on to the kabupaten/kota in which they were collected. There is no requirement that these revenues should be used for road-related purposes.

#### 4. APPROPRIATENESS OF ROAD FUNDS FOR INDONESIA

##### 4.1 Criteria for Assessing the Appropriateness

Road funds have brought significant benefits to many countries that have implemented them, particularly where they are part of a broader process of reform. But if road funds (or selected features of them) are to be applied in Indonesia, the following conditions would have to be recognized.

First, decentralization is committed and already underway, and regional governments are now empowered to make their own decisions about the uses of their resources. Central and provincial governments can no longer dictate or even influence districts on how general grants and PAD revenues are allocated. Under decentralization, the central government cannot mandate that general grant transfers (DAU) be used for, say, road maintenance, even where it is evident that regional governments are failing to do so. It cannot enforce any requirement that regional governments meet performance standards for maintenance of the network. The central government also currently lacks the resources to establish a system of special grants (DAK) to finance road maintenance, even though the DAK system does allow it to impose conditions on the use of the funds.

Second, there exist major imbalances among levels of government and among regions between the levels of expenditure required by their road-related responsibilities and the revenues derived from road users. A significant proportion of provincial revenues have to be passed on to lower-level administrations. And district administrations differ greatly in their resource availability: those in resource-rich regions like Riau or East Kalimantan will have a considerable excess of user revenues over road expenditures, while others will have extensive networks to maintain but few vehicles to pay for it. Regions with surpluses will probably not keen to subsidize regions in deficit.

Third, the government's effort to eliminate the fuel subsidy will probably take several more years to happen. The 12 percent price increase in August 2000 and the 30 percent more in June 2001 were insignificant compared with the eight years of 20 percent increases that would be necessary to eliminate it. However, it does not necessarily rule out the future imposition of a special road maintenance levy (part of the road tariff associated with a road fund), whether at the national or provincial level, particularly if it can be demonstrated that road users would enjoy a net gain from better-maintained roads.

Fourth, regional governments have only just acquired their new-found powers. At least for a while, they will almost certainly resist any suggestion to relinquish control over important new responsibilities, such as would be implied by an out-sourced or arms-length management of a road fund or by the appointment of a road fund board with majority non-government membership. With a few exceptions, technical and management skills at the regional level are very limited. Notwithstanding early efforts at deconcentration of road-related functions, few staff in the regions would be capable of providing a rational economic justification for

efficient resource allocation between road maintenance and capital works and defending this against claims from politically-supported projects.

Fifth, neither Law 9/1968 (governing the budget process) nor Law 20/1997 (governing state revenues from non-tax sources) make provision for special funds; all receipts from taxes and other sources must be paid into the treasury and be included in the government budget. Whichever the level of government, a new law will almost certainly be required if revenues from road users are to be paid directly into a special account rather than through the consolidated fund and budget.

### 4.2 Road Expenditure Requirements

At the very least, users should face the marginal costs they cause to be incurred, i.e. those costs that vary with traffic, including road damage costs and any externalities like noise, pollution and the costs of delays imposed on others under congested conditions. But marginal damage costs are often only a small proportion of total road maintenance costs, since a high proportion do not vary with traffic but are due to deterioration under climatic conditions. Therefore, the level of funding through the road funds should reflect the costs of maintaining the network on a long-term, sustainable basis, i.e. once the backlog of rehabilitation and maintenance has been overcome. These costs were estimated using SEPM for (i) optimum treatments under an unconstrained budget scenario and (ii) constrained budgets ranging from Rp 2 trillion to Rp 10 trillion per annum. Road conditions in 1999 were assumed, with treatments to start in 2001. National, provincial, and district road needs were assessed. The projected expenditures by program are shown in Figures 4 and 5. If budgets were unconstrained, a massive program of betterment (reconstruction and rehabilitation) of deteriorated road sections would commence immediately to bring the network up to a maintainable state, but after a couple of years expenditure would settle down to only Rp 3-4 trillion per year. But with budgets tightly constrained, priority is given to routine and periodic maintenance and as budgets increase, a progressively higher proportion of expenditure can be allocated to betterment.

Figure 4 : Annual Expenditure by Program (Unconstraint Budget)

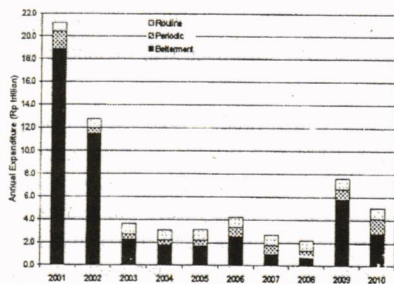
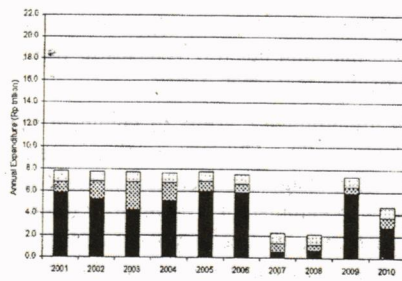


Figure 5 : Annual Expenditure by Program (8 Trillion Budget)



Figures 6 and 7 respectively display the road expenditures by road status and by program, given a variation in budget constraints, suggested by SEPM. It appears that average annual road expenditures need only be about Rp 6.5 trillion per year to achieve economically optimal road conditions over the medium term. With an optimal budget between Rp. 6 to 8 trillion per year, a proportionate road maintenance and betterment program to bring the road back to a stable condition would be achieved.



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This is also confirmed by Figures 8 and 9 which show the average road roughness index and vehicle operating costs for different budget constraints. The figures show that spending any more than Rp.8 trillion per year does little for the long-term condition of the network; it only affects the timing of betterment interventions in early years. At around Rp 6 trillion per year, the condition of the network can be held at its present state. But this delaying of betterment comes with a high price for users. Figure 8 shows how user costs vary with the level of budget. Even with an annual allocation of Rp 6 trillion, user costs for much of the 10-year period are very much higher than for the unconstrained budget case. Clearly, although annual maintenance expenditures of Rp 3-4 trillion per year – the level that should perhaps be the

Figure 6: Average Annual Expenditures by Road Status for Different Budget Constraints

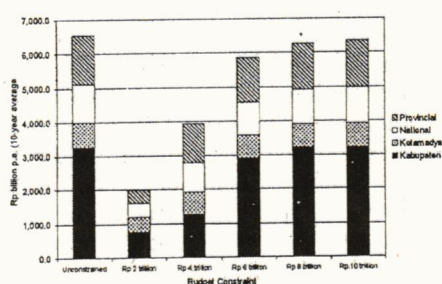
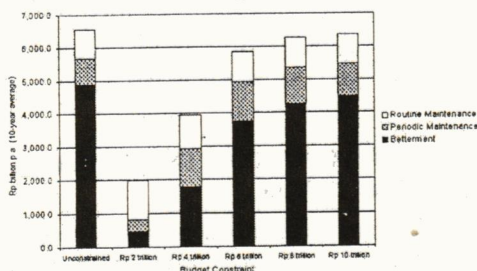


Figure 7: Average Annual Expenditures by Program for Different Budget Constraints



registration tax (PKB); the vehicle ownership transfer fee (BBN-KB); and levies on road transport fuel sales (PBB-KB). They are collected at the provincial level and the revenues are redistributed to provincial and district governments according to Law 34/2000.

Nationwide, overall road revenues exceeds road expenditures by 1.92 times. The relationship between revenues and expenditures, however, varies significantly from province to province. Figures 9 and 10 illustrate provincial revenues and expenditures on roads for two regions of Jawa-Bali and Eastern Islands in fiscal year 1999/2000. Figure 10 shows that local governments in Jawa-Bali expended only about 17.5 percent on road works from the total revenues from PKB, BBN-KB, and PBB-KB. This number will be much smaller when other revenues were taken into account such as Inpres Grant for provincial and district roads. In this region, road users, somehow, subsidize other sectors. The richest province, DKI Jakarta, with Rp.626.5 billion revenue from PKB, BBN-KB, PBB-KB, and other road-related revenues in 1999/2000, spent only Rp.76.2 billion, or 12.2 percent, on roads. The opposite condition occurred in Eastern Islands (West and East Nusatenggara, Maluku, Irian Jaya) where road

initial target for a system of road cost recovery – will minimize user costs once the backlog of betterment has been carried out, the costs of catching up with past neglect are high.

### 4.3 Sources of Revenue

Most of the taxes and fees road users pay are not legitimate road user charges for the purposes of a road fund. VAT, import duties and luxury taxes are general taxes levied on road transport inputs just as for other sectors; they cannot be said to be a contribution specifically to road costs. Driver licence fees, business licence fees, operator/route licence fees and vehicle inspection fees are all charges made for a particular administrative or regulatory service; they bear little relation to road use or the costs of the road system. Three sources of revenue are, however, specific to road users and are not just intended to cover the costs of administrative or regulatory functions: the annual vehicle

expenditures were as big as 374 percent than the road revenues, meaning that provincial revenues originated from other sectors were also used for road works. The corresponding numbers for provinces in Sumatera, Kalimantan, and Sulawesi are 99.4, 215.4, and 288.5 percent respectively. Southeastern Sulawesi was the province that spent the most, 580 percent of the provincial revenues.

Figure 8: Road Roughness for Different Budget Constraint

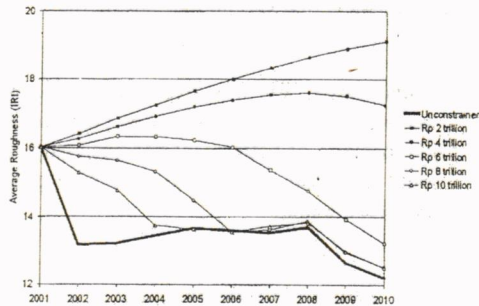
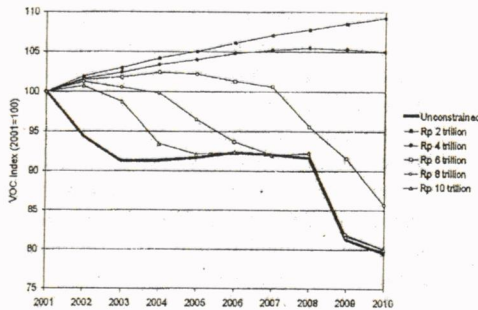


Figure 9: Predicted Variations in Vehicle Operating Costs for Different Budget Constraints



As indicated earlier, the best structure of revenues for a road fund combines (i) a vehicle-related component levied at the time of vehicle registration to reflect the relative pavement-damage and congestion costs caused by different types of vehicle and (ii) a use-related component, usually levied as a surcharge on the price of fuel. PKB, with some modification of rates to reflect the pavement-damaging potential of different types of vehicle, is a suitable vehicle for the former. PBB-KB or, at the national level, a specific surcharge on road transport fuel sales, would be a suitable vehicle for the latter. As a user tariff, BBN-KB can be ignored; it bears no relation to road use, though the inflationary impact of PKB and PBBKB (and the negative impact of BBN-KB on fleet replacement) could be mitigated if BBN-KB rates were reduced.

## 5. OPTIONS FOR ESTABLISHING ROAD FUNDS

Table 3 examines the possible options for establishing road funds in Indonesia by assessing the prospects of particular fund features. In reviewing the table, it is important to bear in mind the objectives of road funds: not just to secure reliable funding, but also to help bring about better management of the road network. In the context of current policies towards decentralization and good governance, road funds could potentially play a very important role in making the management of roads much more efficient, accountable and responsive to users' needs. It should be apparent from the table that the prospects for one or more road funds in Indonesia are heavily constrained by:

- the willingness of central government to impose a national levy on fuel sales, as a specific road use tariff contributing to a national road fund;
- the likelihood that, with their new-found revenues and administrative freedoms, regional governments and politicians will favor capital road projects over maintenance;
- limited prospects for establishing and enforcing performance standards, incentives or controls to ensure that regional networks are adequately maintained;



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- the willingness of regional governments to assign PKB and PBB-KB revenues to road programs funded by an off-budget facility rather than to their consolidated revenue; and
- the willingness of both national and regional governments to use road fund concepts to promote greater transparency, accountability and efficiency in road management, and
- hence to establish a distinction between road funding (by an independent board) and road management functions.

Figure 10 : Road Revenue and Expenditure : Jawa Bali, 1999/2000

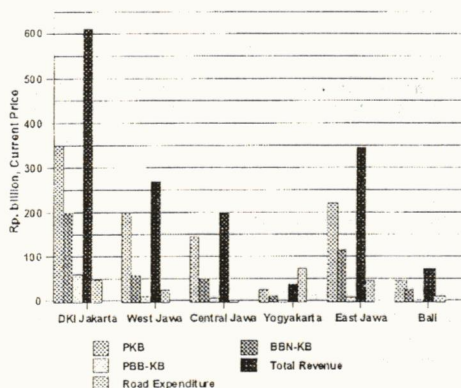
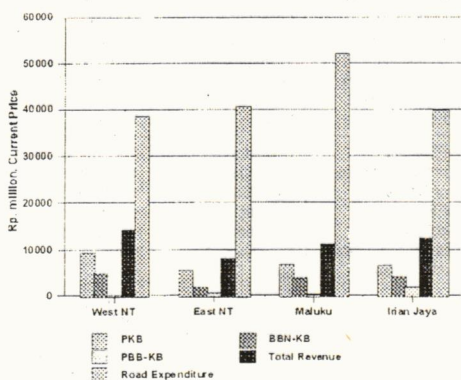


Figure 11 : Road Revenue and Expenditure : Eastern Islands, 1999/2000



revenues from a combination of (a) a new levy on national road transport fuel sales, (b) the retained provincial share of PKB collections and (c) the retained provincial share of PBB-KB collections;

- (iii) a series of Provincial Road Funds, funding only maintenance of provincial roads, with revenues from a combination of (a) the retained provincial share of PKB collections and (b) the retained provincial share of PBB-KB collections, possibly supplemented by transfers from a national road fund;

It is perceivable that implementation of even fairly limited road fund concepts will take some time and an effective education and public information program. Road funds require a major change in the culture of governance. It will take time to adjust to a new regime of democracy. Decentralization will probably need to go through a period of difficulty and adjustment before road fund concepts are considered possible, let alone attractive, in the regions. Even so, it is worth painting a picture of what might be; it may serve as a medium-term target and help decision-makers understand what might ultimately be possible.

Table 3 concludes the assessment of this paper on the prospects for road funds in Indonesia, by highlighting the features of five possible types of fund that might conceivably be pursued :

- (i) a National Road Fund, funding only the maintenance of national roads and implemented by national legislation, with revenues from a new levy on national road transport fuel sales;
- (ii) a National/Provincial Road Fund, funding maintenance of national and provincial roads, with

Table 3: Possible Road Fund Options for Indonesia

Feature	1. National Road Fund	2. National/Provincial Road Fund	3. Provincial Road Fund	4. Regional (District) Road Fund	5. Modified (Coordinated) Regional Road Fund
Type of fund and qualifying expenditures	Funds only routine and periodic expenditures on national roads and bridges No other use permitted	Funds routine and periodic expenditures on national and provincial roads and bridges No other use permitted	Funds routine and periodic expenditures on provincial roads and bridges No other use permitted	Funds routine and periodic expenditures on district roads and bridges No other use permitted	Funds routine and periodic expenditures on district roads and bridges No other use permitted
Legal basis (all with strict controls over management and financial operations)	New national law	New national law; province acts as agent	Provincial legislation	Regional legislation	Legislation by all participating regions
Oversight arrangements (possibly after transition involving an advisory board at each level)	Oversight by an independent executive board, with public/private membership; members to be specified officers of selected organisations, not personal appointments; private sector members to be in the majority; chairman to be appointed by the members				
Relationship with network management	Fund management to be independent of road agency functions. Fund to be firmly established as a purchaser of road-related services.				
Expenditure planning and priority-setting	Expenditure priorities to be dictated by IIRMS (IRMS or KRMS, depending on network) IIRMS functions to be out-sourced (preferred) or managed by the Fund's secretariat (unrealistic for all but national funds) IIRMS condition surveys to be out-sourced under competitive bidding				
Sources of revenue	New levy on national road transport fuel sales, specifically identified as a Road Use Tariff	New levy on national road transport fuel sales Provincial share of PKB collections Provincial share of PBBKB collections	Provincial share of PKB collections Provincial share of PBBKB collections (Possibly) Transfers from National Road Fund	District share of PKB collections District share of PBBKB collections (Possibly) Transfers from National or Provincial Road Fund	Districts' share of PKB collections Districts' share of PBBKB collections (Possibly) Transfers from National or Provincial Road Fund
Collecting and depositing the revenues	Direct transfers from Pertamina to the Fund	Direct transfers from Pertamina to the Fund (fuel levy) Retained provincial share of PKB and PBBKB collections deposited directly into the Fund	Retained provincial share of PKB and PBBKB collections deposited directly into the Fund	District share of provincial PKB and PBBKB collections transferred directly into the Fund Transfers from National Fund made directly into the Fund	Districts' share of provincial PKB and PBBKB collections transferred directly into the Fund Transfers from National/ Provincial Fund made directly into the Fund
Adjusting the tariffs (procedures to be specified in legislation establishing the Fund)	By Road Fund Board after advising the Minister of Finance	By Road Fund Board after advising the Minister of Finance and Governors	By Road Fund Board after advising the Minister of Finance and Governor	By Road Fund Board after advising the head of region	By Road Fund Board after advising the heads of participating regions
Disbursement arrangements	Directly by the Fund to contractors on certification by national road agency	Directly by the Fund to contractors on certification by relevant national/provincial road agency	Directly by the Fund to contractors on certification by provincial road agency	Directly by the Fund to contractors on certification by district road agency	Directly by the Fund to contractors on certification by relevant district road agency



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Feature	1. National Road Fund	2. National/Provincial Road Fund	3. Provincial Road Fund	4. Regional (District) Road Fund	5. Modified (Coordinated) Regional Road Fund
Management of the fund	Management of the Fund to be out-sourced under competitive bidding or by small secretariat appointed by the Board Funds to be held in commercial bank account/s Strict controls over management and financial operations specified in the legislation establishing the Fund Fund managers to manage cash flow to minimise excessive balances				
Reporting and performance measures	Road fund board to prepare annual business plan and forward 3-year program, based on IIRMS Targets to be established in terms of serviceability (road roughness) and user costs Quarterly and annual reports tabled in national/provincial/district and published in media				
Auditing arrangements	Legislation should specify requirements for regular external auditing, preferably by independent accounting firm/s Heavy penalties for misuse of Fund's proceeds				

- (iv) a series of Regional (District) Road Funds, funding only maintenance of district roads; with revenues from a combination of (a) the transferred district share of PKB collections and (b) the transferred district share of PBB-KB collections, possibly supplemented by transfers from a national or provincial road fund;
- (v) a modified form of Regional Road Fund, covering groups of districts, funding only maintenance of district roads, with revenues also from a combination of (a) the transferred district share of PKB collections and (b) the transferred district share of PBBKB collections, possibly supplemented by transfers from a national or provincial road fund.

The picture painted by the table is somewhat idealistic; it will not be achieved immediately, if at all. But it serves as a basis for discussion about the opportunities and constraints of road funds. Consideration could be given to the possibility of implementing a regional road fund on a pilot basis to test some of the concepts outlined above. But public information process to achieve public awareness and public acceptance is instrumental for the implementation.

#### ACKNOWLEDGEMENT

The author sincerely thanks the World Bank for providing a technical assistance to the study of the suitability of Road Funds in Indonesia and to John Lee for his hard working on the completion of the study.

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