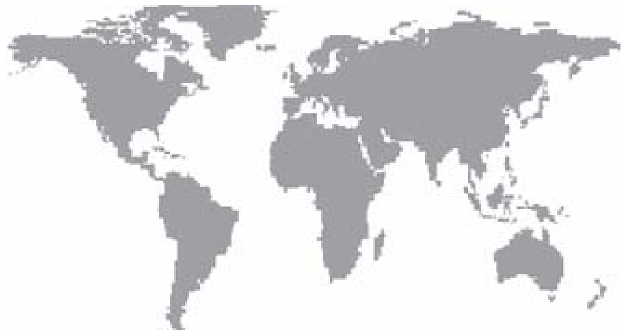

Evaluation of Bank Support for Road Funds

Background Paper For Evaluation of World Bank Assistance to the Transport Sector, 1995 – 2005

Director-General, Independent Evaluation: Vinod Thomas
Director, Independent Evaluation Group, World Bank: Ajay Chhibber
Manager: Alain Barbu
Task Team Leader: Peter Freeman

This paper is available upon request from IEG.

2007
The World Bank
Washington, D.C.

ENHANCING DEVELOPMENT EFFECTIVENESS THROUGH EXCELLENCE AND INDEPENDENCE IN EVALUATION

The Independent Evaluation Group is an independent unit within the World Bank Group; it reports directly to the Bank's Board of Executive Directors. IEG assesses what works, and what does not; how a borrower plans to run and maintain a project; and the lasting contribution of the Bank to a country's overall development. The goals of evaluation are to learn from experience, to provide an objective basis for assessing the results of the Bank's work, and to provide accountability in the achievement of its objectives. It also improves Bank work by identifying and disseminating the lessons learned from experience and by framing recommendations drawn from evaluation findings.

IEG Working Papers are an informal series to disseminate the findings of work in progress and to encourage the exchange of ideas about development effectiveness through evaluation.

ISBN-13: 978-1-60244-081-4
ISBN-10: 1-60244-081-6

Contact:
Knowledge Programs and Evaluation
  Capacity Development Group (IEGKE)
e-mail: eline@worldbank.org
Telephone: 202-458-4497
Facsimile: 202-522-3125
http:/www.worldbank.org/ieg

Table of Contents

This report was prepared by Hernan Levy and Peter Freeman. Romayne Pereira provided administrative support.

Acknowledgments

We would like to thank, first of all, Ian Heggie, former Roads Adviser at the World Bank and currently a visiting professor at the University of Birmingham, for his review and detailed comments on an earlier draft of the paper.

Gunter Zietlow, (GTZ), provided updated information and clarified information on the Latin American road funds. Nils Bruzelius provided important information on the Namibia road fund.

Bank staff from the various Regions provided useful information on the situation of road maintenance and road funds in their countries, including Anil Bhandari, Steven Brushett, Cecilia Corvalan, Ajay Kumar, Aurelio Menendez, William Paterson, Ben Reja, Dieter Schelling, and Terje Wolden

Kavita Mathur helped design the structured interviews with Bank staff and then compiled and analyzed the information collected.

Acronyms

1G	First Generation (Road Funds)
2G	Second Generation (Road Funds)
CEM	Country Economic Memorandum
ECA	Europe and Central Asia region
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
HTF	Highway Trust Fund (US)
IEG	Independent Evaluation Group
IMF	International Monetary Fund
LPG	Liquid Petroleum Gas
MOC	Ministry of Construction (Japan)
PER	Public Expenditure Review
PRSP	Poverty Reduction Strategy Paper
RF	Road Fund
RMI	Road Management Initiative
SSA	Sub-Saharan Africa
SSATP	Sub-Saharan Africa Transport Policy Program
TRANSIT NZ	Transit New Zealand
UN	United Nations

1. Introduction

1.1 This paper was prepared as background for the IEG transport evaluation "A Decade of Action in Transport." The focus is road funds, an instrument several Bank operations have supported to redress the long term under-funding of road maintenance. Over the last 10-15 years Bank projects or sector reviews have supported the restructuring of road management and road maintenance finance including the creation of independent road boards, the establishment of road agencies and the setting up of properly managed road funds. Such road funds are commonly known as Second Generation (2G) funds.

1.2 The purpose of this paper is to assess the effectiveness of the road fund strategy, including the related institutional changes that the Bank operations have supported, with a view to gaining an understanding of the circumstances under which they have been effective, and of the Bank's policies and involvement with road funds. The intention is to help the Bank better define its position regarding road funds, so that it in turn can better assist its borrowers in adopting appropriate institutional structures for road finance and management.

1.3 The Bank's interest in road funds and road management originated in a long-standing crisis concerning the quality of road maintenance in many developing countries, especially in lower-income countries. Failure of government budgets to provide adequate funding for road maintenance was seen as one of the critical reasons why road infrastructure had deteriorated so much, and why countries were losing the value of their road assets at an alarming pace. The creation of road funds independent of the budget to guarantee an adequate level of funding to finance maintenance expenditures was seen as a likely solution to the crisis.

1.4 The Bank for more than 15 years has led a multi-donor program known as the Sub-Saharan Africa Transport Policy Program (SSATP) to assist Sub-Saharan African countries to improve the performance of their transport systems and services. One of the components of this program, the Road Maintenance Initiative (RMI) (now re-named the Road Management Initiative) has strongly supported the establishment of modern road funds and the complementary reform of highway management. Although less active, the Bank has also been involved in similar activities in other regions. In the Latin American and Caribbean region, the Bank has worked together with a number of other organizations in supporting the reform of financing and management of road maintenance.

1.5 At the same time, road funds are being given attention by a variety of agencies around the world, including the United Nations Economic Commission for Latin American and the Caribbean, the German Technical Cooperation Agency (GTZ), the Asian Development Bank, and the University of Birmingham in England that discusses road funds in its world-wide training course on road sector financing reforms.

1.6 Road funds have been the subject of much debate in the Bank, and were one of the key topics of discussion at the Transport Forum 2005, the annual meeting of transport staff.

1.7 IEG has developed a large database of information generated from its evaluation reports and reviews of Bank activities. The database includes IEG assessments of performance of many road maintenance projects, several of which included road funds and are therefore useful for this review. The database also includes reviews of country-wide reports such as country economic memorandums (CEMs), public expenditure reviews (PERs) and poverty reduction strategy papers (PRSPs). IEG also carried out a broad review of road maintenance in rural roads projects in 1992, whose main focus was the economic performance of maintenance projects and key issues in road maintenance management.

1.8 Three main sources have been used for the preparation of this paper: (a) a review of literature, (b) IEG’s database, and (c) a survey of Bank transport staff. All three together provide a reasonable clear picture of the effectiveness of the road funds and the conditions surrounding them. The body of literature is extensive, but there is little that focuses explicitly on assessment of the road funds. The IEG’s database is comprehensive, but it also contains limited information on such assessment. The staff survey gives a different perspective that complements well the other two sources.

2. The Road Maintenance Crisis and Bank Lending

2.1 Attention by the Bank to the problem countries faced by their inability to properly maintain their road networks dates back to the late 1970s. The Bank in 1979 prepared and submitted to its Board of Directors the paper “The Highway Maintenance Problem” (World Bank 1979). This was followed in 1981, with the paper: “The Road Maintenance Problem and International Assistance” (World Bank 1981).

2.2 These two papers described and analyzed the road maintenance crisis. The real magnitude of the maintenance crisis, and the scale to which deterioration had progressed in the developing countries was, however, only exposed in 1988 in the Bank paper: Road Deterioration in Developing Countries – Causes and Remedies (World Bank 1988).

2.3 This paper, in addition to providing a quantitative indication of the extent of the problem through the developing world, gave important clues as to the principal causes of road deterioration and the reasons the problem had become so widespread.

2.4 The key findings of this paper were:

- due to inadequate funding for maintenance, in the 85 countries that had received Bank assistance for roads, close to 15 percent of the capital invested in main roads had been eroded for lack of maintenance;
- as a result, a quarter of the main road networks needed to be reconstructed, at a cost of about $45 billion world-wide, while such investments could have been avoided by spending $12 billion on maintenance;
- for every new kilometer that was built, three kilometers of existing roads would essentially disappear or be no longer operable due to lack of maintenance;
- the cost of road transport costs increases exponentially with poor roads, in such a way that for each dollar not allocated to road maintenance, vehicle operating costs increase by 2 to 3 dollars.

2.5 The 1981 and the 1988 papers were instrumental in shifting the direction of Bank lending for roads. Road projects evolved in scope and focus. Until the late 1980s they financed mainly road construction, provision of road maintenance equipment and consulting services to formulate road maintenance programs. The essence of the shift was placing special emphasis on strengthening the institutional mechanisms to ensure better management and finance of road maintenance.

2.6 From the 1990s, a large majority of the road projects focused on maintenance programs, often involving rehabilitation, as well as periodic and routine maintenance. The projects also emphasized strengthening the institutional mechanisms to ensure better management and finance of road maintenance, although often, especially at the start of the new approach, projects were unclear as to how this could be achieved.

Proposing a Reform of Road Management

2.7 Despite the new emphasis on road maintenance and the need to ensure adequate financing for it, this was rarely accomplished, since additional funds for roads in national budgets could only be provided at the expense of other sectors. Progress achieved over the years was erratic, and there was little evidence that governments in most countries had sufficient scope in their budgets to increase and sustain budget funding for road maintenance at the required level. At the same time, little improvement had been made in the management of the road networks. The limited funds allocated for roads were often wasted through inefficient work methods and uneconomic priorities (i.e, too much spending on new roads at the expense of maintenance). As a result, a high proportion of roads remained in poor condition.

2.8 In response to this situation, the Bank in 1995 issued a new report (Heggie 1995) which suggested that tackling the maintenance crisis effectively would require addressing four fronts:

- *Ownership*: the idea of ownership is to empower road users and to encourage them to take an interest in the management of roads – the issue/question for central and local governments is how they can encourage road users to get involved. The creation of a roads board is an essential component of this concept.
- *Funding:* the object was to secure stable and adequate flows of funds. Three key questions are relevant: (i) what instruments are available for charging road users, (ii) which principles should guide pricing and cost recovery policies, and (iii) how should the resulting revenues be managed?
- *Responsibility:* the creation of an organizational structure for the management of the different components of the road network
- *Managemen*t: the creation of a more business-like road agency, with strong financial management and accountability.

2.9 The driving force for this approach (further described in Heggie and Vickers 1998) was not road maintenance, but a broader perspective of the road sector. In the early nineties, governments in many countries were moving to improve services and the efficiency of infrastructure (ports, telecoms, railways, power) by privatizing the operations, and sometimes ownership. It was suggested that this thinking could also be applied to the roads: why not bring roads into the marketplace, putting them on a fee-for-service like a business?

3. Financing of Road Maintenance and Road Funds

3.1 The principles of road maintenance finance can best be described by resorting to two opposite views that can be labeled as the "budget" approach and the "road fund" approach, briefly described below.

The Budget Approach

3.2 This approach is the most traditional and most used worldwide, especially in Europe. It is based on the following principles. Road expenditures (except for toll roads where tolls revenues cover all, or a significant part of road expenditures) including maintenance, are considered to be public expenditures that need to be covered by the national budget. Road infrastructure assets are publicly-owned, and therefore the responsibility of the budget. Except when roads are congested, roads are a public good to be financed out of general taxation. Fuel taxes, vehicle registration fees and other levies are taken as general taxes that finance the budget. Allocation of the budget to the road sector results from a political process that assigns priorities to alternative uses. Extra-budgetary funds fragment the national budget and hinder government's efforts to allocate funding to the selected priorities, and limit government flexibility to attend to emergencies or changing priorities.

The Road Fund Approach

3.3 This approach is based on the principles that road users should pay for the cost of the roads, and that conversely, revenues thus generated should be applied to cover road costs. This approach requires the creation of a road fund that generally becomes the main source of finance of road maintenance and other road expenditures. A key reason for the setting up of a road fund is that road maintenance is not a politically attractive use of government revenues, even though road maintenance yields the highest economic return. The Road Fund approach, with variations, is used in the US, Japan and New Zealand since the mid-1950s, and is also being used in some 30 developing economies. Users pay "user charges" mainly in the form of a gasoline levy which generally provides the brunt of "user charges" revenues. Revenues from these charges are, in principle, automatically allocated to road expenditures, especially maintenance. Depending on the institutional set up to manage the funding and allocate resources, the users-pay approach postulates that allocation of resources will be more cost-effective and road works will have lower unit costs than under the budget approach.

3.4 The road fund approach, when broadened to include the principles embodied in the 1995 Heggie report, can better be described as "the commercial approach." The road maintenance crisis, with its impact on cost of infrastructure and operation of transport services, requires bringing roads into the marketplace, putting them on a fee-for-service basis, establishing a surrogate market discipline and managing roads like a business.

3.5 The road funds meeting the criteria for this approach are known as "*Second Generation*" road funds, to differentiate them from "*traditional*" or first generation (1G) road funds whose main purpose, rarely attained, is to provide a more certain source of finance than the budget. However, very seldom do these funds meet all the required criteria. The new style road fund operates on the principle that any extra spending on roads is financed through extra payment by the road users. Therefore, the new style road funds are budget neutral.

Which Approach Is Right?

3.6 Both the budget and commercial approaches have drawbacks in certain circumstances so countries need to assess their specific circumstances carefully before deciding which approach to follow.

3.7 Three main criticisms can be leveled at the budget approach: (i) fuel taxes are in reality closer to a "user charge," since there is a direct link between the level of the charge and the demand response of road users – therefore fuel taxes should not be considered, at least not exclusively, as general taxation, (ii) the economic rationale of budget allocation may vary enormously from country to country, with the potential for a significant misuse of resources, leading to deterioration of infrastructure and other public assets when funding to preserve those assets is inadequate. The road maintenance crisis referred to in the previous section was the result, to a significant extent, of inadequate resources allocated to road maintenance, resulting in a major destruction of infrastructure assets in many countries, (iii) road agencies in emerging economies, when operating under the budget principle, have little incentive to maximize efficiency in road maintenance operations.

3.8 Budget finance of road maintenance may assume a higher degree of stability when road maintenance is executed under multi-year performance contracts, which are becoming increasingly used in Latin America. The Treasury is legally committed to comply with the clauses and payments defined in such contracts, and there is some evidence that even under difficult fiscal conditions governments have tended to respect these contracts, (World Bank 2005 and World Bank 2001). While no country is maintaining the whole network through such kinds of contracts, in some countries the proportion of the network thus maintained has increased significantly over the last few years.[1]

3.9 The road fund approach also can be questioned on both principle and empirical evidence: (i) while fuel and other charges are good proxies for road user charges, they are not a perfect charge requiring every user to pay for the service (the road space) he or she receives. Different vehicles contribute differently in the amount they pay for road usage, heavy trucks being the extreme example of the gap between the amounts paid in user charges relative to the damage inflicted on the roads. While this issue also arises in the budget approach, it is more critical in the road fund approach because it claims to reflect user costs (ii) a fuel levy is an efficient form of taxation and is therefore an appropriate source of revenue for the national budget. Inefficiency can be reduced by taxing goods and services where the quantity demanded is relatively insensitive to price changes, that is, whose demand is price “inelastic.” Taxes on gasoline and diesel are relatively efficient because the quantity demanded does not change much in response to tax-induced price changes, at least in the short term.

3.10 The road fund approach appears to provide a better guarantee that funding will be assigned to road maintenance as a priority. However, the degree of certainty of sufficient funding will depend significantly on the extent of autonomy of the road fund, which practically never is absolute. Even in the case of the US fund, congressional action is needed to direct allocation of the funds, and often investment decisions are little related to the allocative principles of the fund.

3.11 Two major risks are associated with road funds. The risks vary depending on the type of structure and management set up of the funds.

- When the funds are operated as an extra budgetary public fund without adequate supervision and transparency, the main risk is the misuse of the funds for purposes unrelated to roads.

---

1. For example, Argentina had 11,000 kilometers maintained under a first-phase program, and an additional 8,000 kilometers are being added under a new program (World Bank 2005)

- Road fund revenues may exceed the requirements of road maintenance, leading to an allocation of excess funds outside the funds stated objective and with no economic rationale. Excess revenues typically can happen when the fuel levy is set as a percentage of the retail price rather than a fixed value per liter.

3.12 Another drawback of the road fund approach is that such funds often are not concerned with social objectives, and as a result rural roads with low traffic that generally serve the poor rural populations are likely to be neglected.

3.13 In the past some road funds were funded from taxes unrelated to road use, such as taxes on alcohol sales or on gross revenues of industrial sales which made the road fund look like any other earmarked fund rather than a user pay fund. (Carruthers 2005).

4. World Bank Policy and Practice

Policy

4.1 The Bank has not had a formal policy regarding ways to finance road maintenance and the use of road funds. The Bank's latest official document outlining policies and priorities in the transport sector (World Bank 1996)[2] highlights the road maintenance crisis, noting that "in the past two decades $45 billion worth of road infrastructure assets have been lost in eighty-five developing countries owing to inadequate maintenance." The report also notes that deferring road maintenance is self-defeating because it increases the operating costs of vehicles and because rehabilitating paved road is more than three times more expensive for the government than maintaining such roads on a regular basis. Regarding the management and finance of road maintenance, the report appears to open the door to road funds when it notes that many countries under special circumstances are adopting a more commercial approach to road maintenance. The paper then goes on to define the requirements for successful commercialization of road management:

- there must be a clear indication of what constitutes a charge for roads, with charges being specified separately from general taxation – charges for road use must be directly transferred to the road authority;
- the level of user charges and expenditures must be linked;
- accounts of the road agency must be made transparent;
- the level of charges and the maintenance and operational expenditures should be determined by representatives of both users and of the groups affected by the roads.

2. This document covers the whole of the transport sector. Other documents published later, and referred to in this section, cover specific topics within the sector and discuss road funds.

4.2 The first and last bullets above are the closest the report comes to accepting the notion of a dedicated road fund.

4.3 The report also highlights two areas that a user-managed commercialized road authority does not automatically resolve: how to treat externalities and the need to maintain lightly used roads for social reasons. In this context, it notes that for a commercialized road agency to be a continuing component of a transport administration, the satisfactory incorporation of environmental and social issues is essential.

4.4 A subsequent Bank report (Heggie and Vickers 1998) provides more details and lists the main principles for commercializing the management of road networks:

- Road users pay for usage of roads through an explicit tariff that must be clearly separated from the government's general taxes. It usually takes the form of a two- or three-part tariff: an annual vehicle license fee that charges for access to the road network (sometimes supplemented by a heavy-vehicle license fee), a road maintenance levy added to the price of fuel that charges for use of the road network, and, where feasible, a charge to manage congestion.
- Introducing the above road tariff must not abstract revenues from the consolidated budget. The ministry of finance is generally invited to convert the existing allocations for road maintenance into an equivalent fuel levy. Any additional revenues must be made from payments by road users. Thus, road users pay for using the road network, they know what they are paying and they are encouraged to demand value for money.
- The proceeds from the road tariff are deposited into a road fund managed by a board that includes representatives of road users and the business community. At least half of the board members generally come from outside the government and are nominated by the organization they represent. The chairperson is independent. This structure creates a form of surrogate market discipline. Board members represent the people who are paying for the roads and they thus have a strong vested interest in seeing that they are not overcharged and that the money is well spent.
- The board must have a small secretariat to manage the funds, published regulations should govern the way the funds are managed, and the auditor general's office or private sector auditors appointed by the auditor general must carry out independent technical and financial auditing.
- The fund should ideally support maintenance of all roads (including cost sharing with local governments and communities).
- Responsibility for different parts of the network should be clearly assigned to a competent road authority, and road authorities should introduce sound business practices.

4.5 While the Bank has lacked an official policy towards road maintenance finance, some internal reports, notably in the 1980s, generally opposed road funds on macroeconomic grounds (World Bank 1986).

4.6 A Bank paper (Paul Amos 2004) that focuses on the public and private sector roles in transport, notes that the "Bank sometimes endorses public enterprise style Road Funds to redress long-term under-funding of maintenance."

Practice

4.7 In practice, the Bank in several countries has supported channeling revenues from road user charges to finance road maintenance expenditures. The early road funds supported by individual road projects were in the late 1970s and early 1980s, and were of the First Generation type, essentially a line in the national budget labeled as road fund or a similar name. The Bank started to support the establishment of second generation funds in the early 1990s (Zambia the first one, 1992) as it appeared that such funds could provide an effective remedy to the inadequacy of road maintenance funding.

4.8 Some Bank macroeconomists and public sector specialist consider road funds to be extra-budgetary funds that fragment the budgetary process and create risks in the allocation of resources. Sometimes, road funds, even if funded from user charges, are for the purpose of analysis lumped together with other dedicated funds, such as those for education or other social services. This type of analysis generally leads to recommending closure of all extra-budgetary funds, whether earmarked funds or dedicated funds financed from user charges. Yet, there has not been a monolithic position taken by country managers across the Bank or across regions on this issue. Rather, there has been evolution over time, with a more neutral or even favorable position taken in recent years in some regions. Provisos are that adequate safeguards are introduced to protect existing fiscal revenues and steps are taken to ensure that road fund resources do not become a major source of corruption.

4.9 The table 4.1, extracted from public expenditure reviews, country economic memorandums and poverty reduction strategy papers presents relevant information about the views of country management and public sector specialists. The table covers 40 countries, divided as follows: Africa 16, East Asia and Pacific 6, Europe and Central Asia 9, Latin America and the Caribbean 5, Middle East and North Africa 1, and, South Asia 3.

4.10 The table shows that the majority of the reports presented statements that were generally supportive of existing road funds, or at least mentioned them as an indication that the road maintenance issue was being addressed. Several of the reports recommended creation of a second generation fund, sometimes from scratch, sometimes by restructuring an existing first generation fund. Several reports also recommended improving the financing of an existing road fund, generally by increasing the fuel levy allocated to the Fund. Negative statements were few, and only in one case did a report recommend closing an existing road fund; all these cases happened in Europe and Central Asia. Annex 1 gives more details of the countries and reports.

Table 4.1 Recommendations in Country-wide Bank reports[a]

REGION	***Create 2G Road Fund***	***Improve financing of RF***	***Restruc RF***	***Supportive statement, no recom mendation***	***Close RF***	***Negative statement, no recom mendation***
Africa	**7**	**7**	**6**	**17**	-	-
East Asia and Pacific	**3**	**1**	**2**	**5**	-	-
Europe and Central Asia	4	2	-	2	1	3
Latin American and Caribbean	3	1	-	1	-	-
Middle East and North Africa	-	-	-	2	-	-
South Asia	3	-	-	2	-	-
TOTAL	20	11	8	29	1	3

a. Country Economic Memorandums, Public Expenditure Reviews and Poverty Reduction Strategy Papers issued between 1993 and 2004. Forty countries were covered by the reports. Several countries were covered in more than one report

4.11 There are also other documents that discuss road funds. For example, the 2004 Country Financial Accountability Assessment for Uzbekistan, while being critical of extra-budgetary funds in general, recommends to review the government arrangement of the Road Fund mainly to avoid conflicts of interest.

4.12 *Capacity of Bank Staff*. Most Bank staff working on road maintenance issues have a fair knowledge of the design and operations of second generation road funds. However, there appears to be a significant range regarding the more in-depth knowledge required to provide technical advice to governments, comment on draft laws, etc. Overall, there appears to be a need for more training and detailed discussions of cases of good practice.

The International Monetary Fund (IMF) Position

4.13 The IMF places road funds in the context of budget preparation and public expenditures management. It applies three relevant principles (Anderson 2005)

- The budget needs to cover all expenditures. Off-balance sheet items, including extra budgetary funds, should be avoided. Special or dedicated funds outside the budget are naturally suspicious.
- Budget decisions on priorities require transparent and predictable institutional arrangements. This consideration leads to skepticism about arrangements where

certain sources of revenues are hypothecated to certain activities, funds or agencies. This principle goes on to say that "….if road funds, why not health funds, higher education funds, etc."

- Moneys from fund deposits should be made available for wider use by the government, including on an overnight basis to minimize its day to day borrowing needs.

4.14 The IMF is also concerned that extra budgetary funds may not be subject to the same level of scrutiny or accounting standards as the annual budget. On the other hand, IMF documentation recognizes that extra-budgetary funds (i) can provide a more consistent source of funding for activities, such as road maintenance, that yield high benefits yet do not get much recognition, and (ii) can increase efficiency by stimulating private market conditions where levels and standards of service are linked directly to fees or charges. However, this example does not discriminate between funds, such as the road fund, fed from user charges with other funds that generally are fed by sources unrelated to the provision of the service.

4.15 A formal coordination procedure was agreed in 1997 between the Bank and the IMF regarding the establishment of road funds. The IMF, while expressing reservations, particularly on governance and user charging aspects, agreed to review the merits of road funds on a case by case basis, and to seek closer coordination between the two institutions in cases where conflicts or disagreements arose.[3]

5. Funding Road Maintenance: International Experience

Industrial Countries

5.1 Practically all Western European countries as well as Canada and Australia fund road maintenance from the budget, although the nature and amount collected from user charges and taxes, and the way funding is provided for the national and regional road networks vary. However, there are some important industrial countries that have set up road funds and use them as the main source to finance road maintenance expenditures. Three examples are given below.

5.2 The United States, Japan and New Zealand have road funds. These funds were originally created at about the same time in the 1950s and remain in place today, although a number of changes have taken place in their design and operation. These funds were set up as a user-pay concept or fee-for service, not an

3. Minutes of meeting held January 9, 1997 between the World Bank roads adviser and the fiscal affairs division, IMF. Office memorandum dated. January 13, 1997

earmarked tax (Carruthers 2005). However, some literature still refers to these funds as being funded by earmarked taxes.

5.3 When initially set up, these funds were intended to cover new construction as well as maintenance

THE US HIGHWAY TRUST FUND[4]

5.4 *Creation and legal basis*. The Highway Trust Fund (HTF) was created by the Highway Revenue Act of 1956, primarily to ensure a dependable source of financing for the National System of Interstate and Defense Highways and also as the source of funding for the remainder of the Federal-aid Highway Program. Prior to the creation of the HTF, federal financial assistance to support highway programs came from the General Fund of the U.S. Treasury. While federal motor fuel and motor vehicle taxes did exist before the creation of the HTF, the receipts were directed to the General Fund, and there was no relationship between the receipts from these taxes and federal funding for highways. The Highway Revenue Act authorized that revenues from certain highway-user taxes could be credited to the HTF to finance a greatly expanded highway program enacted in the Federal-Aid Highway Act of 1956. In the original Highway Revenue Act of 1956, the crediting of user taxes to the HTF was set to expire at the end of fiscal year 1972, but since then, legislation has been passed to extend the imposition of the taxes and their transfer to the HTF through September 30, 2005.

5.5 Like other federal trust funds, the HTF is a financing mechanism established by law to account for tax receipts that are collected by the federal government and are dedicated or “earmarked” for expenditure on special purposes. Originally, the HTF focused solely on highways, but later Congress determined that a portion of the revenues from highway-user taxes dedicated to the HTF should be used to fund transit needs, resulting in a 5 cent increase in the gas tax (to 9 cents), of which 1 cent would go towards transit, to help fund the new account. As a result, the Mass Transit Account was created within the HTF effective April 1, 1983. Although never formally described and named, the portion of the Highway Trust Fund outside the Mass Transit Account has come to be called the Highway Account and receives all HTF receipts not specifically designated for the Mass Transit Account.

5.6 *Revenue Sources*. Resources directed to the HTF are derived from excise taxes on highway motor fuel and truck-related taxes on truck tires, sales of trucks and trailers, and heavy vehicle use. The Mass Transit Account receives a portion of the motor fuel taxes, usually 2.86 cents per gallon, as does the Leaking Underground Storage Tank Trust Fund, usually 0.1 cent per gallon. The General Fund receives 2.5 cents per gallon of the tax on gasohol and some other alcohol fuels plus an additional 0.6 cent per gallon for fuels that are at least 10 percent

4. Heggie and Vickers 1998, http://www.nemw.org/HWtrustfund.htm

ethanol. The Highway Account receives the remaining portion of the fuel tax proceeds.

5.7 *Collection of revenue*. Most excise taxes credited to the Trust Fund are not collected directly by the federal government from the consumer. They are, instead, paid to the Internal Revenue Service by the producer or importer of the taxable product (except for the tax on trucks and trailers, which is paid by the retailer, and for the heavy vehicle use tax, which is paid by the heavy vehicle owner). Hence, the 18.3 cent federal gasoline tax and the 24.3 cent diesel tax included in the price at the pump are, in effect, a reimbursement to the producers and distributors for taxes they have already paid.

5.8 *Allocation of funds* (Miller 2003).Trust Funds do not guarantee that revenues will be spent on a program. The HTF legislation does not contain its own appropriation that would automatically appropriate monies from Trust Fund balances. The spending authority of the HTF comes from periodic authorizations and annual appropriations action by the Congress.

JAPAN[5]

5.9 *Creation*. Japan introduced a special funding system for roads in 1954. This coincided with introduction of the first 5-year road improvement program. At the end of the Second World War, it became clear that the road network – which was outdated and in poor condition –had to be improved.

5.10 *Revenue sources and allocation.* The new funding system for roads involved earmarking certain road-related taxes and depositing them into a special account, or road fund. The special funding was "based on the concept that road users who enjoy the benefits of improved roads should bear the burden for their improvement" (i.e. the user pay concept).

5.11 The road fund uses earmarked *national* and *local* taxes to finance the maintenance, improvement and construction of national, prefectural (provincial) and local roads. At the *national* level, tax revenues earmarked for roads are divided between the various road authorities. The revenue sources are various user charges: gasoline tax, liquid petroleum gas (LPG) tax and tonnage tax. The revenues are allocated to two different classes of beneficiaries: (i) a special account for national roads, and (ii) transfers to local governments.

5.12 At the local level, the sources consist of LPG tax, vehicle tonnage tax, national gasoline tax, local diesel tax, and motor vehicle purchase tax. Revenues are allocated to two different classes of beneficiaries: (i) roads in the Tokyo Metropolitan Area, Hokkaido and prefectures, and (ii) roads in cities, towns and villages.

5. Heggie and Vickers 1998

5.13 Earmarked revenues at both the national and local levels are supplemented by general tax revenues and, in the case of the national government, are also deposited into a special account to ensure comprehensive management of the funds.

5.14 Funds from the special account are provided to road authorities on a cost-sharing basis. The central government finances half the costs of maintaining the directly managed national highways. The remaining costs are financed by prefectural governments and designated large cities. The central government also finances two-thirds of the costs of improving directly managed national highways, 70 percent of the national expressway network, and half the costs of subsidized national highways, main local (prefectural) roads and main local (municipal) roads. Five Year Road Improvement Programs prepared by the Ministry of Construction (MOC) in consultation with the Road Council (see below) establish the allocation of funding.

5.15 *The Road Council*. The Council was established in 1952 and consists of a chairperson and twelve other members. The members are proposed by the Director General of Roads and are appointed by the Minister of Construction (MOC). The chairman has traditionally been a former under-secretary of the MOC. Board members include representatives of the motor industry, business community, trades unions, academia and local government. Much of the substantive work of the Council is carried out by three sub-committees: one deals with road policy, one with toll roads, and the other with environmental issues. The Council has no permanent secretariat, and the work is done by MOC staff. The Road Council has since been superseded by an Infrastructure Council with a Roads Sub-Committee.

5.16 *Disbursements.* The road fund acts like a line of credit. Once the overall spending limits have been approved by parliament, MOC can draw down the funds, regardless of the actual revenue in the road fund account at the Central Bank (i.e., the government provides working capital). Contractors are paid directly after work has been inspected by an experienced MOC engineer who has not been involved in planning or implementation of the work. Work carried out by prefectures and designated cities are also inspected by MOC engineers.

5.17 *Auditing.* All work financed from the road fund is subjected to an audit by the Japanese Institute of Audits, which is independent from the government and influential amongst the public. The audit is done on a sample basis and targets several specific works per office. The audit team visits the work office, examines control procedures and financial records, and dispatches civil engineers to inspect the selected work sites. Problems and queries are resolved with MOC and the audit report is then submitted to Parliament.

NEW ZEALAND[6]

5.18 *Restructuring of Road Management and creation of the Board*. In 1989, a special operating agency, Transit New Zealand (Transit NZ), was put in charge of the main highways system. It was placed under the direction of a Board with user representation. Existing charges for road use were transferred to it, and it was given the authority for spending decisions on both maintenance and expansion. It was also given responsibility for joint funding of secondary roads (owned by local authorities) and for funding urban transit or alternatives to roads in other modes, if they were more cost-effective than road spending.

5.19 After Transit NZ had been in place for five years or so, it was judged that the agency spending was favoring primary highways, to the relative neglect of secondary roads and alternatives to roads. In 1996, a new agency, Transfund New Zealand, was created to remedy this.

5.20 *Allocation of resources.* Transfund is a funding agency (not an operational provider of any services), receiving revenues from the government and allocating them among the competing demands for maintenance and expansion of the primary highways (still operated by Transit NZ), local authority roads, urban transit, and investment projects in modal alternatives. Its 5-person board is now composed of two representatives of Transit NZ, one representative of road users, one of local authorities, and one representing "other public interests."[7] Transfund New Zealand is required to allocate resources in a way that contributes to an integrated, safe, responsive and sustainable land transport system.

5.21 In 2003, a law set a new framework for Transfund to follow in allocating funding. It reflects a new multi-modal approach, encourages long term planning and allows funding flexibility in implementing the government's New Zealand Transport Strategy.

5.22 Transfund's role includes funding for construction and maintenance of state highways and local roads; funding for passenger transport services, eg, commuter trains, buses and ferries; and funding for rail freight and barging. It also includes walking and cycling projects, and funding of projects supporting regional development.

5.23 In 2004, the government created Land Transport New Zealand, an agency formed from the merger of Transfund New Zealand and the Land Transport Safety Authority by the Land Transport Management Amendment Act. Land Transport New Zealand's objective is to contribute to an integrated, safe, responsive and sustainable land transport system.

---

6. Heggie and Vickers 1998, http://www.ltsa.govt.nz , http://www.ltsa.govt.nz/index-transfund.html

7. http://www.reviewcta-examenltc.gc.ca/english/pages/final/pdf/appendix3.pdf

Emerging Economies

5.24 In the last 10 years, road funds, especially second generation funds, have been created in many emerging economies. At the same time, a number of the funds were short lived, and closed over the last 5 years. Annex 2 presents a partial view of active road funds and funds that have closed.

5.25 In Africa, the Bank in conjunction with partners in the SSATP RMI, have promoted the creation of second generation road funds, which in many cases have been supported under Bank projects. In fact, these funds were first tried in Africa, and then in other regions. Most of the literature and assessment on second generation road funds focuses on Africa. The Association of African Road Funds has recently been created with the purpose of sharing experience among themselves.

5.26 In several cases, an existing road fund of the first generation type did not help to provide an adequate level of funding for road maintenance, and Bank efforts to reform the fund to make it closer to a second generation fund failed. Guinea Bissau is one such example.[8]

5.27 In Latin America, several countries, especially in Central America, have created road funds over the last 10 years. A grouping of several regional and international and bilateral agencies (including the World Bank, the UN Economic Commission for Latin American and the Caribbean, the International Road Federation, and the Pan American Institute of Highways) joined forces in promoting regional and national seminars on improving the highway system in Latin America and the region under the name PROVIAL. In 1994 the International Road Federation and the GTZ initiated a project to assist countries in creating Roads Maintenance Funds and contracting out road maintenance by performance standards. An association of Road Funds similar to the one in Africa exists in Central America.

5.28 In addition, other countries, such as Brazil, have created road funds at the state level, four such funds having been established between 1999 and 2001, and two more thereafter. Other countries are discussing the creation of such funds, including Brazil at the federal level, Ecuador and Mexico (Zietlow 2004).

5.29 In Eastern and Central Europe, several road funds have been created in recent years, but most have been abolished, generally following recommendations by the Bank and the IMF. Most of these funds were basically first generation. In some cases, such as Russia, abolishing the road fund was an obvious decision, since fund revenues were unrelated to road use, and there was lack of transparency in the use of such funds. In other cases, such as Latvia, the road fund was fed by user charges, and had helped boost allocation of funding to road maintenance from US$25.5 million in 1996 to US$60 million in 2000, covering some 60 percent of the optimal funding for maintenance. Some aspects of this fund had been

---

8. IEG's database

considered as an example of “best global practice.”[9] The main problem with this fund was lack of independence of the Board, which was chaired by the Minister. The closure of the Latvia fund appears to be the result of Bank and IMF approaches in middle and high-income countries of ECA, where there is an expectation that fiscal policies and public expenditures management are adequate to ensure proper financing of road maintenance, without need to resort to dedicated funds.

5.30 In Asia, second generation road funds in Philippines and Lao PDR have been operational for the last five years. The Lao PDR’s Fund is especially successful, with revenues collected efficiently and allocated to a reasonable maintenance program. The Philippines’ Fund is well designed but a fiscal crisis led to some funding not being released by the Ministry of Finance. A second generation road fund was created in Papua New Guinea in 2003, but has yet to become operational. Other countries in the region are considering establishing similar funds. China has a kind of first generation road fund, called a Road Maintenance Fee (RMF). This fee is levied on transportation companies’ revenues and on vehicle ownership and is the central element in China’s road funding system. The RMF is collected and administered by the provincial transportation departments.

5.31 In India, a federal road fund exists but its objective is new construction rather than maintenance.

6. Design and Management of Second Generation Road Funds

6.1 Th**e** design and operations of existing Second Generation road funds vary greatly from country to country, as discussed below. No road funds fully meet the requirements for a second generation road fund as described above.

6.2 *Road Funds Evolution and Restructuring*. Many of the second generation funds have been restructured often since they were first created. While sometimes the reforms have been effective and improved the operations of the fund, in other cases the reforms have been ineffective or simply were not put into effect. IEG reviews found that a restructuring of the fund in Benin had been effective, converting it into an autonomous agency with less staff, a competent team and provided with adequate resources for maintenance. Conversely, ongoing attempts to reform the fund in Yemen have failed to date, and the fund has yet to achieve an autonomous status with funding from user fees, as envisaged, partly because the country was in a financial crisis and government needed to keep a strict control of all income and expenditures.

9. IEG’s database

6.3 Argentina exemplifies a continuous rethinking of the financing of road maintenance and the creation and later restructuring or dismantling of funds of various types.[10] In the early 1970s, a National Highway Fund was set up aimed to increase the resources of the national highway agency. A year later, new fund for Infrastructure and Transport was created, which aimed to help finance the deficit in the national railway but also included financing for the roads. A Road Fund was created a few years later, but this Fund was abolished in 1989 following a macroeconomic crisis. Then, a new Road Fund was created in 2001, but the purpose of this fund was to finance road development rather than maintenance. This Fund was again restructured in 2004, when its objective was expanded to provide private toll road operators compensation for a reduction in the toll rates.

6.4 *Road Boards-Composition*. As shown in Annex 2, practically all of the 2G Funds meet the condition of having private sector representation on the their Boards. In over than half of these funds, the private sector representatives are in the majority. Yet, most of the Boards are chaired by a senior government official, generally from the Ministry of Public Works

6.5 *Road Boards-Mandate*. The mandate of the boards also differ, with some having executive and other advisory powers Mostly, at least in Africa, the boards mainly provide financing for the maintenance (and, in some cases, rehabilitation), with most planning and work execution being done by the respective highway agency (Gwilliam and Kumar 2002). In some Latin American countries, such as Honduras and Guatemala, the Board contracts out all execution and supervision of maintenance works to the private sector (Zietlow 2004).

6.6 *Sources and channeling of revenue*. Practically in all cases, funding for the road boards is generated mainly by a fuel levy, complemented by other sources such as tolls and other charges. Generally, the fuel levy is set as a fixed amount per liter, but in some countries it is set as a percentage of the fuel wholesale price. In this case, the risk exists that with variations in the wholesale price, the amount collected may differ significantly (higher or lower) from the road maintenance needs. In many cases, notably when levies are channeled via the Ministry of Finance, leakages exist and sometimes are significant. For example, internal Bank documents indicate that 59 percent of the fuel levies intended for the Zambia Road Fund did not reach the fund in 2003.

10. http://www.rebanadasderealidad.com.ar/nacional-05-10.htm

Table 6.1 Selected Road Funds in Africa and Latin America: Sources and Allocation of Road Fund Revenues

Africa	***Main source of funds***	***Fuel levy (US cents/liter)***	***Percent of RF funds from fuel levy***	***Allocation***
Benin	Fuel levy	10% of wholesale price	75	Maint
Ethiopia	Sales tax and municipal tax	4.4	25	Maint
Ghana	Fuel levy	3.5	85	Maint/rehab
Kenya	Fuel levy		90	Maint/rehab
Malawi	Fuel levy		95	Maint
Namibia	Fuel levy	12	75	80% for national roads 20% for urban, traffic information
Tanzania	Fuel levy	9.0	95	Maint
Zambia	Fuel levy	15% of wholesale price	95	Maint/rehab
Latin America				
Costa Rica	Fuel levy	7.5-4.3	95	75% national roads, 25% municipal roads
Guatemala	Fuel levy	3.1-3.1	100	
Honduras	Fuel levy	8.2-2.6	100	
Nicaragua	Budget	--	--	100% national roads (routine and periodic). Up to 10% for rehabilitation
El Salvador	Fuel levy	5.3-5.3	100	100% national roads

Sources: Africa: Gwilliam and Kumar 2002; Seydak et al. 2005; Latin America: Zietlow 2004

6.7 *Allocation of resources*. There are significant variations in the way road funds resources are allocated. Practically all funds focus on routine and periodic maintenance, but some allow part of the resources to be used for road rehabilitation. Most funds apply all their resources to maintaining the main national road network, but some funds also allocate resources to maintain municipal or provincial roads, and even subsidies to road transport. Within these rules, the composition and mandate of the Boards may have significant influence on how Fund resources are allocated

7. Performance of Road Funds

7.1 As noted in the introduction, this review uses three different sources to assess the performance of road funds: existing evaluations, IEG's database, including findings in individual project assessment reports and a survey of Bank staff responsible for road projects in countries with road funds. The SSATP is also undertaking an evaluation of African road funds.

7.2 Information from each of these sources is limited, and none individually permits the derivation of conclusive results. At the same time, the existing evaluations evaluate performance by comparing road fund objectives to achievements or changes between start of the road fund and the situation a few years later. No evaluation compares a road fund with a control case where the budget finances road maintenance expenses. (Admittedly, it would be difficult to identify control cases representing typical performance of budget-financed road maintenance). However, by combining the information from the various sources, it is possible to obtain a good idea of the performance of the road funds.

7.3 The assessment is also a function of the intended objectives. When the initial road funds were set up as first generation funds the only objective was to improve the funding of road maintenance. Under the second generation funds, the objectives have been broadened to improve the performance in other dimensions, such as the allocation of resources and better performance of the road agency by giving the road management a commercial orientation involving the private sector in the decision-making through their participation in the road boards.

7.4 Providing a broad assessment of the performance of the road funds is further complicated by the fact that significant differences exist in the design and management of road funds, as well as in the economic and political conditions in the countries concerned. Since the sample of road funds for which performance information is available is relatively small, it is not possible to make allowance for all these factors.

Assessment of Road Funds in Existing Reports

7.5 Five papers are reviewed. The papers differ significantly in scope, nature of assessment and rigor. Yet, each makes a contribution to understanding the conditions under which road funds they may be effective and the kind of outcomes that they generate. The review below describes the focus and coverage of the various papers, but does not discuss their findings, which are incorporated into the Aggregate Assessment section.

TEN AFRICAN COUNTRIES, 1995 (BALCERAC DE RICHECOULD AND HEGGIE)

7.6 This paper is not an assessment of outcomes of road funds, but rather a review of the inputs that are necessary, *ex ante*, for a second generation road fund to perform effectively. It examines road funds in 10 African Countries (Benin, Central African Republic, Chad, Ghana, Mozambique, Rwanda (where operations were suspended by the civil war), Sierra Leone, South Africa (up to 1988 when the fuel levy was abolished), Tanzania and Zambia. Its analysis focuses on objectives, revenue raising, legal status and management, as well as financial management.

7.7 This study finds the following as being essential design elements of a second generation road fund: (i) the fund should be fully funded by user fees rather than transfers from tax revenues, (ii) the fund should be managed by an independent board comprising representatives of road users who are selected from the organizations they represent, (iii) the board should be free to set the level of the tariff in response to changing needs, currency devaluation and inflation, (iv) the revenues from the tariffs should be deposited directly into the road fund, the fuel levy should be collected by fuel companies and, where feasible, other fees should be collected under contract, and (v) the fund should be managed according to sound financial principles, with a commercial accounting system, clear disbursement procedures, an independent financial audit, and selective technical audit.

SEVEN AFRICAN COUNTRIES 2002 (GWILLIAM AND KUMAR)

7.8 This study aimed to assess the performance of second generation funds using objective indicators in seven African countries: Benin, Ethiopia, Ghana, Kenya, Malawi, Tanzania and Zambia. The report first examines the structure of the road funds, including the legal basis, the statutory role of the road boards, their power regarding resource generation and distribution of resources and the professional staffing supporting the boards.

7.9 The study then reviews the process that the boards follow in different areas, including determining and securing income, monitoring performance in allocation, conducting technical audits, formal allocation of resources and the development of supply agencies (the road agencies).

7.10 The last section of the paper is on performance outcome. Outcome considers the following dimensions: level of funding, capacity of the local construction industry, operational efficiency and the quality of the road network

SIX LATIN AMERICAN COUNTRIES 2004 (ZIETLOW)

7.11 This report discusses the principles for creating sustainable road maintenance in general, and describes the approach taken by several Latin American countries that have set up 2G funds: El Salvador, Costa Rica, Guatemala, Honduras, Nicaragua and four states of Brazil.

7.12 The report describes the set up and operations of the road funds in these countries, and provides indicators of outcome in aspects such as increased level of funding, impact on the quality of the road network, and the relative role of local versus external funding for road maintenance. While the report has made a big effort to collect the necessary data to compare road funds and their performance, data are sketchy and what is available in one country may not be available in another. The report includes a useful closing chapter on lessons learned.

TWO AFRICAN AND TWO ASIAN COUNTRIES 2005

7.13 An internal Bank study explored the most effective institutional arrangements for financing and maintaining public roads. The first phase of the study was to compile a typology of existing national institutional arrangements for the financing and management of road maintenance. Thirty-three countries in all regions were reviewed, including small and large countries as well as countries with unitary and federal constitutions. Countries were included in the sample if adequate information was available. The first phase also analyzed the impact of different institutional arrangements on the quality and efficiency of use of financial resources in road maintenance.

TWENTY SEVEN AFRICAN COUNTRIES 2006 (BENMAAMAR)

7.14 This study, commissioned by SSATP, discusses the evaluation criteria for assessing second generation road funds and gives an overview of their performance. It also identifies the constraints encountered by the road funds as they evolve towards second generation road funds. The analysis is based on data stemming from a tracking system that summarizes the state of advance of reform implementation in 27 countries in Sub-Saharan Africa (SSA) with a particular emphasis on road funds performance. The paper’s findings are supported by visits to a number of SSA countries and by a survey conducted among road fund managers to measure performance indicators of the road sector institutions.

Survey of Bank Road Sector Staff

7.15 A survey conducted among Bank transport staff for the purpose of this report covered 14 road funds in the following countries: Croatia, Ghana, Guatemala, Honduras, Kenya, Lao, Lesotho, Malawi, Mozambique, Nepal, Philippines, Tanzania, Yemen and Zambia.

7.16 A summary of the key responses to the survey is presented below:

- 7 out of the 14 Road funds were established within the context of a Bank project, and, in these cases, the Bank assisted through financing consultants, providing ideas or helped conduct in-country seminars to discuss the merits of the road funds
- There is a perception that road funds have generally led to increased funding for road maintenance and better allocation of resources and sometimes to more efficient execution of the works.
- In about half of the road funds considered, their resources would allow to finance about 50 percent of the maintenance needs of the national network, if funding is

prioritized for road maintenance. But, only one third of those road funds use their resources exclusively for road maintenance.

- The main shortcoming, present in several of the road funds considered, are the following:

  - Road fund resources too concentrated on main roads to the detriment of low traffic roads
  - Part of the road fund resources are taken away by the Ministry of Finance
  - Allocation of road fund resources to uses is often too political
  - There is little accountability in the use of road fund resources
  - In road boards chaired by a government official, there is tendency to use road fund resources for road improvement rather than road maintenance.

- Other important shortcoming cited include:

  - Road fund boards are unclear about selection of performance indicators, monitoring and programming, making the Board unable to judge the performance of the road agency
  - The reputation of road fund boards is generally good, but expectations are too high. The board lacks sufficient authority to set tariffs affecting their revenues
  - The road fund law generally allows too much politics to intervene in the allocation of road fund resources.

Aggregate Assessment

7.17 Based on the information provided by the reports described above, and data from other sources, this chapter provides an integrated assessment, divided into performance or outcome indicators, and process indicators.

OUTCOME INDICATORS

7.18 Improvement in the condition of the road network is the obvious key indicator of outcome. However, this indicator is available for only a handful of countries. Therefore, the table below also utilizes two other indicators that are useful proxies and themselves probably good predictors of improvement in the quality of the roads: the percentage of estimated needs financed and changes in the overall level of funding for maintenance.

7.19 In practically all countries for which measures are available, there has been a significant increase in the percentage of roads in good condition. The highest increase occurred in Benin, where the percentage of roads in good condition increased 9.4 percent per year since the creation of the road fund. In Guatemala, where the measure available was the percentage of roads in bad condition, there was also a major improvement as the proportion dropped from 40 percent in 1994 to less than 20 percent in 2001. The percentage of estimated needs financed varied from 30 percent to 80 percent, but there is no data to assess what the change has been over the period since the road funds were established. The level of maintenance funding was reported to have increased significantly in Honduras and especially in Guatemala, that had a 2.5 times increase over 6 years. In Uzbekistan, the resources of the road fund increased almost 5 times over a period of 4 years, but the actual allocation of such funding to road maintenance is not known.

7.20 In countries with a large influx of funds from international financiers allocated for road rehabilitation and construction, such funding may be a major factor affecting road condition. Therefore, in such cases, the impact of the road funds on road condition is more difficult to assess.

Table 7.1 Indicators of Performance of Road Funds

Country	***Annual Change In percent roads in good condition (%)***	***Coverage of est. fin. needs (%)***	***Change in level of maintenance funding (US$ unless indicated)***
Africa[a]			
Benin	+9.4		
Ethiopia	+3.0	75	
Ghana	+4.5	50	
Kenya	+3.0		
Malawi		40	
Namibia			1998/99 – 2003/2004. Funding for routine and periodic maintenance increased from US$26.5 million to US$61.2 million
Tanzania		30	
Zambia	+4.0	30	
Uganda		80	
Sierra Leone[a]			1997-2004: RF revenues increased from about $2.5 million to close to $10 million during the period. In 2004, actual RF revenues reached about 80 percent of the planned revenues
Latin America[b]			
Honduras			2001 to 2009: fund income projected to increase from 60 to 84 Million (US$ 2000 dollars). Road network maintained by the Fund will go up from5743 km in 2001 to the whole road

			network of 14602 km in 2009.
Guatemala	*		1996 to 2002: funds spent on road maintenance jumped from US$ 29.5 million to 72.6 million
Eastern &Central Europe			
Croatia			
Uzbekistan[c]			1999-2003(forecast): Road Funds resources increased from 32 billion soums to 140 billion. Actual allocation for road maintenance unknown.
Asia			
Philippines		40	2000-2005: Funding increased from US$60 m (budget) for general maintenance to US$100 m (RF) for preventive and routine maintenance
Lao PDR		40	2000-2005: Funding for maintenance increased from US$2.0 m (budget) to US$5.4 (RF)

* In Guatemala, the extent of roads in bad condition dropped from 40 percent in 1994 to less than 20 percent in 2001.
Sources: a. Gwilliam and Kumar 2002; b. Zietlow 2004; c. World Bank 2004 (Uzbekistan-Country Financial Accountability Assessment); d. ICR 2005 – Sierra Leone : Transport Sector Project

PROCESS INDICATORS

7.21 *Maintenance by contract and operational efficiency:* the percentage of maintenance works contracted out increased significantly, reaching close to 90 percent in two of the countries (Zambia and Ghana) in the Gwilliam and Kumar study. Two important consequences resulted: (i) operational efficiency increased as the road maintenance cost per kilometer dropped by 10 or 20 percent (Zambia, Ethiopia, Ghana), and (ii) the capacity of the local construction industry increased as new local contractors appeared on the road maintenance market.

7.22 *Funding from local rather than external funding* increased in some countries in Latin America, the most notably case being Honduras, where funding from locally generated funds (as opposed to loans from external sources) increased from about 20 percent in 1995 to close to 100 percent in 2000 (Zietlow).

7.23 *Coverage of estimated funding needs*. As shown in Table 7.1, no road fund managed to cover all the maintenance funding needs, with the best being in the 75-80 percent range (Ethiopia and Uganda). The road funds in the two countries in Asia for which data was available (Philippines and Lao PDR) only cover 40 percent of needs. In the more detailed of road maintenance needs presented in the

Benmaamar study, out of 18 African countries, road funds in four countries managed to cover 100 percent of routine maintenance, and only in six countries did funding cover more than 50 percent of periodic maintenance needs.

7.24 *Allocation of road maintenance funding.* The results appear to be mixed, although data available are sketchy. The Gwilliam and Kumar study notes that while second generation funds, with their commercial orientation and strong constituency should improve allocation of resources, in practice such allocations continue to be dictated by standard formulae rather than a planned review of programs put forward by the road administrations. In the African countries reviewed, the disbursements appear to be generally biased towards urban and main roads, to the detriment of the rural/feeder network. While this probably reflects dominance of central government ministries and composition of the boards, it is also caused by low absorptive capacity in rural areas. In Ghana, the road fund provides funding to the districts and this is one reason that the Ministry of Finance supports the fund: for the MOF, monitoring use of funds in the districts is a difficult task, and therefore the road fund's allocation and monitoring is welcome.

7.25 The Bank internal study has similar findings. The Zietlow study of Latin American countries also appears to reach similar conclusions, since in the countries for which there is data available, priority was given to paved roads and in another case the increase in funding has allowed to almost triple the network covered.

7.26 *Involvement of road users.* The composition of the road boards indicate that road users representing the private sector are involved to a significant degree, and the evaluation studies reviewed suggest the Board is likely to be influencing in a positive manner the allocation of resources and transparency in the procurement process.

7.27 *Development of small road maintenance companies*. At least in one case (Honduras), microenterprises for carrying out routine road maintenance have been created as a result of a requirement by the road fund. The road fund assisted preparing legal documentation and training future entrepreneurs. The microenterprises have been successful and later extended their work to other sectors. The Ministry of Finance has been supportive of this initiative.

7.28 *Transparency*. Some of the Boards have put in place measures to make the road maintenance budget and operations open to the public. In Ethiopia, the Board quarterly publishes its budget. In Zambia, any user can access information on the disbursement of the fuel levy. In most countries, bids are advertised in the local press, and sometimes through the web.

7.29 *Quality of works.* Few countries appeared to have put in place a system for regular technical audits. Ghana appears to be a leader in this area, as its road fund produces regularly technical audits. In Tanzania, the road fund undertakes every year technical audits of 20 percent of the work it finances, and quality of works appeared to have improved since the audits started in 2001.

7.30 *Administrative costs.* In the majority of the African and Latin American countries, administrative costs are set not to exceed three percent of the fund's income. In Ethiopia and Tanzania, the limit is one percent. Costs of revenue collection generally are not reported. In Philippines, collection of the motor vehicle user charge is high—license fees are costly to collect in all countries— as it is estimated at 10 percent of the revenue (Paterson 2005).

8. Conclusions and Lessons

Conclusions

8.1 *There is no right or wrong approach to road maintenance finance*. International experience in industrial countries suggests that there is no right or wrong approach as to whether a country uses the budget approach or the user pays approach. It is more a matter of which philosophy works better in each case. The same principle applies to emerging economies, although inadequate funding of maintenance through the budget has triggered the establishment of road funds. As emerging economies progress and strengthen the management of budget expenditures, they would also have to decide based on their own philosophies.

8.2 *Bank's selective approach so far appears correct*. The Bank has encouraged some countries to follow the user pays approach when there has been longstanding neglect of road maintenance and the budget approach has not worked. The Bank support of second generation road funds is consistent with the move away from direct government involvement to a more hands-off approach, involving the private sector and the users more.

8.3 *Some progress reported*. The road funds reviewed show that, at least compared to a situation at the start of the fund, they have achieved progress in various areas. This progress has to be compared to the risks and costs, tangible or otherwise, of the road funds in each country. Institutional reforms take time, and it may be too early to assess the long term effectiveness of the second generation funds,

8.4 *More research is needed*. The number of road funds for which some data and assessment exist is small. Substantially more information on a larger number of road funds is needed in order to get a better handle of the trade-offs between the budget and the user pays approach when the various dimensions of outcome and process indicators are considered. Ideally, the performance of road funds should be compared to budget financing of maintenance in relevant countries.

8.5 *Road fund design*. No individual road fund appears to meet the all the theoretical design conditions or to have fully met the intended objectives of second generation funds. Creation of a Board appears to be a condition met on most of the funds, and private sector representation is substantial, often more than half of the Board members. Other important conditions, such as channeling resources to a road fund account and conducting independent audits have rarely been met. The expectation that the Boards would be able to change the level of user charges to adjust for changing revenue and road network requirements was generally unwarranted, since Ministries of Finance are not likely to delegate tax-raising authority to a road board.

8.6 *Monitoring and Evaluation.* One of the weakest areas of road funds relative to expectations is the lack of adequate monitoring and evaluation systems. Information on changes in the condition of the road network is sparse, and what is available is often unreliable. While Monitoring and evaluation is a responsibility of the road agency rather than of the road fund, establishment of a fund was expected to result in a better monitoring system. A fund was supposed to have the interest and leverage necessary to demand from the road agency the establishment of adequate monitoring. Overall, the Boards lack basic indicators to judge the performance of the road agency they provide funds to. Better monitoring should be a key area for improvement. Improved monitoring also would permit more frequent empirical assessment of the road funds.

8.7 *Conditions for success.* Road funds appear to work and be effective under some conditions, but not under others. Some conditions appear quite specific to the country's economic and political circumstances. As in other areas of public sector management, government commitment is essential for establishing an efficient road fund, including adequate level of resources, and a secure system for channeling revenues to the fund. More specifics of conditions for success will need to await a larger assessment of individual road funds, and a systemic identification of the conditions that led to the successful funds.

8.8 *Outcomes*. On the main outcome, condition of the road network, data are so sketchy that is not possible to ascertain whether there has been real progress when all the road funds reviewed are considered.

8.9 Regarding funding for maintenance, there is better evidence in the cases reviewed of an improvement in the level of funding over the years of the fund, and in a few cases the improvement has been dramatic. The fund's resources appear to have been instrumental in this achievement. In other cases, the Ministry of Finance also contributes funding for maintenance, and the outcome regarding overall maintenance finance should include both the resources from the road fund as well as those provide by Finance. Where a road fund appears to have been successful in raising the level of maintenance finance, it is difficult to credit this to the road fund alone, or even as a principal cause. In particular, in countries where donor finance of the road sector is significant, donor funding and their requirements for ensuring maintenance could have achieved similar results under a budget approach. Other achievements, such as the creation in one country of micro enterprises at the request of the road funds could perhaps have been achieved under a budget finance approach that is working well and can assure small contractors of continuing business and payments on time.

8.10 *Involvement of the private sector*. Participation of the private sector representatives in the form of roads users in the road boards is a positive development that would have been difficult to replicate under budget-financed maintenance. While there are exceptions, experience indicates that most of the user members belong to user associations and their presence in the board therefore represent the views of a large number of people. The main benefits of private sector representatives appear to be in the areas of transparency and accountability, while their impact on improving resource allocation is less clear.

8.11 *Approaches to improve budget finance of maintenance.* Many countries not interested in setting up second generation road funds do not adequately fund maintenance. In these cases, use of multiyear performance contracts for maintenance and rehabilitation can substantially improve the prospects for receiving adequate government funding for road maintenance and keeping the road network adequately maintained, since Ministries of Finance generally respect the commitments under such contracts. In middle income countries and in large low-income countries where important transport corridors often include high-traffic roads that lend themselves to a privately operated toll facility, private sector financing will take care of both investments and maintenance, thus reducing the claims on the national budget.

8.12 *First generation road funds*. First generation funds provide the appearance of an improvement in funding, but they are generally a line in the budget, and even if they are based on specified taxes or charges, they are equally prone to raiding for other uses. They do not result in an increase in road maintenance funding, nor have any impact on improving the management of the road agency and the allocation of resources

8.13 *Impact of second generation funds beyond financing.* Second generation funds raise awareness of the road maintenance needs and broaden the discussion and action beyond financing of road maintenance into road management and the involvement of users in decision making. In this sense, second generation funds may be a valuable instrument of road policy and management.

8.14 *Country Management and IMF views*. Contrary to conventional wisdom among transport staff, Bank country managers and macroeconomists and IMF staff generally take a pragmatic rather than an ideological view of road funds. In most cases they support a second generation fund that meets the basic design criteria. Support for road funds appears especially strong in Africa. Conversely, the strongest opposition appears to be in Europe and Central Asia (ECA). More regular contacts between the Bank, including transport staff, and IMF to coordinate road fund policies appear desirable.

Lessons

8.15 The following lessons emerge from this review:

- When sustained lack of financing of road maintenance has led to a severe deterioration of the road network, the establishment of second generation road funds may be a valid course. However, pursuing such a course requires strong government commitment to off-budget financing of maintenance and to the commercially-oriented reforms of road management implied by the second generation funds, including and independent board not chaired by a government official;
- A road fund should not be established under some conditions, including a high level of corruption, little likelihood of having independent audits and that transparent procurement will be put in place, and a Ministry of Finance that is relatively strong. Preparation of a no-go list could be useful. The experience with road funds closed in ECA could provide useful ideas;
- Financing of road maintenance should be viewed in the broader context of road management. Necessary road management reforms can be achieved under the budget approach or the user pays approach provided the flow of funds for maintenance is adequate and stable
- In order to gain better insights of the performance and impact of second generation funds, monitoring and evaluation systems need to be put in place, starting with credible assessments of road condition, trends in yearly allocation for road maintenance, and efficiency of road maintenance operations;
- Private sector participation in the second generation road boards is an effective way to involve the users and improve transparency and accountability in the use of road maintenance funds;
- Multi-annual performance contracts for road rehabilitation and maintenance, while they may be equally applicable under the budget or the user pays approach, may be especially useful to improve road maintenance funding under the budget approach.

Annex 1
Recommendations from CEMs, PERs and PSRPs Regarding Road Funds

Country	***Report***	***Region***	***Date***	***Establish RF 2G***	***Improve financing of RF***	***Restruc. RF***	***Neutral Supportive***	***Close***	***Negative***
Armenia	PER	ECA	2003	x					
Azerbaijan	CEM	ECA	1993						x
Bangladesh	PRSP	SA	1993	x					
Bangladesh	PER	SA	2003	x					
Belarus	CEM	ECA	1993		x				
Benin	PRSP	AFR	2000		x				
Benin	PRSP	AFR	2003			x			
Bolivia	PER	LCR	1999	x					
Cambodia	PRSP	EAP	2003		x	x			
Cambodia	PRSP	EAP	2004	x					
Cambodia	PER	EAP	2003			x	x		
Cameroon	PRSP	AFR	2000			x			
Cameroon	PRSP	AFR	2003			x			
Cote d'Ivoire	PRSP	AFR	2002	x					
Czech Republic	PER	ECA	2001					x	
Ecuador	PER	LCR	1993		x				
Ethiopia	PRSP	AFR	2004				x		
Ethiopia	PER	AFR	1997				x		
Ethiopia	PRSP	AFR	2001				x		
Ethiopia	PRSP	AFR	2002				*		
Ghana	PRSP	AFR	2000				x		
Ghana	PRSP	AFR	2003		x				
Gui nea	PRSP	AFR	2000	x					
Guinea	PRSP	AFR	2002	x					
Guyana	PER	LCR	2002	x					
Indonesia	PER	EAP	1998				x		
Jamaica	CEM	LCR	1994	x					
Kenya	PSRP	AFR	2000				x		
Krgyz Republic	PRSP	ECA	2001	x					
Laos	PRSP	EAP	2004				x		
Laos	PRSP	EAP	2001	x					
Laos	PER	EAP	2002				x		
Madagascar	PRSP	AFR	2000				x		
Madagascar	PRSP	AFR	2003			x	x		

Country	***Report***	***Region***	***Date***	***Establish RF 2G***	***Improve financing of RF***	***Restruc. RF***	***Neutral Supportive***	***Close***	***Negative***
Madagascar	PRSP	AFR	2004				x		
Madagascar	CEM	AFR	1998				x		
Mali	PRSP	AFR	2003				x		
Mauritania	PER	AFR	1994		x				
Moldova	PER	ECA	1996	x					
Mongolia	PRSP	EAP	2003				x		
Mozambique	PRSP	AFR	2001			x			
Mozambique	PER	AFR	2003			x			
Nepal	PRSP	SA	2003				x		
Nepal	PER	SA	2000				x		
Nicaragua	PER	LCR	2001				x		
Niger	PRSP	AFR	2000	x					
Niger	PRSP	AFR	2003		x				
Nigeria	PER	AFR	1996	x					
Romania	PER	ECA	1998				x		
Romania	PER	ECA	2002				x		
Rwanda	PRSP	AFR	2000				x		
Rwanda	PRSP	AFR	2004				x		
Sri Lanka	PRSP	SA	2003	x					
Tajikistan	CEM	ECA	1994	x					
Tajikistan	CEM	ECA	2001		x				x
Tanzania	PRSP	AFR	2000				x		
Tanzania	PRSP	AFR	2004		x				
Tanzania	PER	AFR	1994				x		
Tanzania	PER	AFR	2001		x		x		
Ukraine	CEM	ECA	1999						x
Vietnam	PER	EAP	2000	x					
Yemen	PER	MENA	1996				x		
Yemen	PRSP	MENA	2001				x		
Zambia	PRSP	AFR	2004	x					
Zambia	PER	AFR	2001		x		x		
Zimbabwe	CEM	AFR	1995	x					
TOTAL				**20**	**11**	**8**	**29**	**1**	**3**

Number of countries: 40
AFR= 16, EAP=6, ECA=9, LCR=5, MENA=1, SA=3

Annex 2
Road Funds – Current and Closed

Source	*Country*	*Region*	*Year Begun*	*Current Status A=active C=closed*	*Road Fund Board*	*Board (private sector Share on Board)*	*Road Fund Objective M=maint. R=rehab.*	*Comments*
1,G&K	Benin	AFR	1996		Y	5/9	M	
Z	Bolivia				N		M National	
1	Bulgaria	ECA		C				
1	Cameroon	AFR			Y	Pvt. Sector Majority		
1	Chad	AFR						
Z	Colombia			A	N		M National Provincial Municipal	
1	Congo, Dem. Rep.	AFR						
Z	Costa Rica	LAC	1998	A	Y	3/7	M National Municipal	
1	Croatia	ECA	2001					
1, G&K	Ethiopia	AFR	1997		Y	4/15	M	
Z	El Salvador	LAC	2000	A	Y	5/7	M National	
1	Georgia	ECA		C 2004				
1, G&K	Ghana	AFR	1997			8/13	M R	
Z	Guatemala	LAC	1997	A	Y	3/6	M (national roads)	
1	Guinea Bissau							
Z	Honduras	LAC	1999	A	Y	3/7	M Paved roads Being expanded to cover all roads.	
1	Hungary	ECA	1992					
1	India	SAR						

1	Jordan	MENA						
3	Kazakhstan	ECA		C				RF legislation still valid but fund transferred to MOF
1, G&K	Kenya	AFR	2000		Y	8/13	M R	
1	Korea	EAP						
3	Kyrgyz	ECA		C				RF legislation still valid but fund transferred to MOF
1	Lao PDR	EAP	2001	A	Y		M	A well performing Fund
1	Latvia	ECA	1994	C			M (includes Municipal Roads &subsidies To transport)	
1	Lesotho	AFR		A		5/9	M R	
1	Lithuania	ECA						
1	Madagascar	AFR						
1	Mali	AFR						
1,G&K	Malawi	AFR	1998			9/12	M	
1	Mozambique	AFR			Y			
4	Namibia	AFR	2000	A	Fuel levy		M R	A weight-distance tax to be introduced
1	Nepal	SAR			Y			
Z	Nicaragua	LAC	2000		Y	3/7	M R National	
1	Niger	AFR						
1	Panama	LAC						
1	Pakistan	SAR	1999		1999			
Z	Peru	LAC			N		National	
1	Philippines	EAP	2000	A	Y	3/7	M	Board has weak governance
2	Poland		2004					
1	Romania	ECA		C				
1	Russia	ECA	1992	C				

				2000				
1	Senegal	AFR						
1	Sierra Leone	AFR	Legally constituted in 1989; came into effect in 1992					
`1	Slovakia	ECA		C 2004				
1	South Africa	AFR						
1	Tajikistan	ECA		C 2000				
1,G&K	Tanzania	AFR	1999			5/9	M	
1	Togo				Y			
1	Yemen	MENA	1995					
	Uzbekistan			C				Fund transferred to MOF management in 2004
1, G&K	Zambia	AFR	1994			7/11	M R	
1								
1								
1								
	Proposed RF							
	Armenia	ECA						
	Bangladesh	SAR						
	Cape Verde	AFR						
	Uganda	AFR						

Sources: 1=IEG database; Z=Zietlow 2004 or Zietlow personal communication; GK=Gwilliam and Kumar 2002; 2=2004 International Monetary Fund July 2004 IMF Country Report No. 04/219 Republic of Poland: Report on Observance of Standards and Codes—Fiscal Transparency Module—Update; 3. Kerali; 4. Seydak et al. 2004.

Bibliography

Amos, Paul. 2004. Public and Private Sector Roles in the Supply of Transport Infrastructure and Services. Operational Guidance for World Bank Staff; Transport Papers; TP-1. Washington, DC: World Bank.

Andersen, B. 2005. "IMF Policy on Extra Budgetary Road Funds." Presented at the Transport Forum 2005.

Benmaamar, Mustapha. 2006. *Financing of Road Maintenance Works in Sub-Saharan Africa. Reforms and Progress towards Second Generation Road Funds.* Sub-Saharan Africa Transport Policy Program. Discussion paper #6. Washington, DC: World Bank.

Carruthers, Robin. 2005. "Why and When Road Funds are a Good Idea." Presentation to the Bank's Transport Forum 2005.

de Richecour, Anne B. and Ian Heggie. 1995. *African Road Funds. What Works and Why?* Sub-Saharan Africa Transport Program, World Bank and Economic Commission for Africa. SSATP Working Paper #14. Washington, DC: World Bank.

Gwilliam, Ken and Ajay Kumar. 2002. *Road Funds Revisited. A Preliminary Appraisal of the Effectiveness of "Second Generation" Road Funds.* World Bank. TWU Series, TWU-47. Washington, DC: World Bank.

Heggie, Ian. 1995. *Management and Financing of Roads: An Agenda for Reform.* Technical paper 275. Washington, DC: World Bank

Heggie, Ian and Piers Vickers. 1998. *Commercial Management and Financing of Roads*. World Bank Technical Paper 409. Washington, DC: World Bank.

Kumar, Ajay.2000. *Assessment of Selected Road Funds. Case Study of Benin, Ethiopia, Ghana, Kenya and Zambia.* SSATP Working Paper #51. Washington, DC: World Bank.

Miller, Vic. 2003. "Issues Surrounding the Federal-Aid Highways Program and the Highway Trust Fund." Prepared for The National Conference of State Legislatures.

Paterson, William. 2005. "Road Sector Reform in East Asia and Pacific Region: Issues, Risks and Lessons." Presentation at the Transport Forum

Seydak, Gunther, Friedrich W. Poolman, William Ravenscroft. 2004. Experiences with a Second Generation Road Fund in Namibia Four Years after Establishment.

World Bank. 1979. *The Highway Maintenance Problem*. Washington, DC.

World Bank. 1981. *The Road Maintenance Problem and International Assistance.* Washington, DC.

World Bank. 1986. *Road Funds from Earmarked Sources.* Interim Guidelines. Transportation Note 1. Washington, DC.

World Bank. 1988. *Road Deterioration in Developing Countries – Causes and Remedies.* Washington, DC.

World Bank. 1996. *Sustainable Transport. Priorities for Policy Reform*. Washington, DC.

World Bank. 2001. "Argentina – Road Maintenance and Rehabilitation Project." Performance Audit Report. Operations Evaluation Department. Washington, DC.

World Bank. 2005. *Argentina-Provincial Road Infrastructure Project.* Project Appraisal Document. Washington, DC.

Zietlow, Gunter. 2004. "Road Funds in Latin America." Presentation at the University of Birmingham, Senior Roads Executive Programme, 26-30 April.