Road Funds and Road Maintenance

An Asian Perspective

Asian Development Bank

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APPENDIXES

Glossary

ADB	Asian Development Bank
benefit-cost ratio	ratio of discounted benefits to discounted costs
CRF	consolidated revenue fund—central revenue account into which all taxes and fees due to the government are paid
discount rate	percentage annual rate at which the value of future benefits and costs are reduced to compare with present-day costs and benefits
DMC	developing member country (of ADB)
earmarking	process of reserving revenues, or portions of revenues, from certain taxes for a given use (such as road maintenance)
EIRR	economic internal rate of return: the discount rate at which the sum of discounted costs and benefits equals zero
finance ministry	generic term covering various agencies found in DMCs, variously known as the Ministry of Finance, Department of Budget, Ministry of Economy, and also planning agencies that share responsibility for economic efficiency
fiscal flexibility	freedom to allocate, at will, expenditure of funds in the national budget
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit GmbH (German Agency for Technical Cooperation)
HDM3	Highway Design and Maintenance Standard Model
HDM4	Highway Development and Management System
IMF	International Monetary Fund
informal income	income derived from the informal sector of the economy (nonregistered or untaxed economic activities)
lenders	generic term for multilateral agencies, like ADB, and bilateral agencies, like GTZ (q.v.) that provide loans to developing countries
NGO	nongovernment organization
pavement management system	system by which pavement condition is tracked and maintenance needs identified
QA	quality assurance: a system by which quality is assured by auditing processes, rather than checking each output
RETA	regional technical assistance
RMF	Road Maintenance Fund
RMI	Road Maintenance Initiative (of the World Bank and bilateral donor agencies, in Sub-Saharan Africa)
road maintenance	all activities needed to keep a road operating indefinitely—routine maintenance, periodic maintenance, and rehabilitation
road management system	system by which the condition of pavements, bridges, and road furniture is tracked and maintenance needs identified
road tariff	a set of fees and charges that act as prices charged for road use
TA	technical assistance:resources, funded either by a loan or grant, for project preparation, advisory and operational purposes, and regional activities

Foreword

It is widely accepted that roads play an important role in development, and help reduce poverty. To realize their potential contribution, however, roads need to be properly maintained. In many of the Asian Development Bank's (ADB's) developing member countries (DMCs), the standard of road maintenance is poor. Often the main reason given for poor road condition is that funds for road maintenance are inadequate.

This report presents the findings of a regional technical assistance (TA) 5871: Road Funds Strategy, which was carried out between April 2000 and March 2001 to examine the problem of road funding and propose solutions.

Under the TA, road funding experiences worldwide were reviewed (Appendix 3) together with other relevant source materials, a bibliography of which is appended (Appendix 5). But much of the existing body of knowledge on road funds relates to either African or Latin American countries. Therefore, the question arises as to how much of this experience is relevant to Asian countries. Of particular concern were issues relating to Asian perceptions of the need for road maintenance and the funding and administration required to address that need. To address this gap, detailed fact-finding trips were made to Kyrgyz Republic, Lao People's Democratic Republic, Pakistan, Philippines, Uzbekistan, and Viet Nam to discuss the perceptions and experiences of road funds with government officials and road users. From these initial meetings, issues and perceptions emerged, which were used as the basis for the Regional Workshop on Funding for Road Maintenance. At this Workshop, held at ADB in Manila on 6–7 March 2001, more than 60 participants representing 20 Asian countries, the international development community, and other interested parties discussed the Asian experience with road funds. A report on this Workshop can be found in Appendix 4. The results of this Workshop were used to refine the proposed approach to combat maintenance neglect presented in this report.

For much of the project, Marcelo Minc was the ADB project officer supervising and guiding work. The project was finalized under Paul Vallely. The consultants engaged to undertake the work were Ronald Allan and Olga Caday. The contribution of Stephen Vincent to Chapter VII is gratefully acknowledged.

I. THE ISSUE

In the developing world, roads are deteriorating for want of maintenance. Roads are being lost. The Asian Development Bank (ADB) and other agencies lending money for roads are concerned about this. Inadequate maintenance is the cause of the problem. Maintenance includes all activities needed to keep a country's road network operating indefinitely:

- routine maintenance (restoring drainage, filling potholes and cracks, maintaining edges);
- periodic maintenance (resealing, about every 5 years, to rejuvenate the surface); and
- rehabilitation (overlaying, about every 15 years, to restore smoothness and durability).

A road network is sustainable when it is in satisfactory condition[1] and does not, as a whole, deteriorate over time. Individual roads do not remain static: paved roads go through a cycle of accumulating roughness, despite routine and periodic maintenance, until they are restored to their original smoothness by rehabilitation. Since a network is made up of roads that individually are at all points in this maintenance cycle, the condition of the network as a whole does not change year by year. A sustainable road network is, therefore, one that is maintained.

Inadequate maintenance is attributable to any of the following reasons:

- Money is not allocated (in sufficient amounts).
- Money is allocated but not spent.
- Money is not spent efficiently.
- Money is not spent effectively.

Addressing only the first cause—allocating more money—will not be enough to solve the road maintenance problem; it has not sufficed in the past. This study recognizes the importance of all four causes and addresses them.

Almost all ADB's developing member countries (DMCs) fail to maintain roads properly. In principle, the problem should not be hard to fix. All that is needed is a systematic and rational set of rules and tools to identify and plan maintenance tasks, a trained workforce with equipment to carry out the work, and the money to pay for it. Experience reveals, however, that solving the road maintenance problem is considerably more resistant to solution than it appears. Many countries have tried to reform road maintenance but have failed—or reforms have lapsed—after a short period of improved performance.

ADB, at times in cooperation with the World Bank, has been working with its DMCs, some of which have gone down the path toward reform but have generally come to a halt just before the final step: implementing change. The arguments for reform are compelling and the benefits are great, yet there is a very strong reluctance to change. How to overcome this reluctance is the challenge faced by this study.

This study did not set out to reinvent good practice. Rather, it builds on existing knowledge and looks at the implementation problems that have prevented good practice from being given a chance. Over the last 15 years, a handful of developing countries, mainly in Africa and the Caribbean, have reformed their road maintenance funding with strong encouragement and support from the World Bank and German Agency for Technical Cooperation.[2] The experience gained has identified the strengths and weaknesses of the main options for reform. There is now a body of knowledge that is considered by many to be good practice.

The following sections of this study first describe the problem in greater detail, together with the challenges involved in providing adequate road maintenance, then set out the lenders' and the DMCs' views of the situation. Two sections follow that propose solutions that can meet the challenges of road maintenance. The final section

[1] "Satisfactory" in terms of serving the amount and type of traffic using the road.

[2] Deutsche Gesellschaft für Technische Zusammenarbeit GmbH.

presents a recommended approach for ADB and other development agencies. Several appendixes support the main text, notably one on good practice for road maintenance reform, and another containing observations and recommendations from participants in the March 2001 Regional Workshop on Funding for Road Maintenance.

II. THE FACTS

1. Pavement Wear is Not the Problem

Over the past 2 decades, much has been said and written about loss of huge investments in roads in the developing world.[3] Roads are being lost (or at least pavements are being lost) because they deteriorate into muddy, or dusty, or potholed dirt and gravel; slivers of asphalt among the potholes betray many roads that were once sealed, i.e., water- and wear-proofed with asphaltic concrete or portland cement concrete. Pavements are supposed to wear out: a bitumen pavement is designed to accumulate fatigue and to progressively lose its smoothness. Rehabilitation restores it to its initial condition. Then the cycle repeats itself, so pavement wear off itself is not the problem. But pavements should not wear out prematurely, nor should they be left so long that rehabilitation is no longer any use and they have to be reconstructed. It is the failure to maintain the roads that has cost some countries very large sums.

Maintenance includes all activities needed to keep a road operating indefinitely:

- routine maintenance (restoring drainage, filling potholes and cracks, maintaining edges);
- periodic maintenance (resealing, about every 5 years, to rejuvenate the surface); and
- rehabilitation (overlaying, about every 15 years, to restore smoothness and durability).

In feasibility studies assessing the economic value of sealing pavements, it is assumed that proper routine and periodic maintenance will prevent premature failure, that pavements will be rehabilitated when they get too rough, and that they will not be left to deteriorate further until they need reconstruction. These assumptions may be false, however. Sealing a pavement may be uneconomic: if sealed pavements are not properly maintained, they may be more of a burden than a benefit to the economy.

2. The Struggle for Maintenance Money

Providing funds for road maintenance is a struggle, for many reasons:

- *Pavements need preventive maintenance.* Money is best spent on maintaining pavements before the need is apparent: the right time to reseal is before deterioration is obvious to a nonexpert. As bitumen oxidizes, pavements become brittle and start to crack. At the early stage of cracking, a reseal will rejuvenate the surface and restore its elasticity. Once cracks are obvious, a reseal will no longer work: the cracks are too big and will come through the new seal, reappearing on the surface. Cracks let in water. Water softens the road base and causes the road to break up. Clearly, it is best to reseal early. But it is difficult to secure funding to repair pavements that do not (yet) look broken.
- *Capital bias.* Even when the road budget is adequate for proper maintenance, maintenance can still be inadequate, because of capital bias.
  - Politicians want to build new roads. Capital expenditure and ribbon cutting win more votes than keeping roads in good condition. In fact, letting pavements collapse *wins* votes—when they are rebuilt. The public mistakenly thinks the remedy for bad roads is renewal, not maintenance.

[3] Harral, Clell, and A. Faiz. 1988. *Road Deterioration in Developing Countries—Causes and Remedies.* Washington, D.C.: World Bank.

- To engineers, maintenance is not glamorous. They are trained to design and to construct, and do not consider maintenance their mission in life.
- "Rent seeking" favors capital bias. In countries where corruption is endemic, capital projects provide opportunities to divert large sums of money.

- *Rehabilitation is classified as capital spending.* Even though rehabilitation is part of road maintenance, accounting conventions treat it as capital spending, because it is costly and has a long life. Rehabilitation projects then join the list of candidates vying for inclusion in the capital budget or investment program. Rehabilitation should have priority, but does not.[4]
- *Equity and fairness: unmaintainable roads.* Sometimes spending money to maintain, e.g., reseal, an access road to a village seems unfair, when a neighboring village still has no all-weather access at all. It may even be government policy for all villages to be given all-weather access. But building more roads is foolish if it means letting those already built deteriorate due to lack of maintenance. Good care needs to be taken of what has been built. New roads should be added only when there are funds available to do so. This point can be extended to roads that are no longer maintainable: those that have deteriorated to a stage where the only sensible remedy is reconstruction of the pavement. For such roads, resealing or rehabilitation is a waste of money. No matter how unfair it may seem, these pavements should be allowed to deteriorate further, until there are funds for reconstruction.

A conclusion from these observations: unless a culture of (preventive) maintenance can become entrenched in a country, road maintenance and improvements, i.e., new roads, should not be funded from the same pot.

3. Road Maintenance—Good Business for the Road Agency?

Does the road agency make more money maintaining the road or letting it deteriorate and rebuilding it? To encourage proper maintenance, lenders, that is, the multilateral banks and bilateral aid providers that underwrite such projects in the developing world, argue that road agencies cannot save money by spending less on maintenance; if roads are not maintained, the assets will eventually be lost and expensive reconstruction will then be needed. For purpose of illustration, assume routine maintenance is always done. Now consider two cases.

- The road is resealed at 5-year intervals, each reseal costing \$15,000/km; and is rehabilitated after 15 years, at a cost of \$60,000/km.
- The road receives no maintenance at all and is reconstructed after 20 years, at a cost of \$200,000/km.

If the agency attends to routine maintenance (filling potholes, maintaining pavement edges, etc.), but neglects periodic maintenance and rehabilitation, it may indeed save enough money to pay for reconstruction when it is eventually needed. This assumes the money saved produces benefits elsewhere (say, a 12% annual discount rate, in the example above). At that rate, these two cases are equal in cost. Thus, from the point of view of the road agency or finance ministry, it may be good business to cut back on maintenance. The cost saving may not be permanent—since the road will eventually need expensive reconstruction—but at least the expenditure is deferred for many years.

If this is indeed the understanding of government agencies, it is no surprise that lenders' warnings that neglect leads to expensive reconstruction have not worked. Governments have not rushed to allocate more funds to maintenance because they know, from long experience of underfunding, that the road system still functions. Lenders' alarms, and governments' reaction to it, suffer from the same flaw: both sides recognize only the costs of the road agency. But the road agency is only one party in the road system. The road system includes road users, who benefit greatly from proper maintenance.

4. Road Maintenance—Good Business for Road Users

The picture changes when road user costs enter the calculation. Maintenance is very good business indeed for road users. Technical publications often cite the statistic that for every additional \$1 a developing country spends on road maintenance, road users save \$3. Thus, the compelling argument for proper road maintenance is the benefit to users, and thus to the economy.

[4] At first sight, misclassifying rehabilitation as capital spending seems to give it an advantage, because of capital bias. But since capital bias does not mean all capital works are funded, this is not necessarily the case.

5. Toll Roads Benefit Road Users: Implications for Road Agencies and Governments

On commercially operated toll roads, inadequate maintenance is not a problem. The tolls users pay are used for maintenance, and a toll road attracts road users because users know that even though they pay for their use of the road, they save money because the road is more efficient. Toll road maintenance recognizes users' costs; if the toll road operator failed to recognize users' costs, it would lose business—and money.

Unfortunately, since only highly trafficked roads in special circumstances can be converted to toll roads, most roads must remain in road agency care. This places an onus on the road agency to behave as if it were a commercial operator of toll roads. The road agency should regard its custody of the roads as providing a service to road users.

Some implications of this analysis become clear:

- The road agency needs the analytical ability to make decisions that take account of road users' costs;
- User involvement in road administration would help ensure that road user needs and costs are properly taken into account; and
- Since users are the main beneficiaries of proper road maintenance, users can afford to pay for proper maintenance.

Why should road users pay? The added expenditure needed to maintain roads properly is considerably less than the added benefit of proper maintenance. Since road users are the ones who enjoy the benefit of proper maintenance, road users can pay the extra cost and still be better off. Road maintenance is not a heavy burden on the nation and economy. The fact is that spending too little on road maintenance is an even greater burden on the economy. Unless the nation has too many roads, or roads of the wrong type, proper road maintenance is an enormous overall saving to the nation.

6. What is Proper Maintenance?

Wealthy developed countries that use economic analysis to decide road expenditures typically use discount rates between 7% and 10% per year. For example, New Zealand, with a GDP per person that is 10 times that of most DMCs, uses 10% and requires a benefit-cost ratio well in excess of unity—in recent years around 4.5. Thus, to be funded, road works have to show an internal rate of return far in excess of 10% per year: the implicit discount rate is 28% per year.[5]

The internal rate of return used by ADB and other lenders is generally 12%. Yet the implicit discount rate used in New Zealand, which can afford—and has—good roads, is far more testing. A similar, more realistic discount rate would be appropriate for DMCs. In practice, road improvement projects in DMCs would commonly pass a 28% test. And projects that reduce a maintenance backlog can produce an economic internal rate of return (EIRR) of more than 100%. But pavement management systems do not work this way. They do not propose projects, then test them using an EIRR criterion. Pavement management systems reverse the order. A discount rate is struck (usually 12% per annum) and all projects that exceed that threshold are selected. In other words, every expenditure all the way down to 12% is selected, and hence qualifies to be funded.

This is excessive. As a result, pavement management systems can generate maintenance budgets without credibility—for example, budget requirements more than 10 times what historically has been spent. Such results give finance ministries no confidence in the scientific foundation of pavement management systems. It is not surprising that road agencies have difficulty making a credible case for more funding. It is true that pavement management systems can be constrained to derive a program of works to fit a given budget, but this is the wrong way around. The economically justified budget should be derived from the pavement management system, not given to it.

The problem is the discount rate. Using a discount rate of 12%, a DMC could produce an almost endless list of worthy projects in roads, aviation, ports, health care, education, water supply, sanitation, and so on. More reasonable is a discount rate of 20–30% per year, which proposed investment projects commonly achieve anyway. The lower a country's GDP per person, the higher should be the discount rate, to reduce the list of projects to what the country can afford. What this would mean for road maintenance is that pavements would be allowed to get rougher before they are rehabilitated: for example, three reseals, rather than two, before rehabilitation.

This conclusion is supported by a comparison of vehicle fleets. New Zealand trucks and buses are modern, efficient, and expensive to buy. To justify expensive technology, vehicles achieve high travel distances:[6] line haul

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[5] Over a project life of 20 years, and assuming benefits to increase with traffic growth at 4% per year.

[6] The cost of vehicle operation includes the cost of financing the vehicle purchase. The greater the distance travelled, the greater the number of kilometers over which to spread the financing cost. As a result, the higher the annual travel distance, the lower the per-kilometer cost of operating the truck.

operations can achieve up to 1,000 kilometers (km) a day at speeds up to 100 km per hour. In DMCs, vehicle technology is less sophisticated and road alignments may not permit high speeds, so smooth roads are unlikely to produce as many benefits as in New Zealand. The optimal level of pavement smoothness is not as demanding in DMCs as it is in developed countries.

In principle, proper maintenance could be defined as all work that users value and are willing to pay for. The discount rate approach is the technician's way of estimating what users value. In the light of the foregoing, proper maintenance could be regarded as all work shown to be worthwhile at an annual discount rate of, say, 25% per annum.

Using a high discount rate such as 25% makes it difficult to argue against doing all the maintenance that meets this test. But there is reluctance to break ranks and endorse the use of a discount rate other than 12% per year. Making the test a benefit-cost ratio of 3, say, at a 12% discount rate, might be a compromise solution—if the computer program allows benefit-cost as an option. The computer programs usually allow a budget constraint to be specified, in which case the best options at 12% can be selected subject to the constraint. But to specify the budget constraint is to put the cart before the horse. The point of using a discount rate such as 25% is to find out what *should be* the budget constraint. Using a high discount rate, just for maintenance, remains the soundest approach.

7. Computerized Pavement Management Systems

Computerized pavement management systems, such as those based on the Highway Design and Maintenance Standard Model (HDM3) developed by the World Bank and its successor, the present industry standard Highway Development and Management System (HDM4), developed by the World Bank, ADB, and others, have been in use for many years. These systems are complex and require meticulous care to avoid data input errors. Finance ministries tend to be mistrustful of black box pavement management systems, especially those that claim to justify enormous increases in funding. Finance ministries do not realize that extravagant budget demands are caused by the input data (specifically the discount rate), not the computer system.

Irrespective of whether the black box is trusted, it commonly does not survive for long. The life of a computerized pavement management system is often short. The lender installs the black box, then the recipient country sidelines it by starving it of money, failing to update the database, transferring trained staff, and allowing vehicles to be commandeered by unauthorized persons.

Even if the system survives, the database may not be updated accurately and regularly.[7] Whatever the system of managing pavements, data must be collected regularly. For the computerized versions, strict adherence to location reference points must be maintained—a requirement that is easily violated. In many countries, it is difficult to be confident of data accuracy.

Some DMCs claim that the data collection to update computerized systems is too onerous, and with some reason. Data collection is repetitive and monotonous, but it is not a menial task. Giving clipboards to villagers (or even departmental staff) and returning a week later produces traffic counts of unknown reliability. To ensure accuracy and integrity of the database, a senior person with dedication and authority must pay close attention. Tedious data collection is prone to error and, worse, to faking. Visual surveys of road condition are subjective, even for engineers instructed in the procedure. Producing a reliable data set demands dedicated attention to detail, checking, crosschecking, data validation—and the resources to do a good job.

Data collection is vulnerable to budget cuts, even though the cost is small in relation to the large sums of money that are spent on the basis of this information. This suggests contracting out data collection for, say, 5-year periods. Contracting data collection identifies this as a budget item that must be funded, because there is a contract to honor. Contracting out data collection has another benefit as well. It creates pressure to produce quality information. The contractor is accountable for the quality of the information and bears the cost of remedies for any errors and omissions.

Contracting out the whole pavement management system, rather than just data collection, would make the package more attractive to competent consultants. Contracting the whole system increases the incentive to guarantee the honesty and integrity of the database. The consultant would be responsible for maintaining the system

[7] Maintaining the database is demanding, even in the most developed countries, as reported in a recent study in New Zealand, which has had such a system since the 1980s (Bennett, Christopher. 2001. *Evaluating the Quality of Road Survey Data.* Transfund New Zealand.). There were problems within databases, such as poor location referencing, changes to the locations of inspection lengths, and inconsistent lane identification. In general, the state highways achieved much better consistency than local authority roads, perhaps reflecting the higher quality assurance standards of state highway surveys, or the use of the same contractor for extended periods of time. Maintenance presented a particular problem, since it changes the condition of a pavement. Unfortunately, resurfacings and overlays/shape corrections were not recorded reliably. Changes in pavement condition indicated that a treatment was performed, but the treatment was not in the database.

and ensuring backup in the event of technical difficulties or staff losses. To this end, a local consultant might enter into a cooperation agreement with foreign consultants expert in the field.

8. Lenders as Part of the Problem

By financing improvements or new roads, lenders add to the maintenance burden. In recognition of this, some lenders insert loan covenants that the new roads will be properly maintained. Even if the country complies, however, the underlying intent is not met if money used to maintain the new road is diverted from maintenance of other roads, which then go without maintenance.

Lenders usually insist on counterpart funding, on the grounds that this gives DMCs a sense of ownership of the project. DMCs are obliged to meet their share of the cost, even in times of fiscal austerity when government spending has to be cut. If lenders do not permit cuts in their projects, and if there is little other road improvement work that can be foregone, cuts have to be made in maintenance. Later, the DMC becomes open to criticism for not maintaining its roads.

9. Should Lenders Fund Maintenance?

Over the years, lenders have become more and more involved in road maintenance. In recent years, large sums have been lent to DMCs for road maintenance, particularly rehabilitation.

Why road rehabilitation? To draw an analogy with a truck: rehabilitation is akin to removing the engine and reconditioning it; periodic maintenance can be likened to running repairs; and routine maintenance is lubrication and refueling. Lending money for routine maintenance is like lending money to buy fuel for a truck: a short time later there is nothing to show for it—except the liability for the loan.

Initial construction of a road—entailing earthworks, structures, and a pavement— is capital investment, which might not be made but for foreign assistance. Once the investment is made, however, the country concerned ought to be able to maintain the investment. If the country cannot afford to maintain it, the country cannot afford to obtain it. Rehabilitation is maintenance, and should have no more claim to loan financing than periodic and routine maintenance. It is true that for any specific road, the cost of rehabilitation is lumpy, like an investment in road improvement, but that is not so for a road network, over which pavement age distribution is spread. Like routine maintenance, rehabilitation expenditure should be fairly consistent from year to year.

Lenders nowadays find themselves giving loans for pavement rehabilitation, especially where the pavements concerned have suffered accelerated deterioration through inadequate maintenance. A loan to clear a maintenance backlog can be justified only once, on the understanding that this is a last chance and that adequate budget provision for maintenance will be made in future.

III. THE LENDERS' PERSPECTIVE

In 1988, the seriousness of the road maintenance problem was revealed by a study of 85 countries that have received foreign assistance for roads.[8] Funding for road maintenance had been so inadequate that reconstruction was now needed for a quarter of the main paved road network and a third of the main unimproved network. Expenditure of more than $40 billion could have been avoided by spending $12 billion on maintenance.

Lenders identified several reasons for this state of affairs:

- *Road budgets were insufficient.* In the contest for limited government funds, roads competed with rival needs such as health care and education. Government budget setting tended to follow precedent, preserving (or even cutting) past budget shares at a time when vehicle ownership and use were expanding rapidly, and roads required an increasing share of government expenditure.
- *Pavements need periodic maintenance well before they start to break up.* To the casual observer, a pavement that is starting to crack will look to be in good condition, whereas the road engineer knows it will soon start to break up unless the pavement is resurfaced promptly. It is difficult to win budget support for fixing something that does not appear to be broken.
- *Road management was weak and work practices inefficient.* More should have been achieved with the funds being spent.
- *Maintenance funding decisions recognized only road agencies' costs. The costs of road users were not counted.* The level of road expenditure has a marked effect on road users' costs. If travel time is doubled because of poor roads, twice as many vehicles are needed to do the job. Up to a certain point, spending more on roads saves money: the savings achieved by users exceed the extra spent on the roads.
- *Road users had little or no voice in decisions on road funding.* Road user lobby groups have a strong voice in advanced economies, but are usually in their infancy in developing countries.

To combat the problem, lenders have sponsored many conferences and workshops in developing member countries (DMCs) to raise awareness of the problem and to gain consensus from stakeholders on actions needed to remedy the problem. In spite of these efforts there has been little change.

It seems that DMCs will comply with lenders' encouragements to study the problem and to develop solutions. Workshops are held. Studies are undertaken. Needs are identified. Legislation is drafted. But the legislation never gets passed. DMCs will walk the road to reform but, at the end, few will take the final step to implement change. Lenders have funded numerous studies of maintenance needs that have identified the maintenance backlog. Lenders have also funded technical assistance (TA) projects on institutional strengthening, and set up pavement management systems and bridge management systems, but with little lasting effect. Pavement management units are underfunded, databases are not kept up to date, survey vehicles disappear, and trained staff members leave for jobs that give them the opportunity to augment their salaries with informal income. Corruption distorts decision making and saps value from the monies allocated to road maintenance.

Lenders fund pavement rehabilitation to clear the maintenance backlog, only to see other roads slipping into the same state for the same reason, namely lack of timely maintenance. This is the road agency's poverty trap. It is created when more roads are built, or are improved to the

[8] Harral, Clell, and A. Faiz. 1988. *Road Deterioration in Developing Countries—Causes and Remedies.* Washington, D.C.: World Bank.

wrong standard; or when politicians approve only blacktop roads, even though these are expensive to build and maintain, and are rougher than gravel roads when neglected; or when politicians fail to recognize that some roads are no longer maintainable—i.e., periodic maintenance would be a waste of money and these roads should wait until they can be reconstructed.

To lenders, the road maintenance problem has a technical solution based on objective decision making. This is not always the perception of DMCs. The DMC viewpoint can be at the other end of the scale from the lenders' viewpoint.

IV. THE DEVELOPING MEMBER COUNTRIES' PERSPECTIVE

Developing member countries (DMCs) differ widely, and there is no single DMC view. The following points apply at least to some DMCs, but not necessarily to all.

For many DMCs, the decision-making process is intentionally subjective and political, based on consensus. Decisions require discussion, committees, and compromise. Western-style rational decision making is not the norm. Roads are regarded an essential public service, not a business. Accordingly, rational economic decision-making rules may be inappropriate.

Fairness and sharing prevail over other decision-making rules. That it is the turn of the next village to get a paved access road is more important than that it is necessary to maintain what is there before adding to the maintenance load, which is the rational view. Fairness is for politicians to judge, hence the allocation of road funds is a political process. A rational approach to allocation would force politicians to forfeit some of their power to technical people. Resentment can result from lenders' loan covenants and TAs that attempt to make rational decision making the norm.

Many DMCs do not have a culture of maintenance. Countries that lack a culture of maintenance repair roads when they fail. They do not perceive the advantage of preventive maintenance undertaken before there is a need for repairs. Sometimes, preventive maintenance is even thought to be a waste of resources. The belief is that pavements are designed to be rehabilitated after a certain time, irrespective of whether maintenance is done. It is not understood that pavement design assumes ongoing maintenance, and that neglect of maintenance leads to a premature need for expensive rehabilitation.

At the other end of the spectrum, some countries call periodic maintenance "preventive maintenance," showing clearly that they understand its value.

Some DMCs see maintenance of roads as a heavy burden on the nation and economy. They appear not to distinguish between the government and the nation as a whole. Thus they fail to see that not maintaining the roads is an even heavier burden, which falls on road users.

Perhaps the concern over a heavy burden is also a distributional issue. It may be thought that the cost of roads falls disproportionately on the poor. Some DMCs also express concern for the inflationary effects of increasing the budget for roads. All these pose many challenges for lenders. Cultural and political systems will not change just for road maintenance. Solutions must be found that work within the systems and cultures of the countries concerned.

V. THE CHALLENGES

1. To Earmark or Not to Earmark?

Many developing member countries have been encouraged by lenders to earmark, or specifically designate, road user charges, or some portion of general government revenues, to fund road maintenance.

When pressed to adopt earmarking, DMCs often resist, promising to do better within the government's existing budget processes. Such promises give lenders little reason for optimism. A government's pledge to provide adequate funds does not commit succeeding governments, and the many pressing calls on government general revenues make it a difficult pledge to keep. The evidence is that, without earmarking, there is only a small chance of DMCs' consistently allocating sufficient revenues to meet road maintenance needs. In spite of the evidence, a DMC is likely to argue that *it* is different and that *it* will succeed where others have failed. Unfortunately, a DMC that takes time to test alternatives to user charges is likely to rediscover that alternatives do not work. Time will have been wasted and roads may have deteriorated further.

Finance ministries commonly object to earmarking on the grounds that it curtails their fiscal flexibility. The International Monetary Fund (IMF) may support, or even encourage, this objection. The argument is that, in times of fiscal austerity, all tax handles should be available to cut expenditure. Yet the IMF's *Public Expenditure Handbook*[9] recognizes there can be benefits from fiscal rigidity. It also approves of earmarking where there is a strong link between the payment and the service provided. On both counts, earmarked funding for road maintenance can be a good thing.

If the real concern is that the road sector is demanding too large a share of government funds, a clear distinction should be made between network maintenance and network improvement. Road maintenance should be taken out of the government budget process and should be funded from dedicated revenues, whether derived by earmarking or from user charges.

2. Which Roads to Fund

In some countries, the national road network is the prime concern: the secondary network is simply seen as feeding the national network, and thus the emphasis should be on the national roads. The weakness of this viewpoint is that user charges are paid by all road users, not just those traveling on national highways. Those who do not use national highways pay but receive nothing in return. Revenue—user charges from gasoline sales, etc.—from the use of secondary roads all goes to national highways.

There is no practical reason why dedicated user charges should support only national roads. On the other hand, if all roads are maintained by revenues from user charges, there will be a massive transfer of money from busy highways and urban streets, which generate the bulk of the revenue, to low-traffic rural roads that generate little revenue. This is the reverse of the imbalance that arises if user charges fund only the national network.

There is an intermediate solution. Roads come in many forms, from publicly provided multilane expressways down to privately owned cart tracks. At the extremes, there is no uncertainty as to the role of dedicated user charges. The primary national network can claim full support from dedicated charges, while privately owned tracks have no such claim. But where, in the wide spectrum between these two extremes, does the transition take place?

[9] Chu, Ke-young, and Richard Hemming (eds.). 1991. *Public Expenditure Handbook: A Guide to Public Policy Issues in Developing Countries.* Washington, D.C.: IMF. Pp. 149–151. The conditions under which earmarking is likely to be beneficial are analyzed in Potter, Barry. 1997. *Dedicated Road Funds: A Preliminary View on a World Bank Initiative.* IMF Paper on Policy Analysis and Assessment. Fiscal Affairs Department. Washington, D.C.: IMF.

An answer can be found by distinguishing between the two main benefits that roads provide: mobility and access. Roads provide mobility to road traffic and access to frontage properties. With this distinction, it is possible to rate roads according to their benefits: x% mobility and y% access. Limited-access expressways confer no access benefits and are rated 100% mobility and 0% access. Tracks that benefit only the few who live along them are rated 0% mobility and 100% access. Other roads fall somewhere in between.

Funding road maintenance can be made a shared responsibility between road users, who gain the mobility benefit, and property owners, who gain the access benefit. Each pays in accordance with benefit percentages. Dedicated road user charges fund only that portion of road maintenance indicated by the mobility percentage rating. The access portion is met by property owners, which in practice means local authorities, who tax property owners and pay on their behalf.[10]

3. How to Make Pavement Management Technology Locally Sustainable

It is difficult to generalize from the experience of computerized pavement management systems in developing countries. At one extreme, they are initially adopted enthusiastically by the engineers in the road agency. On the other hand, the road agency does not want to change and the system is pushed aside following departure of the team that installed it. And there is a range of experience in between. There are systems that work as they should at day one, but sooner or later fall into disuse, perhaps through neglect of the database. Simplified systems have been tried, but these rob the pavement management system of much of its power and usefulness. To justify the effort and cost of maintenance, it helps if the computerized system is fully fledged.

Pavement management systems do not have to be computerized. Manual systems were in use long before computers. Pavement management was based on sets of rules tempered by engineers' judgment. Today, a rules-based pavement management system can be developed more scientifically by setting up a computerized system for the purpose. The computerized system analyzes representative cases and develops a detailed set of intervention rules. The engineers in the field use these rules (tempered by engineering judgment) for a few years, after which the performance of the system is reviewed and the rules revised if necessary.

Whatever type of pavement management system is used, it will achieve little unless the field engineers controlling the work find it helpful. In practice, however, the engineer in the field may feel at loggerheads with a computerized system, centralized at a head office, which dictates what needs to be done. Nowadays, computerized systems need not be the prerogative of engineers at the head office: the Internet makes it easy for field engineers to access centralized systems. Once they experience their usefulness, the field engineers become a constituency in support of the system. They will appreciate the importance of up-to-date, accurate data. Through self-interest, they will be vigilant about maintaining the database.

This is the optimistic picture. In reality, the success of computerized systems depends on more than Internet access. It depends critically on enthusiastic support by individuals in a position to make things happen. Success also depends on whether the people operating the system are satisfied with their lot. They need recognition in terms of status and salary. In countries where salaries are low, it can be difficult to persuade competent people to accept the isolation of technical positions at a head office, with uncertain prospects for promotion.

The challenge is not only how to make computerized systems work. It is also when to decide it is wise to take a step back from this level of sophistication and use rule-based methods instead.

4. How to Involve Stakeholders

In general, customers demand and expect their suppliers to give them quality and service. Road users are no exception. If road users pay for maintenance through dedicated user charges, they should expect their suppliers to deliver the standard of maintenance they want, and for which they are willing to pay. The slogan "User pay, user say" encapsulates the point.

Traditional road administrations used to take the attitude that they were doing road users a favor: users should be grateful for the standard of roads they get; users have no right to complain; roads are just one of many public services the government is doing its best to provide.

With such attitudes prevailing, it is not surprising that decisions were based on road agency costs alone, with little or no account taken of users' costs. In the absence of a customer-supplier relationship, there was little incentive to give value for money. Such systems were flawed and inefficient—from planning and budgeting through to the execution of the work.

[10] Rating roads in this way is subjective. New Zealand adopts an uncontentious 50% and 50%, on average. Wealthy urban local authorities pay more than 50%; sparsely populated remote areas pay less.

With a move to encourage users to pay, the challenge is how to introduce the concept that users have a say." The first question is, who are the users? The list of stakeholders that have something to gain or lose is extensive. The following are some of the representative groups:

- chambers of commerce,
- industrial and mining associations,
- agricultural groups (farmers, herders, plantation owners),
- tourism and hospitality industry,
- motorists' associations,
- truck operators' associations,
- bus operators' associations,
- bus users' associations,
- taxi associations,
- groups and nongovernment organizations (NGOs) with special interests (pedestrians, cyclists, poverty, environment),
- scientific and academic institutes,
- professional associations (consulting engineers, lawyers, environment groups), and
- contractors.

As the list illustrates, the users are not just vehicle operators. For example, in the case of truck traffic, commerce and industry have the most to gain from good road maintenance. Since transport costs are passed on to the customer, the truck owner's main concern is that the competition faces the same costs. To the truck owner, fair competition is more important than whether operating costs rise or fall. Suppliers, such as construction contractors, have different incentives from those of users. They have a stake in the performance of the road agency, but that stake is not due to "User pay."

If road maintenance is funded by dedicated charges paid directly by road users, efficiency gains can be made if a customer-supplier relationship can be established, emulating the marketplace through involvement of road users.

5. How to Maintain National Commitment

Reform of and funding road maintenance takes years. In that time, there is a risk that a government's resolve to implement reform will change. A government cannot commit future governments. And in government departments with weak corporate memories, new incumbents may deliberately contradict the decisions of their predecessors as a means of stamping their authority on an administration. The challenge is to get the key players to commit themselves to agreed targets and then to hasten the pace of change. The faster the implementation, the fewer the opportunities for a change of mind.

6. How to Preserve Lender Interest in the Road Sector

Lender funding of roads in developing countries has been, at best, a mixed success. When roads are not maintained properly, the forecast benefits that justified the original investment are not fully realized. In some countries, lender efforts have been so unrewarding that lenders have withdrawn from the road sector. Decades ago, the challenge was to determine where best to direct lender efforts. Today there is the added challenge of how to maintain lender interest in the road sector, in the wake of the sector's disappointing performance.

Many countries, in seeming contradiction to their lack of care of their roads, still regard roads as an engine of economic and social development. Road network development is high on their list of priorities, but road maintenance is, at best, very low on the list. For most lenders, road maintenance is high on the list of priorities; reform of road maintenance comes before new or improved roads.

To maintain lenders' interest in the sector, road maintenance has to be brought up to standard. To do that, some of the following steps have to be taken:

- *Allocate money for proper maintenance.* Winning sufficient funding for maintenance faces obstacles. One is competition from other sectors—and roads should have to compete, but for capital, not for maintenance. Another is capital bias—a preference for development over maintenance. Third, the road sector case for improved funding may suffer from a credibility problem on the part of the finance ministry.
- *Spend money allocated to maintenance on maintenance.* Money can be allocated but not spent because it is not disbursed in time for it to be used in the construction season, or it is raided for other purposes, or it is misappropriated.
- *Spend money efficiently.* Maintenance planning needs to be systematic, and based on objective economic principles, for the benefit of all of society.
- *Spend money effectively.* Carry out maintenance competently, without extravagance or waste. This may entail such things as more competitive bidding, institutional strengthening, support for the construction industry, etc.

7. Challenges to Lenders

Every government needs help—to evaluate, choose, and implement systems that ensure adequate road maintenance. Past attempts, in a range of countries, to place road maintenance on a sound footing have produced a valuable body of knowledge and experience. What works and what does not work is by now well known. In many countries, consultants have been engaged to guide governments contemplating reform, yet the results have been disappointing. As noted in the section on the lenders' perspective, history shows that many DMCs will walk the road to reform, but few have taken the final steps to implement change.

a. Choose enforceable loan covenants and enforce them

Recently, there have been signs of progress in countries faced with lender resolve not to lend more money to the road sector until reforms are implemented. Lenders do not like being heavy-handed, but threats seem to work. Assurance of adequate road maintenance is often a loan covenant, but it is not enforced. The challenge to lenders is to include only those loan covenants they are prepared to enforce, and then to have the resolve to enforce them.

b. Provide Appropriate and Consistent Technical Assistance

Another challenge to lenders is to provide technical assistance that works. Often, the assistance takes the following course: a consultant works for several months on justifying change and preparing an implementation plan; seminars and workshops are conducted along the way; and the final report is a blueprint for change, written in a style to suit the lending agency. The consultant leaves and the process, lacking impetus, stalls.

Such hit-and-run technical assistance is not effective. Reform takes years. Funding changes may require new legislation, which usually cannot be hurried. During the process, government officials may change and the consultant's report may need updating. Long-term and sustained, but flexible, lender help is, therefore, needed. Full-time consultant assistance is not appropriate: there is not enough to do, and anyway, the task of implementation should fall on government officials. If the consultant is both long-term and full-time, the consultant will end up doing the work, diminishing government ownership of the process and government corporate memory of the reforms. What is advisable is technical assistance that can step in quickly, on demand, when and where it is needed.

c. Be Consistent

The challenge to lenders is thus largely one of lender consistency. Lenders need to enforce loan covenants, monitoring their fulfillment in the long term. They need to ensure that technical assistance does not end with the production of a report that meets lender expectations. Technical Assistance needs to be sustained.

VI. A SOLUTION THAT WORKS

1. Establish a Road Maintenance Fund

A solution to the problem of long-term sustainable funding of road maintenance is to introduce user charges and to establish a Road Maintenance Fund (RMF) to manage the collection and expenditure of the revenues. *See Appendix A*.To this end, it is necessary to create a customer-supplier relationship that emulates the marketplace. To do this, road users must be heavily involved in the RMF: the RMF should be governed by a board made up of persons selected for their commitment to achieving value for money for road users, plus government officials to represent the broader national interest. Day-to-day affairs of the RMF can be managed by a small secretariat. The RMF should be an independent body, preferably one established by an act of parliament.

Dedicated road user charges can be thought of as a road tariff—a fee for road maintenance services undertaken for the benefit of road users. It should be like paying a road toll, without toll booths. The road tariff is expected to be the RMF's only source of revenue, making the RMF independent of the consolidated revenue fund (CRF), i.e., the government budget.

Transferring road maintenance funding to the RMF should be neutral to the government's CRF, which would lose the responsibility, but would also lose by earmarking exactly that amount of revenue represented by some of the taxes formerly paid by road users to the CRF. This level of earmarking is likely to be insufficient to fund a proper level of maintenance; the earmarked taxes will need to be raised or new charges added. When this happens, the newly earmarked taxes must be labeled as "user charges" to make it clear that they are part of the road tariff.

The RMF fully funds maintenance of the national road network. The tariff level is set to meet a known expenditure requirement, not the other way around. (In other words, RMF expenditure should not be determined by the revenue the tariff produces.) Funding of lesser roads should probably be shared between the RMF and local governments. From time to time, expenditure requirements will change, prompting an adjustment to the tariff. The RMF might be given qualified powers to change the tariff, perhaps on a no-objection basis after submission to the government.

The road tariff must be levied directly on road users. The tariff typically has two parts: a fee for access and a fee for use. The access fee is time-related, usually a vehicle license purchased annually, giving the vehicle the right to use the roads. The usage fee is distance-related, usually a levy on fuel, so vehicles that travel more pay more.

The road tariff should try to mirror maintenance costs. Some costs are related to road use. Pavement maintenance is an example. Since trucks cause more pavement wear than cars, the usage fee for heavy vehicles should be higher. Some costs are related to weather and the passage of time. Drainage maintenance is an example. These costs should be met by the access fee because it is time-related.

The RMF should collect the revenues and disburse money to the road agency, subject to the agency's complying with RMF conditions designed to promote value for money. RMF conditions might include use of economic analysis to justify pavement rehabilitations, quality assurance (QA) systems,[11] and a degree of contracting out. The RMF should not take over any functions of the road

[11] Quality Assurance (QA) is a system by which auditing processes ensure quality rather than the checking of each and every output. For example, safety checks of a trucking firm would focus on the firm's procedures for driver selection, training, and monitoring, rather than on the drivers themselves. QA is the subject of the ISO 9000 series of standards published by the International Standards Organization.

agency, which would carry out the same functions as before, but might have to improve its performance.

An important task for the RMF is to make publicly available, and to actively disseminate, information that allows road users to see where the money is spent and what is achieved. This engenders user support, which is essential when charges have to be raised.

The RMF does not operate in a competitive environment and cannot be made bankrupt. Thus, the affairs of the RMF must be fully transparent. The government will be well informed, due to the presence of government officials on the board, but that is not enough. An annual report and audit should be presented to parliament. In addition, every few years technical audits could be undertaken by international consultants, and made public. In some countries, the RMF produces weekly programs on radio and television to actively publicize its work. The Internet is an efficient and effective means of making information on roads and the RMF publicly available. The information should include time series data on the state of the network, so people can see whether the network is improving or deteriorating.

At the beginning of this document, four causes of inadequate road maintenance were identified. Dedicated road user charges, with an RMF to manage the revenues, are an effective response to all four:

- *Money is not allocated (in sufficient amounts).* The level of user charges is determined by the expenditure needs. Thus, there can be no shortfall in revenue (to pay for justifiable maintenance requirements).
- *Money is allocated but not spent.* The problem of lumpy flows of funds will not arise, since the RMF receives its revenue from user charges at a steady rate. The problem of funds being released too late to be spent in the fiscal year will be obviated, since the RMF's revenue cannot be spent on anything other than road maintenance, and surpluses can be carried over to the next fiscal year.
- *Money is not spent efficiently.* Efficiency is served by RMF rules governing how road agencies prepare their works programs. Road agencies must take an economic approach that recognizes the costs of road users.
- *Money is not spent effectively.* Effectiveness is served by RMF rules governing how road agencies execute their works programs, such as use of competitive bidding for contracts. Agencies will be subject to more transparent financial and technical auditing, and may be obliged to introduce QA systems.

2. Have the Finance Ministry Promote the Road Maintenance Fund

A proposal to set up an RMF will usually have evolved over a long period, typically in the following stages. Working with the road agency, a TA study of the road sector identifies areas in need of strengthening. One of these areas is maintenance funding. A TA addressing road needs is undertaken to identify the maintenance backlog and to assess the long-term maintenance funding required once the backlog is cleared. Lenders undertake to help with clearing the backlog, but insist that the government take steps to ensure proper maintenance from now on. (Lenders want assurance that a backlog does not happen again and that road users benefit, as intended, from properly maintained roads.) To equip the road agency to plan road maintenance, a TA project installs a pavement management system, trains personnel in its use, and leaves behind the equipment needed to keep the database up-to-date.

In the above process, the road agency is the advocate for change. Sitting in judgment are the finance ministry and others. It can be assumed that the finance ministry is averse to losing control of even part of the road budget. The finance ministry's concerns are magnified if the pavement management system produces extravagant claims for funding. These issues serve to compound the finance ministry's habitual concern for the large amount of money controlled by the road agency engineers. And now these same engineers are arguing that maintenance is underfunded. The finance ministry is reluctant to give them even more money to spend. To the finance ministry, it is like appointing the poacher as gamekeeper.

For these reasons, the finance ministry opposes setting up an RMF. The finance ministry may be persuaded (or instructed) to cooperate in developing a proposal for an RMF, but it remains a powerful player that is inherently opposed to reform. This is why countries that take the path to reform often freeze at the last steps, namely, giving the reforms the force of law.

There is an alternative approach.

The finance ministry is the primary government agency concerned about value for money. In every sector, a primary goal of the finance ministry is to promote economic efficiency, promote effective implementation, and fight corruption. It follows that the finance ministry—

even more than the road agency—should be concerned about sustainable roads. If the finance ministry looks beyond the narrow monetary aspects of a road fund, it will see many benefits from establishing an RMF:

- The RMF will impose a discipline on (i.e., exercise a supervisory role over) the road agency, in a way the finance ministry cannot.
- Because it understands the needs of those who benefit from roads, the RMF is better placed than a government agency to promote economic efficiency.
- The RMF, by setting rules with which the road agency must comply, can make implementation more effective, e.g., by ensuring that at least a portion of the work is competitively tendered.
- By requiring financial and technical audits, the RMF will help combat corruption.
- The RMF will introduce QA to the road sector. From there, QA can spread to other government sectors. QA is poorly understood in developing countries, most of which have difficulty even delegating authority. The potential gains from delegation and QA systems are enormous.

Examined in this light, the finance ministry should be the promoter of the RMF. The RMF will accomplish many things the finance ministry would like to see happen, but has not been able to achieve. The RMF is more closely allied to the finance ministry than to the road agency. The RMF takes nothing away from the road agency, which continues to do the same job as before—only better, as it must comply with rules set by the RMF to win its funding.

3. Establish Locally Sustainable Pavement Management Systems

There is no alternative to computerized pavement management systems, such as those based on HDM3, when extrapolating further than the next few years. There is no other practical way of forecasting pavement conditions many years ahead. Thus, computerized systems are essential for maintenance policy studies. As working tools, however, computerized systems are good only if there is an institutional ability to use them and an institutional commitment to maintaining them. The prime need is to keep pavements intact. Rolling 3-year maintenance plans are sufficient for that, especially since accurate prediction is not needed for years two and three. The following approach can then be taken:

- *Routine maintenance.* Perform it thoroughly, as it is always economically justified (and is poverty-alleviating).[12]
- *Periodic maintenance.* When bitumen embrittlement risks widespread cracking, rejuvenate with fresh bitumen and a stone chip wearing course.
- *Rehabilitation.* As roughness accumulates, and user costs increase, use economic analysis (at, say, a 25% annual discount rate) to find the right time to restore pavement smoothness and durability.

Budgeting for routine and periodic maintenance needs only simple rules and a database of pavement condition. The rules can be revised in line with experience. An annual roughness survey is one means of keeping track of network condition. For a properly maintained road network, the average condition of the network will not get better or worse.

4. Fund the Maintenance Backlog

To guarantee continued public support, the RMF needs to show early results. Public support is more likely if today's road users are not burdened with the cost of past mistakes. Removing maintenance backlog has to be funded by government general revenues or loans. Road users will quickly see big improvements and will link them to the introduction of road user charges (when in fact there is a lag between introducing the charges and seeing widespread benefits from them).

It is better to clear the backlog sooner rather than later. But sudden removal of the backlog would cause lumpy maintenance needs in the future. If the whole backlog were removed in one year, a need to reseal all those roads would arise in about five years. If the backlog were removed over a period of five years, which is more likely, then the every-five-year reseals would be spread evenly and the problem of lumpy maintenance needs would not arise for 15–20 years, when these roads come up for rehabilitation. By then, the RMF should have been operating successfully for 15 years and could presumably be trusted to borrow on the commercial money market to cover the temporary rise in funding needs.

[12] In routine maintenance, cracks are treated before they get too bad and start causing potholes. Pavement edges are maintained to prevent edge break. Drains are cleared and kept flowing freely; water under the pavement is to be avoided. Grass is cut, to maintain a root structure and hold the soil together. Localized pavement failures are dug out and pavement is restored by hand methods using small mechanical equipment for compaction. Labor-intensive and poverty-reducing, routine maintenance transfers income to rural areas, and is cheap.

5. Acquire Lender Support

It is imperative that lenders support DMCs when they commit themselves to reform road funding. Lenders can assist by helping fund the maintenance backlog. They might also help fund the RMF in the early years, so the RMF can be established initially with little or no increase in cost to road users, thereby winning their support. Over 5 years, user charges could be ramped up and lender funding could be phased out. Lender support such as this is a better inducement to reform than loan covenants or threats to suspend road sector lending.

In the past, lenders' well-intentioned efforts to remedy deficiencies and clear the backlog of road maintenance have been misdirected. Ad hoc support to DMCs has not worked because the countries themselves had no plan for a permanent solution. What is needed is a holistic solution to

- clear the maintenance backlog;
- fully fund road maintenance through dedicated user charges;
- set up an RMF board to manage the revenues and monitor expenditure of funds; and
- carry out an institutional strengthening program to support the RMF in its early years and to help implement other elements of reform (such as better maintenance planning and use of economic decision-making rules, introducing improved maintenance methods, reforming procurement, transiting from force account to contracting, providing training and support for contractors, and educating financial institutions in commercial banking so they can provide capital support to successful contractors).

All lenders active in the road sector of a particular DMC should cooperate and follow the approach. Implementing the road funding aspects of reform requires the following steps, some of which may be concurrent:

- Reach agreement with the government
  - on the existence of a road maintenance problem;
  - on an affordable share of resources to allocate to roads, at a macroeconomic level;
  - that restoration of the network will be met by government general revenue, or loans;
  - that maintenance (which includes rehabilitation) has first priority;
  - that maintenance will be funded by dedicated user charges; and
  - that an RMF with statutory independence will manage the revenue.
- Determine the level of the maintenance backlog and identify what maintenance needs will be ongoing after the backlog is cleared.
- Decide on the form that the independent RMF should take, and prepare for the required legislative steps to introduce dedicated charges and establish the RMF.
- Carry out an institutional review to determine what reforms are warranted, in addition to funding.
- Reach agreement with the government, and all lenders active in the road sector, on an action plan with target dates to
  - establish the RMF;
  - provide funding for clearing the maintenance backlog and providing transitional finance for the RMF;
  - provide technical support for the RMF in the early years;
  - implement needed institutional reforms/ strengthening; and
  - provide resources for monitoring progress and adherence to the plan.

Agreeing, at a macroeconomic level, on an affordable share of resources for roads puts road funding in a national context. Then, after the road maintenance portion is identified, what remains for network improvement becomes clear, including counterpart funding for lender projects. A short policy statement should be written reflecting the conclusions reached. This is a top-down approach designed to strengthen the country's corporate memory, which can be short, as described in Chapter V, Section 7b. If the approach is "bottom-up," with the road agency arguing it needs more money, sustained commitment to reform is less likely.

6. Take Steps Toward Sustainable Funding of Maintenance

In many countries, lender initiatives to help remedy poor road maintenance have met with limited success. The reasons for maintenance neglect are understood, and understandable. The remedies seem clear enough, at least to lenders, but the remedies face resistance to change. Even in countries that have accepted the principle of user pay for road maintenance, the commitment to reform is less than wholehearted, and the process of change tends to stall at the point of implementation. The following is an approach that offers a better chance of success.

a. Gain Acceptance of a Maintenance Problem

The road agency will require no convincing that there is a maintenance problem. The target audience is the finance ministry and the politicians. Indeed, it is the finance ministry that should put the question as to whether a maintenance problem exists. The finance ministry is the government agency vitally concerned about the efficient use of resources—value for money—and, therefore, that the nation gains the full benefit from its road system.

Determining whether the roads are in poor condition is an empirical matter.[13] It involves working with the road agency. If the road agency has a pavement management system, answers can be derived from that. Otherwise, an examination of some representative roads is sufficient .

If a maintenance problem is confirmed, a preliminary assessment should be made of the underlying causes. The remedy is rarely a case of merely providing more money. Indeed, if other problems are fixed first, there may be no need for an increase in money. Potential contributors to maintenance problems include poor planning; ad hoc political decision making that foils systematic planning; deferred rehabilitation, because it is treated as capital not maintenance; poor execution of works, which may be due to lack of training or equipment; inappropriate relationships between sector institutions; lack of competitive tendering; materials supply problems (e.g., quarry permit difficulties); high unit costs (e.g., monopoly pricing of bitumen); and diversion of funds, such as from maintenance to improvements, or by misappropriation.

b. Bring Stakeholders Together for Briefing and Discussion of Remedies

A workshop about 3 days should be convened for stakeholders—government officials, road user representatives, and leaders of commerce and industry. The aim is to inform stakeholders and reach a consensus on the problem, its possible causes and remedies, and the way forward.

Some of the participants will need education on basic concepts. Some may not know that road user costs can—much less should—be taken into account when making decisions concerning road maintenance. The significance of preventive maintenance may not be appreciated. It is helpful to include descriptions of successful maintenance systems in other countries.

c. Publish a Position Paper

The finance ministry or the government should issue a position paper setting out the problem to be resolved, the specific matters to be addressed, a timetable for the process, milestones and decision points, and the responsibilities of the participants. The position paper will inform the general public and build a corporate memory of agreed actions.

d. Conduct Studies and Investigations

The position paper leads to a number of matters needing study and investigation.[14] Many will concern matters not directly related to funding such as strengthening the capabilities of the road agency, banking system, and contractors. It is not possible to anticipate all the studies that might be needed, and the focus here is on the two studies needed to address the funding issue: a road maintenance study and a road funding study.

i. *Road Maintenance Needs Study.* A network that has lacked adequate maintenance will have developed a backlog of maintenance. Restoring the network will require rehabilitation and reconstruction, after which it should need only normal ongoing maintenance to keep it in proper condition. Funding is needed for clearing the backlog and for ongoing maintenance thereafter. It is the ongoing maintenance that dedicated user charges should fund. A study to determine the road maintenance needs should be guided by a steering committee drawn from the finance ministry, road agency, and other parties with contributions to make. This study should be in the public domain.

ii. *Road Funding Study.* To ensure that the earmarking of road user charges has a neutral effect on the CRF, a study of road funding is needed to recommend which taxes (or parts of taxes) paid by road users are best earmarked for the RMF, then relabeled as user charges. The study also needs to consider cause-and-effect relationships between road use and road agency costs, so that user charges reflect the impact of each class of user on the roads. This may necessitate adjusting the charges or adding new ones. The study should recommend how much of the secondary road network's costs should be funded from road user charges. If the dedicated charges include fuel levies, diesel

[13] Road user costs enter into the assessment of whether a road is in poor condition.

[14] There is a potential role for lenders to assist with all these studies.

that is used for nonroad purposes has to be considered. Such consumption can be made subject to exemption, refund, or compensation. Options for managing the revenues from dedicated road user charges will be developed, among which will be a proposal for an RMF. Candidate designs for an RMF will be presented. This study should be in the public domain.

g. Encourage Public Comment/Prepare a Policy Paper

At this point the government has a choice. It may decide on the best course to follow and draft a policy paper, on which comments are invited from interested parties. Or it may prepare an options paper, inviting public comment on the options, prior to making a final decision. The final result, after comments are received and considered, is a policy paper on road maintenance funding. If it is decided to introduce dedicated road user charges and establish an RMF, the next step is to prepare for implementation.

h. RMF Organization and Management

Various approaches can be taken to RMF composition and operations and the choices will be country-dependent. There are many matters to be considered here: the RMF's mission statement, composition of the board and secretariat, authority to disburse monies, audit, and much more. See Appendix A for more details.

i. Empowering Legislation

Empowering legislation for the RMF will have to be drafted for submission to the government.

j. Activation of the RMF

Once the legislation is passed and takes effect, the RMF will take an interest in the parallel reforms arising from the position paper. The RMF board may elect to add its support for those reforms and assist with funding (if empowered to do so).

VII. AN ALTERNATIVE SOLUTION

There are strong reasons for implementing Road Maintenance Fund s in developing countries. Not only does an RMF solve the problem of inadequate road maintenance, but it also introduces worthwhile reforms into the business of road management. Despite these advantages, however, a country may refrain from taking steps to implement an RMF. Worse, a country may take steps to implement an RMF in name, but not in substance. A defective road fund may be worse than no road fund at all, because it may block the implementation of an effective system of road funding.

If a country will not commit itself to implementing an RMF that embodies the essential elements of good practice, it may be because the country is being pressed to reform too quickly or too soon. Rather than pressing the issue, it may be better to step back and let the country itself set the pace of change (if it is prepared to do so) and take responsibility for determining its own reforms—which may, ultimately, include an RMF.

There is much in favor of self-reliance in the process of change. Change has a better chance of being accepted and sustained when a country takes its own initiatives and relies on itself, first and foremost, to carry out reform. The following section sets out what is involved in the self-reliance approach as a path to progress in countries showing a reluctance to commit to a good practice. A more detailed exposition is presented in Appendix B.

1. Self-Reliance

Any process of change faces problems of sustainability. This is particularly so if the driver of change lies outside a country. When solutions are developed and promoted by development agencies, the momentum of change is often lost once external consultant assistance and funding comes to an end, as eventually it must.

Sustainable improvement in road funding and maintenance is more likely if there is national *self-reliance* in determining and implementing new systems. It is human nature to be more committed to things that one decides for oneself. Change and reform are more likely to be successful when the choices are made by those who will be affected by the change and reform—provided those persons are fully informed about the options and their consequences.

It is not easy to achieve national leadership for change supported by, rather than driven by, external development agencies. Initially, key individuals may sponsor and promote change. But individuals can be reassigned overnight. Government personnel move with career progression. Political appointments are subject to change. Time is needed to ensure that the benefits and implications of change are understood, not only by currently influential government officials, but also by those who might replace them as a result of political or administrative changes. Changes need to be understood by all, and not by individual personalities.

2. Transformation Forum

One way to charge up national leadership for change is to create a forum of stakeholders to be the focus and initiator of change. The forum need not be limited to issues of road funding and maintenance. The forum can be given a mandate to look at all changes in the road sector and to formulate a high-level view of how the sector should be transformed for the better.

Such a transformation forum should include representation from a cross-section of road stakeholders. The forum should be responsible for deciding what needs to be done and for taking action. Rather than passively receiving and considering proposals presented by external agencies and their consultants, the forum should actively decide its requirements and commission assistance as required. The forum must be the driver of change, coordinating all agencies' inputs and integrating the inputs from any external technical assistance.

3. An Agenda for Change

The transformation forum's first step in developing a local solution should be to establish an agenda for change. This task can be approached by identifying currently perceived failings in the way that roads are managed and financed at the present time, and how these matters should change in the future. The agenda should cover all issues, and not be constrained by previous initiatives. Changes already in progress may be included, in which case they become subject to the jurisdiction of the transformation forum. For each item, there should be a statement of what is perceived to be wrong at the moment, and a vision of a better state of affairs in the future. The agenda for change should be formally approved by the transformation forum, and published. It should be reviewed regularly, and updated if warranted, so that it represents current perceptions of what needs to change.

Development agencies may participate in developing the agenda for change if they are members of the transformation forum. Whether members or not, they may assist by providing supporting information and facilitation. Development agencies should not lead development of the agenda, or attempt to develop it independently. The agenda must be locally owned.

Once an agenda for change has been developed, the transformation forum should formulate a plan of action for each item on the agenda. Priorities should be set, and methods of addressing each item determined.

4. Development Agencies as Facilitators, not Drivers, of Change

Under the transformation forum approach, development agencies become facilitators of change, rather than leaders and drivers of change. Development agencies still have a role to play in encouraging and supporting improvements, but it is different from the type of assistance they have given in the past.

No matter how well-intentioned, external assistance has not always been successful. Countries sometimes agree to technical assistance for the wrong reasons. Some technical assistance is even counterproductive: it leads to dependency; it is disjointed; projects start and stop; different development agencies have different priorities and agendas; different consultants offer differing interpretations of international good practice.

Sustainable change is not served by piecemeal technical assistance projects, starting and stopping to fit funding deadlines, and producing conflicting advice that reflects the varying views of consultants, project officers, and development agencies. Development agencies must work together to overcome the shortcomings of past technical assistance, and to integrate their activities into those of the transformation forum.

Road sector reform is not a cake to be divided up between different agencies, with each agency pushing an agreed component of reforms while others turn away to concentrate on their areas. Each agency should stay involved to ensure that inputs and knowledge are properly coordinated and integrated; involvement must be constant, flexible, and long-term. Change cannot be hurried by intense short-term inputs of targeted skills and financial resources.

5. Supporting the Process of Change

a. Promoting Understanding

Generally, the public is well aware of how poor road maintenance is, but is unaware of the reasons for it. Government officials are often well aware of the difficulties faced, but are unaware of the potential solutions. Lack of understanding leads to strong public reaction against increases in charges such as fuel taxes and vehicle licensing fees, because the public— often justifiably, based on past experience—does not believe that increasing road user charges will solve the problem. Lack of understanding by government officials, and the public, can lead to implementation of inappropriate solutions, leaving the problems unresolved.

An information campaign to develop knowledge and understanding is an important step toward sustainable change. Information campaigns can take different forms, and all avenues should be considered: television discussions and debates, series of newspaper articles, use of the Internet, and workshops and seminars at all levels (national meetings, local community groups, and specialist interest groups such as transport operators).

b. Dialogue Between Countries

To date, developing countries have had little exchange of experience and knowledge through ongoing direct dialogue. Their channels of communications have been via intermediaries: development agency experts and consultants moving from country to country, and one-off regional or country workshops, sponsored by development agencies. Self-reliance has been absent. In many countries, a body of local knowledge is building, as experience on implementation of road sector reforms increases. By now, countries should be exchanging experience directly, in an ongoing way, without the need for intermediaries.

The Internet offers a low-cost medium of communications. Country-to-country exchange of knowledge can take place through web pages and e-mail. The Internet is also becoming increasingly important as a means of communication within countries. Direct sharing of experiences among countries, and among stakeholders within countries, will rapidly expand the body of knowledge upon which the transformation forum bases its decisions and actions.

c. Information Updates

Lack of information about what is happening can produce adverse results, especially if there are suspicions among the public that decisions are not being based upon objective criteria, or that money is being misappropriated or misallocated. The best way to combat these problems is to make freely available appropriate information about how and where money is spent, and to ensure that it is accurate and up-to-date.

The Internet should be the primary method of disseminating such information. Although the Internet is not yet freely available to everyone, it is available to key groups—particularly to the media and nongovernment organizations, which ensure widespread dissemination of important information. The Internet has the specific advantages of

- immediacy—as soon as information is on the Internet it is available to everyone;
- uniqueness—there is only one version of the information, namely, what is on the web site, and
- low cost—printing and transport costs are eliminated, and information can be free.

d. Use External Resources Wisely

Development agencies will no doubt offer support for the process of change. However, offers of technical assistance and external funding should be accepted only when they fit into the overall plan. The transformation forum should be aware that every input by an external agency poses a potential sustainability problem: eventually, external inputs will end.

If new skills are required, a plan to develop these skills should exist from the start. The plan should state which skills will be developed, and by whom. When external assistance is envisaged, it should be viewed against the backdrop of when the required expertise could be available without external assistance. The plan must be resilient enough to allow for critical individuals' changing jobs before the process of change is complete. It must provide for training of personnel to take over when current staffs are promoted, retire, or change jobs.

If new equipment is needed to support road management and maintenance activities, a realistic assessment should be made of whether the resources and skills exist locally to operate and maintain such equipment. If external resources are required when breakdown occurs, or when maintenance is required, use of the equipment will not be sustainable once external funding ceases. Long-term replacement of equipment also needs to be considered. Local funding may not be available to replace equipment, in which case the choice of equipment may be inappropriate.

The plan may call for external assistance and expertise over a long period. About 5–10 years may be needed for sustainable change. It is unrealistic to try to anticipate all the needs that will arise, and when they will arise. (For example, a political change may suddenly present an opportunity to gather stakeholders together in search of consensus. The infusion of external assistance, delivered immediately, may yield large paybacks.

e. Flexible Support from Development Agencies

There will often be a need for short-term inputs, on demand, as and when the transformation forum identifies matters that need to be addressed quickly, to keep changes on track. To be useful, external assistance needs to be responsive to needs as and when they arise.

Conventional technical assistance does not meet the need for short, flexible inputs from external sources. Conventional technical assistance projects usually have long lead times, imposed by budget planning, and provide intense inputs for short periods. Consultants follow terms of reference that were conceived at an earlier stage and that may no longer be relevant. Confusion may arise from the use of different consultants expressing various (sometimes conflicting) views. Adherence to rules that insist on competitive bidding can lead to changing from one consultant to another, to the detriment of the country being assisted. To support the transformation forum, development agencies need to be capable of providing appropriate, flexible expert inputs at short notice.

6. Keeping Changes On Track

a. Stakeholder Influence

When the process of change is open, and details of what is happening are freely available, stakeholders and the general public can be expected to take an interest in ensuring that changes work and road conditions improve. Channels are, therefore, needed for regular communications with stakeholders, to listen to their opinions and feedback. If the road transformation forum includes effective representation of road stakeholders, and meets regularly, such feedback should be simple to arrange.

b. Regular Assessment

The transformation forum's agenda for change can be likened to a living organism, adapting to events and the environment. Similarly, the transformation forum should regularly take stock, and adapt as needed. For this reason, the forum should schedule regular meetings—say, every two months.

To assist the transformation forum in assessing and monitoring progress, standard guidelines should be used. Each meeting of the forum should review every item on the agenda for change, record progress made or planned, and confirm, modify, or formulate future actions. The agenda for change should itself be reviewed, and either confirmed or amended. And the transformation forum should review its own functioning, and whether its composition is still appropriate.

Immediately after each meeting, official minutes should be circulated to all stakeholders, including external development agencies, so there can be no doubt about the full picture of what is happening and who is doing what.

c. Audits

As soon as they are available, the official minutes of meetings of the transformation forum should be independently audited, measured against the same standard guidelines as used by the transformation forum. This provides a quality check for all concerned that the forum is carrying out its activities as intended.

The audit provides some assurance to the public, road stakeholders, and development agencies that the transformation forum is acting in accordance with established guidelines. Without the audit, the transformation forum is accountable only in the court of public opinion.

d. When Things Go Wrong

In the process described above, there are no sanctions if the process fails to function as intended. Realistically, sanctions would be of little value; they would stand a good chance of being overridden politically. Rather than try to impose sanctions after the event, the process described above aims to minimize the chance of failure before the event. The aim is to identify problems before they occur (or as soon as they occur) and to spur immediate remedial action. This is why the focus is on minimizing known problems and on regular and effective monitoring.

The above two-stage process—a local transformation forum deciding actions to be taken, followed by an independent audit to check the validity of the forum's deliberations—keeps decision making local, but with accountability built in, for the benefit of all concerned.

VIII. AN APPROACH TO COMBATING MAINTENANCE NEGLECT

Sufficient experience has been accumulated to assert confidently that, for a country that is underfunding road maintenance, setting up a good practice Road Maintenance Fund (RMF) would be highly beneficial. Maintenance neglect causes great economic loss, mainly because of high costs imposed on road users. Such economic loss is best removed sooner rather than later. Recommending to a developing member countries (DMC) that it institute a good practice RMF, as soon as possible, is a responsible action for an international development agency to take.

If a DMC does not act upon such a recommendation, the fallback is to recommend that the DMC itself analyze the performance of its road sector and, from an analysis of shortcomings, develop its own solutions—supported in that process by international and bilateral development agencies. Such a process was described in the previous section.

In recommending a good practice RMF, development agencies must recognize that countries differ. There is no need to recommend a standard solution, but there are limits on how far to depart from good practice. A poor practice road fund would be worse than no road fund at all; it could block implementation of a good practice fund.

An irreducible minimum set of ingredients will qualify an RMF as good practices.

- Road users, stakeholders, and the general public must be well-informed about proposed reforms, and must understand the need for an RMF and dedicated road user charges.
- All RMF revenue must come from user charges related to the benefits gained from road use and access. The revenue will likely come from
  - levies on consumables, mainly fuel;
  - annual vehicle license fees;
  - supplementary heavy vehicle fees;
  - fines for overloading vehicles; and
  - international transit fees (where appropriate).
- Road users and stakeholders must have a strong hand in the RMF and administration of expenditure from road user charges.
- A clear separation should be maintained between purchaser and supplier functions, between funding and executing maintenance. The RMF provides funds for road maintenance on a sustained basis; it does not undertake implementation or procurement, although it does set rules for implementation and procurement, to ensure that road users' funds are efficiently and effectively spent by road agencies on implementation.
- The RMF must be able to hold road agencies accountable for funds it gives them. Thus, the RMF must have full legal powers to set responsibilities, establish performance targets, and introduce sound business practices.
- Full information on the planned and actual expenditure of those RMF revenues must be openly and promptly available to the public.

In sum, a good practice RMF must have as this mission: the promotion of efficient road network maintenance, to a standard that road users want and are willing to pay for, by collecting the road tariff and allocating funds to road agencies that comply with RMF standards for sound planning and execution.

Appendix 1. Road Maintenance Fund: Current Good Practice

1. Recent History of Road Funds

Not all countries need road funds to ensure adequate road maintenance. Road funds are not needed in the developed world, where networks are mature, budgets are sufficient to maintain road smoothness, road management is good, the staff is skilled, corruption and political interference are not everyday problems.

In developing countries, lack of road maintenance is a serious problem. Programs to address it have been initiated under international assistance, notably by the German Agency for Technical Assistance in Latin America and the World Bank and other aid providers in sub-Saharan Africa, where the Road Maintenance Initiative was begun in 1987. In these sub-Saharan countries, about 40% of the road network was in need of rehabilitation, the neglect being mainly due to insufficient and erratic maintenance funding. Typically, road agencies were allocated only around 40% of their assessed maintenance needs; actual disbursements were often much less. The agencies inefficiently used the money they received: they had large workforces with low productivity, so that wages took most of the very low funding, leaving little for fuel and materials to do any work; weak planning and programming and frequent political interference in day-to-day operations also interfered with efficient functioning.

With assistance from lenders, many countries tried to correct these problems by increasing road user taxes to provide more maintenance funds, reducing the permanent workforce, increasing the use of contractors, and installing sophisticated computer-based pavement management systems.

Generally things did not work out as intended. Road user tax increases were absorbed into the consolidated (overall) budget, and little emerged for road maintenance. Delayed payments, erratic workloads, and inflation bankrupted the contractors, or else they charged inflated prices to cover these risks. Sophisticated pavement management systems were installed, but then lapsed due to lack of funds, qualified personnel, and support by senior management.

Experience in both Latin America and sub-Saharan Africa points to deficiencies in road sector institutional structure. Roads are not considered part of the market economy. No clear price is derived for road use. Road maintenance budgets are not determined by what users want and are willing to pay for. Government agencies are not geared to provide a user-oriented service and, at salaries that are a fraction of the market rate, cannot attract, motivate, or retain qualified personnel. Management efficiency struggles against a vague separation of responsibilities, ill-defined performance measures, and weak accountability.

2. Can Commercialization Work?

Can commercialization succeed in reforming road maintenance, as it has with other public utilities, such as water, electricity, and telephone services? Commercialization would require a customer-supplier relationship between road users and road agencies, with clear responsibilities, authority, performance targets, incentives, and accountability. A road tariff would ensure that road users pay a price for road use and, in return, get what they want and are willing to pay for. Since there is no competitive market in which road user preferences can be observed or deduced, ways of involving users in road management decisions and choices are needed.

Solving the road maintenance problem is thus founded on two interdependent priorities:

- funding road maintenance though a road tariff and involving users in road management, to ensure that maintenance is user-oriented and provides value for money; and
- setting clear responsibilities, establishing performance targets, and introducing sound business practices to ensure effective management and execution of road maintenance.

Changing to a fee-for-service system of road user charges requires road user support. For this, there must be assurance that the revenues will be used efficiently, and for the intended purpose. The evidence from many countries is that users are happy to pay more if they get better roads. They know they will save more money, through lower travel costs, than the extra they pay for road maintenance.

Road users can most easily be involved in road management through management boards. These are now fairly common in sub-Saharan African countries and elsewhere. Most of these countries have, at least in principle, accepted the view that commercialization of road management is the way forward. A number are in the process of implementing parts of the reforms. While there has been some progress in policy and institutional reforms, most countries still have a long way to go before sustainable road management is in place and is showing tangible results. A recent review of sub-Saharan countries indicates that overall, the main paved roads are in about the same poor condition as they were 10 years earlier.

Early, first generation attempts at road funding reforms were not successful, and some failed completely. These comprised a ring-fenced account, usually residing within the national accounts administered by government officials, into which revenues from road users were paid; the revenues were supposed to be protected from diversion to other uses and to be sufficient to fund all road maintenance. This only accomplished part of the job. First, generation funds have evolved into second generation road funds: road user charges are paid into a fund administered by an independent board drawn from the public and private sectors,[15] with a private sector chairman and majority, and a mandate to ensure that the funds are spent effectively and efficiently and that road users get value for their money. Second generation funds appear to be more successful, although the rate of success will not be known until they have functioned for several years.

[15] Private sector is used here to refer to representatives of the interests of road users.

3. The Compass of the RMF

a. What Roads Should the RMF Support?

Dedicated road user charges paid to a road maintenance fund (RMF) should fund all maintenance of the national highway network. The RMF would find it convenient to deal only with the road agency in charge of the national highways, but that would ignore lesser roads, which may suffer even more from lack of maintenance; these roads contribute revenues to the RMF and should receive some assistance in return.

Lesser roads should be partly funded by the RMF. For other than national highways, funding road maintenance can be a shared responsibility between road users, who gain the mobility benefit, and property owners, who gain the access benefit. Each pays in accordance with benefit percentages: dedicated road user charges fund only that portion of road maintenance indicated by the mobility percentage rating, while the access portion is met by property owners; in practice, this means local authorities, which tax property owners on their behalf. The RMF typically contributes 50%, adjusted up or down according to the ability of provinces and local authorities to raise revenues to partially fund roads. At the community level, local contributions could be made through contributions in kind, such as free labor.

b. What Expenditures Should the RMF Meet?

The RMF's objective is to secure proper maintenance, including all activities needed to keep the roads operating indefinitely, and to clear up the maintenance backlog, which typically amounts to one third of the road network:

- routine maintenance (restoring drainage, filling potholes and cracks, and maintaining edges),
- periodic maintenance (resealing, about every 5 years, to rejuvenate the surface), and
- rehabilitation (overlaying, about every 15 years, to restore smoothness and durability).

The RMF should also fund administration, planning, programming, and monitoring of maintenance operations, which are integral parts of maintenance; studies and training; and research and development relevant to road maintenance.

Minor road improvements are capital—not maintenance—expenditures; but to save money, they are done at the same time as rehabilitation. Traffic can grow markedly 15 years or so between rehabilitations; it would be wasteful to rehabilitate a road that is likely to become inadequate before its next rehabilitation in another 15 years. Rehabilitation requires large quantities of materials and the mobilization of heavy equipment. Including minor improvements, such as easing tight corners to improve safety or paving the shoulders for slow-moving traffic, adds little extra cost.

Major improvements, such as building new roads or bridges, remain classified as capital expenditure items, which stay under parliamentary budget control. This preserves fiscal flexibility, which is the ability to spread the budget cuts over all sectors at times of economic hardship. Sometimes earmarking taxes for specific purposes is criticized as reducing fiscal flexibility, but since the capital budget for roads remains under traditional budgetary control, that is not the case here. Dedicated funding for maintenance simply removes a bias against maintenance that is very costly to the nation.

4. The Road Tariff

a. Which Taxes and Fees should be Dedicated Road User Charges?

Road user charges should be simple and directly related to road use—a "road tariff" paid by road users to meet the cost of road services provided for their benefit. Generally, it should comprise the following:

- *Levies on consumables, mainly fuel.* Fuel levies are simple, readily understood by the public, and easy to collect. Fuel is not the only consumable that can be levied, however. If higher fuel prices are a concern, part of the revenue can be raised by levies on lubricants, tires, and spare parts. (In fact, the vehicle itself wears out with use, especially in the case of working vehicles; in principle, a levy could be applied to the purchase of new vehicles.)
- *Annual vehicle license fees.* Conceptually, annual vehicle license fees pay for time-related road maintenance costs (whereas fuel levies pay for use-related costs).
- *Supplementary heavy vehicle fees.* Annual vehicle license fees also have another purpose. They can be used to refine use-related charges. A diesel levy is sensitive to the weight of a heavy vehicle but not to the number of axles that spread the load on the pavement. More axles mean less pavement wear. Part of the diesel levy can be switched to a supplementary annual fee for heavy vehicles that reflects both vehicle weight and number of axles.
- *Fines for overloading.* An overloaded heavy vehicle causes dramatically more pavement wear, the cost of which should be added to the fines paid by apprehended vehicles and paid to the RMF.
- *International transit fees.* Vehicles entering from other countries should face costs of road use equivalent to those of domestic road users.

Road user charges must be confined to fees directly related to road access and use. They should not include, for example, inspection fees for vehicle mechanical fitness and safety. (Vehicle inspection fees should meet the inspection costs.) Neither should lottery proceeds, taxes on business turnover, and the like, be components of a road tariff.

To give a sense of proportion to the road tariff, an analysis of some developing countries in Latin America[16] found that the cost of maintaining the entire road network could be met from a fuel levy of only 7–9 US cents per liter. The fuel levy would be lower if some of the cost were met by an annual vehicle fee, and if the cost of maintenance of lesser roads were shared with local bodies. These other revenue sources could potentially halve the fuel levy to around 4 US cents per liter.

Why can't road use charges be met by making all roads toll roads? There are three reasons.

- Only roads carrying thousands of vehicles a day are candidates for toll collection. Otherwise the cost of collection adds significantly to road operating cost, and becomes an added burden on road users.
- Tolling is feasible only for roads with access limitations. Otherwise, vehicles detour around toll plazas.
- Since users would pay both the toll and the road tariff, double charging arises.

Installing tolls on bridges seems at first to obviate these objections. Busy bridges accommodate thousands of vehicles per day; these vehicles cannot detour around a bridge; and since little fuel is used crossing the bridge, double charging is insignificant. Does this mean bridge tolls should be added to the road tariff? No because bridge maintenance costs are very low in comparison with the likely toll revenues, which would be out of proportion to the maintenance need.

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[16] Zietlow, Gunter, and Alberto Bull. 1999. *Reform and Financing and Management of Road Maintenance: A New Generation of Road Funds in Latin America.* Paper presented at the XXIst World Road Congress, 3–9 October, Kuala Lumpur.

On the other hand, installing tolls on a bridge to recoup its construction cost makes sense: users can accept paying an additional sum for a new bridge that saves them a lot of money. The same reasoning also applies to new roads, if the tolls pay for capital, not maintenance. Tolls are not suited to be part of a road user charge that raises revenue to pay for maintenance.

b. How Can the Consolidated Revenue Fund be Protected?

Switching road maintenance funding to the RMF should not affect the consolidated revenue fund (CRF) or revenues currently allocated to health care, education, etc. When the CRF loses the responsibility for funding maintenance, it should also lose an equal amount of revenue, by earmarking the road user taxes and paying them to the RMF.

Figure A1.1 illustrates how monies going into and out of the CRF lose their identities. It indicates that the total money going into the CRF equals the total money going out.

Figure A1.2 shows a case when road users' tax contributions do not lose their identities and these contributions are used to meet road expenditures in full. Road user contributions are shown split into taxes contributing to government general revenue and taxes (to be thought of as road user charges or the road tariff) earmarked for the RMF. The road user charges portion can be paid directly to the RMF without any detrimental effect on the CRF, as shown in Figure A1.3.

Figure A1.1. Income and Expenditure of a Typical Consolidated Revenue Fund

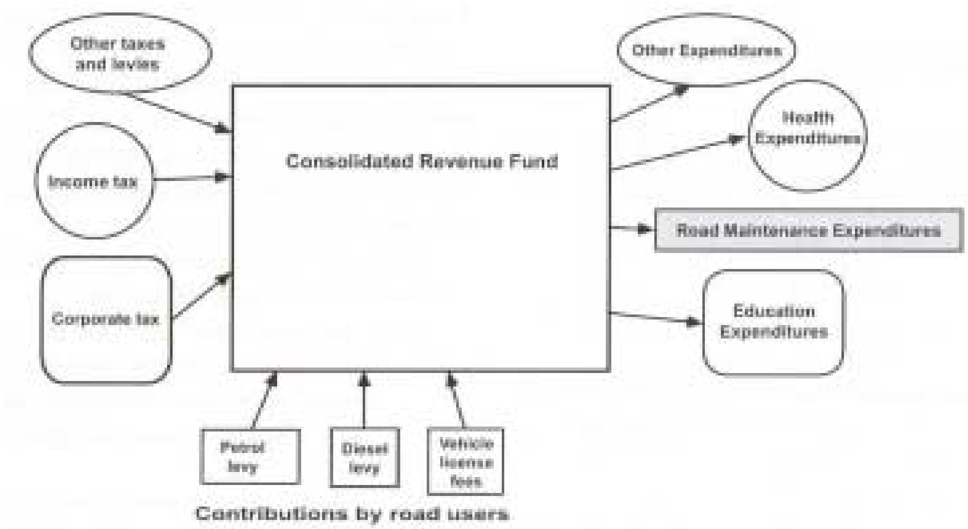
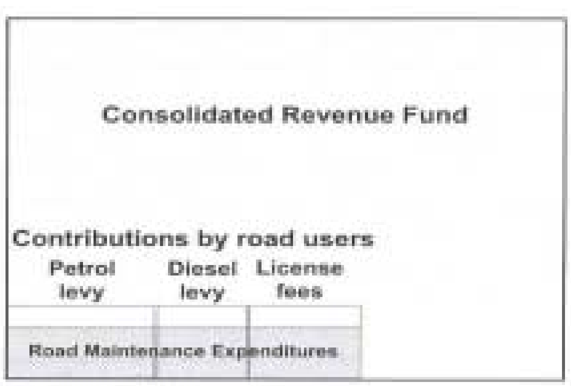
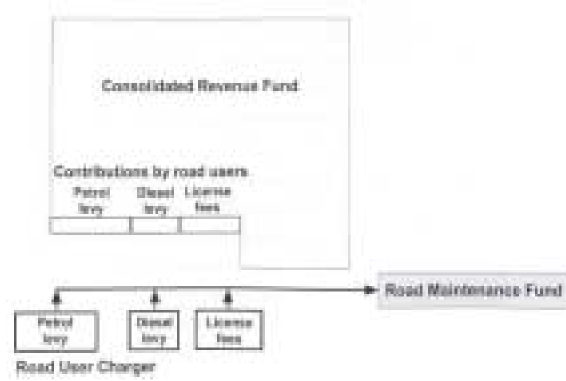


Figure A1.2. Consolidated Revenue Fund Contributions by Road Users



Note: In the diagram, the shaded portion is much bigger than in reality. Commonly only a small percentage of government revenues are allocated to raods.

Figure A1.3. Consolidated Revenue Fund Road User Contributions Earmarked



Note: In the diagram, the shaded portion is much bigger than in reality. Commonly only a small percentage of government revenues are allocated to raods.

c. Where Should the Earmarked Revenues be Kept?

The finance ministry would probably prefer that the RMF's revenues remain within the national accounts, as a ring-fenced corner of the CRF, because this makes the national accounts look healthier. Experience (from first generation road funds) shows three potential problems with this. First, the RMF's revenues are vulnerable to being raided and used for other purposes. Second, while ring fencing may be respected, the funds may not be released, and may accumulate, starving maintenance, while adjustments are made by rebalancing the apportionment between road user charges and taxes. Third, the RMF may not receive all the revenues due to it: intragovernment cross-debts during economic downturns have resulted in state-owned petroleum companies retaining revenues collected on behalf of the RMF. Good practice is for revenues to be held in an account at a commercial bank—or two or three commercial banks, to spread any risk of default.

d. How Should Road User Charges Evolve?

As described this far, the road tariff is initially made up of road user charges that were formerly taxes, or parts of taxes. This change is neutral both to the CRF and to road users, who see no change in their costs. Furthermore, it is neutral in terms of the money available for road maintenance. To fund adequate maintenance, the road tariff can be increased (Figure A1.4), new charges added (Figure A1.5), and charges rebalanced to better reflect the costs imposed by different vehicle classes (Figure A1.6).

Figure A1.4. Increases in Earmarked Road User Charges

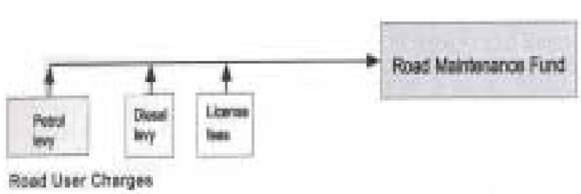
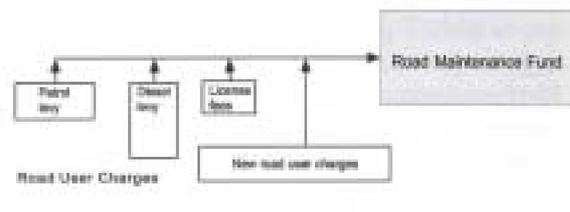


Figure A1.5. New Earmarked Road User Charges

e. The Transition: A Role for Lenders

Figure A1.6. Rebalanced Earmarked Road User Charges



Road users are generally willing to contribute more toward road maintenance—provided that the roads are better maintained. Users perceive, correctly, that the extra charges they pay will be more than compensated by the gains they make through reduced operating costs. Gains do not occur instantaneously, however. If the road tariff is implemented fully from day one, users will feel the pinch of extra payments initially before they notice any savings flowing through, and the lag between payments and savings may jeopardize user support. Ideally, users should see significant road improvements before the road tariff is fully implemented. With some transitional funding, the road tariff could be phased in over several years.

In any event, since one of the most important responsibilities of the RMF is to clear up the typically enormous maintenance backlog, transitional funding support will be needed for several years. Clearing the backlog without delay will give users the satisfaction of fast progress, which in their minds they will link to the road tariff. Funding support can come from government general revenues or loans, and will be small compared with what is needed for the backlog. Most of the backlog will be rehabilitation. For this, lenders will surely need to provide loan finance. Without a plan for funding the full removal of the backlog, a proposal for an RMF has little chance of success.

f. What Intermittent Adjustments to the Road Tariff May be Needed?

Maintenance needs will be fairly even from year to year if there is an even spread of pavement condition and, hence, rehabilitation. Nevertheless, there will always be some yearly variations. In addition, the maintenance load can be expected to grow steadily, as the network is improved or extended. Funding requirements can be smoothed by allowing the RMF to operate within a specified band of surplus or deficit.

To keep within the band, the tariff will need adjustment from time to time. The power to adjust the tariff should, ideally, be vested in the RMF. This would be ideal if the RMF truly has a customer-supplier relationship with road users. At the other end of the spectrum of possibilities, the RMF might be required to submit tariff changes to parliament. In a realistic middle ground scenario, the RMF notifies a tariff change for the coming year on a no objection basis; if there are no objections, for instance from the finance ministry, within a fixed period, the notified tariff acquires the force of law.

g. What About Fuel Not Used on Roads?

A cornerstone of the road tariff is a levy on fuel, gasoline, and diesel, collected by fuel wholesalers (in many countries, a state petroleum company) on behalf of the RMF. While gasoline is used mainly by road vehicles, diesel has many uses. The road tariff should not apply to fuel used in fishing boats or for electricity generation, railway transport, industrial uses, and agricultural equipment.

Some countries, such as New Zealand, avoid the diesel problem by having a weight-distance charge instead of a levy on diesel. Heavy vehicles pay per kilometer of travel according to a declared maximum permissible weight and axle configuration (that spreads the load on the pavement). This system has the benefit of charging more precisely for pavement wear, but surveillance and enforcement are onerous and would not work in developing countries. Another possibility is to contrive two diesel fuels, one on which the road tariff is paid and one on which it is not. To detect misuse, coloring is added to the fuel on which the tariff is not paid.[17] Again, surveillance and enforcement are problematic, especially in developing countries.

For major users, such as railways and electricity generators, the road tariff can be refunded or simply not charged at all. Fuel consumption of large users can be audited and cheating kept within limits. The same might be possible for the fishing industry, if the supply chain for fuel is fairly simple. For farm and small industrial uses, one option is to allow applications for refunds. Another is to compensate the sector as a whole: for example, the farm sector might enjoy a fertilizer subsidy that balances the road tariff paid by farm equipment.

[17] Coloring of kerosene may also be necessary if there is a high price differential between diesel and kerosene, as happens in countries that subsidize kerosene used for cooking and lighting by the rural poor. Diesel engines still work when substantial amounts of kerosene are mixed with diesel fuel.

Whatever course is taken, the RMF is not entitled to any road tariff revenues collected from nonroad uses. If such collections occur, the revenues must be estimated and paid into the CRF.

5. The Road Maintenance Fund

a. What is the RMF's Mission and Structure?

More than a bank account to hold revenues from user charges, the RMF is also an institutional arrangement for administration of the revenues.

The mission of the RMF is to promote efficient road network maintenance, to a standard that road users want and are willing to pay for, by collecting the road tariff and allocating funds to road agencies that comply with RMF standards for sound planning and execution of works.

The RMF is responsible to the public for ensuring that road user charges are spent responsibly and that the right balance is struck between the level of the tariff and the level of service the roads provide. It has a clear mission statement, transparent objectives, and well-defined measures of its outputs. A clear separation exists between purchaser and supplier functions, between funding and executing maintenance. The RMF provides funds for road maintenance on a sustained basis. It does not undertake implementation or procurement but it does set rules for them, to ensure that road users' funds are efficiently and effectively spent by road agencies undertaking implementation. The RMF holds road agencies accountable for funds it gives them.

The RMF mission statement calls for road user involvement, which can be advisory or executive. A minimal level of user involvement is achieved by an advisory board of road users to advise the minister whose department has charge of the money. It is good practice for the RMF to be a separate agency modeled on commercial lines, with an independent board made up of road users and government representatives, and with its own executive staff. Public sector board members provide linkages to the agencies involved with road maintenance, provide support for revenue collection, and present the broader national interest. The other members provide linkages to users, whose willingness to pay for adequately maintained roads is, ultimately, the foundation of the RMF.

Appointments may be ex officio (such as the finance secretary), nominations by organizations such as the Chamber of Commerce, or individuals chosen for the commitment and knowledge they will bring to the RMF. The method of selection may differ between public sector officials and road users' representatives. Public sector members might include

- the secretary of the Ministry of Finance (or nominee),
- the secretary of the Ministry of Transport (or nominee),
- representative of municipalities, and
- a representative of rural local government.

Nominees should be no more than two levels of seniority below the level of Secretary. Road agencies are not listed because they are providers of services that are purchased by the RMF.

Road user interests might be covered by

- Chambers of Commerce,
- industrial and mining associations,
- agricultural groups (farmers, pastoralists, plantation owners, etc.),
- the tourism and hospitality industry,
- motorists' associations,
- truck operators associations,
- bus operators' associations,
- bus users' associations,
- taxi associations,
- groups and nongovernment organizations with special interests (pedestrians, cyclists, poverty, environment, etc.),
- scientific and academic institutes, and
- professional associations (engineers, lawyers, environment groups, etc.).

Engineering contractors are not listed for the same conflict-of-interest reason that road agencies are excluded: they are providers of services purchased by the RMF.

Not all the above groups can be given a voice on the board at the same time. It is sensible for appointments to be for (a minimum of) 3 years, staggered so that vacancies do not all occur at once. Even if individuals are appointed for their personal attributes, the organizations listed may be invited to suggest candidates.

A board of about nine members functions well. The chairman ideally should be elected from among the user representatives. Board members are paid for attendance at meetings (which are at least bimonthly). Some of the work may be undertaken by committees (e.g., road safety, community and environment, engineering, road user charges) onto which persons with special knowledge can be co-opted. The RMF outsources as many functions as possible, e.g., revenue collection, monitoring of work done, etc.

Management of an RMF requires a strong and independent secretariat, headed by a chief executive officer, who is appointed by the board and attends board meetings, but is not a member of the board. The chief executive officer appoints the staff, which might comprise about 10 persons with skills in planning, economics, engineering, accounting, and administration, plus support staff. Initially, the secretariat would assist the board to establish the systems on (i) receiving its income, (ii) allocating funds on the basis of plans prepared by road agencies in accordance with rules set by the RMF, (iii) disbursing monies to road agencies, and (iv) monitoring road agencies to verify that works have been undertaken satisfactorily. The secretariat manages the financial affairs of the RMF and prepares reports and publicity material.

b. How should the RMF be Empowered?

The RMF should have its own empowering legislation. But waiting for new legislation may take a long time. The RMF may therefore need to be established under existing legislation or by decree, in which case there should be a sunset clause to ensure that the status of the RMF is reviewed and either regularized by new legislation or closed down.

The legal document creating the RMF should state clearly which items the RMF can finance and should give some indication of relative priority. The instrument establishing the RMF should be supported by published financial regulations or procedures. These could be announced as legal regulations, such as in the official government gazette, or be published by the RMF board.

The board must be given full legal powers to enter into legally enforceable agreements, such as for collection of revenues and expenditure of monies paid by the fund. The board has a fiduciary duty to defend the fund against raids.

c. Duties and Functions of the RMF

The RMF collects road tariff revenues and disburses money to road agencies, subject to those agencies' compliance with RMF conditions designed to promote value for money for the road user. Such RMF conditions might include using economic analysis to justify pavement rehabilitations, use of quality assurance systems, and minimum levels of contracting out.

In particular the RMF will have the following functions:

- enter into agency agreements for collection of revenues;
- establish procedures to ensure an adequate and stable flow of resources;
- set out transparent criteria for, and issue manuals to guide, preparation of road agency programs eligible for RMF support;
- set out procedures for disbursing funds for approved expenditure programs;
- collate and review maintenance programs submitted by road agencies;
- review, evaluate, and audit (financial and technical) works financed by the RMF to ensure the funds are spent effectively and on the approved programs;
- make payments to road agencies, guarding against misappropriation and unduly slow payments procedures;
- prepare annual reports detailing the funds received and allocated, programs completed, shortfalls experienced, corrective actions taken, etc.; and
- disseminate information and conduct publicity campaigns to raise awareness of the RMF's work.

d. How Should the Road Tariff be Collected?

Collecting revenue involves drawing up agreements with collection agencies such as petroleum companies. With each collection agency, there is a formal contract, or at least a written memorandum of understanding, covering procedures for collecting revenue, procedures for depositing funds into the RMF bank account, information to be supplied to the RMF, and agency fees payable to the collection agency.

The secretariat systematically tracks movements in the chargeable base (e.g., sales of fuel and their base prices), and estimates how much revenue should have been collected, allowing for exemptions and rebates, and reconciles the figures with the amounts actually credited to the RMF.

e. How Can Transparency and Reporting be Assured?

The RMF does not operate in a competitive environment and cannot be bankrupted; thus, its affairs must be fully transparent. The RMF submits to the government an annual report and audit carried out by independent auditors appointed by the government auditor. This is a public document.

Under its empowering legislation, the RMF should be accountable to road users for efficient and effective use of road tariff revenues. Not only should its processes, plans, achievements, performance, and audited accounts be publicly available, but a deliberate effort should also be made to disseminate information as widely as possible, and to solicit users' reactions. If the public understands what the RMF is doing, there is more chance of public acceptance when road user charges are increased. Individual board members would need to listen to, and inform their constituents about, road-related expenditures, and the level of charges that result.

Every few years, technical audits should be undertaken by international consultants and made public. In some countries, the RMF produces weekly programs on radio and television to actively publicize its work. The Internet is an efficient and effective means of making information on the road sector and the RMF publicly available. The information should include time series data on the state of the network, so people can see whether the average condition of the network is improving or deteriorating.

Appendix 2. An Alternative Route to Sustainable Funding

Despite the benefits of setting up a road maintenance fund (RMF) for sustainable funding of road maintenance, a country may refrain from doing so. If a government will not commit itself to implementing an RMF that embodies the essential elements of good practice, it may be because the country is being pressured to reform too quickly or too soon.

Rather than pressing the issue, it may be better to step back and let the country itself set the pace of change (if it is prepared to do so), and take responsibility for determining its own reforms—which may, ultimately, include an RMF. Reform has a better chance of being accepted and sustained when a country takes it own initiatives and relies on itself, first and foremost, to carry out reform. This appendix sets out a self-reliance approach to progress in countries showing reluctance to commit to a good practice RMF.

1. Recognize the Local Context

a. Have an Open Mind—and a Little Realism

For more than a decade, in countries all over the world, international development agencies have applied fairly consistent principles to the reform of road sector funding by introducing road maintenance funds. Yet, even after years of implementation experience, there are few textbook examples of change implemented as intended. In practice, departures from the original intent almost always occur, commonly in the following ways.

- The board of the road fund is not truly representative of stakeholders.
- Decision making is not objective and transparent in the eyes of the public.
- Revenue collection sources and methods are not fair and transparent.
- The public does not understand the reasons for changing the revenue base.

Problems occur for a various pragmatic reasons, the most important of which summarized in Table A2.1. Behind these problems are underlying factors, often linked to a lack of realism on the part of those seeking change. If these underlying factors are not addressed, pushing ahead with idealized solutions is unlikely to lead to a sustainable solution. Factors needing to be addressed are primarily the following:

- vested interests, political and financial, that obstruct change to existing systems of decision making and funds distribution;
- weak governance and lack of public and political interest in better governance; and
- lack of local leadership for change.

The strength of these factors is a reflection of the collective will power of a country to improve the way in which roads are managed and financed. No matter how good the technical solution, if all the forces in a country are resisting change, then change is unlikely to happen. On the other hand, if there is a collective and strong national wish to change, and to make the improvements work, individuals will come forward to improve and refine proposed solutions, and to correct shortcomings if national political or cultural requirements have not been given due weight.

Realism is needed when encouraging a country to adopt a dedicated road fund. It is widely known that many developed countries do not have, and do not need, dedicated road funds. Against this backdrop, implementation of a road fund may be doomed by lack of commitment from parties crucial to the change process—unless the merits of a road fund have been understood and accepted first.

Successful change is more likely if the parties come into the process with open minds, eager to learn from the

Table A2.1 Road Funds Problems, Their Effects, and Possible Solutions

Problem	Effect	Possible Solutions
External solutions are imposed.	Solutions fail to address local needs and fail to win local commitment and support.	Take longer to tailor solutions to needs. Win support through public information campaigns. Pass the initiative for finding solutions to local people who are invited to call on international funding agencies for assistance.
Frequent changes of senior government staff take place.	The process of change repeatedly backtracks and decisions are remade, delaying and jeopardizing the reforms.	Drive change through a body established for the process, where the members are chosen personally, not ex officio. Conduct public information campaigns that, among other things, have the advantage of solidifying corporate memory.
The government sector is poorly paid.	A climate is created in which corruption may flourish. Persons trained for specialist posts take leave for more remunerative jobs, such as those attracting informal income.	Create an agency that functions on private sector lines, where staff are subject to private sector rewards, obligations, and risks.
Inputs by different external agencies to the process of change are disjointed.	Inputs to reforms are less effective, or are not timely, or are not provided at all. Inputs are packaged as large consulting assignments when the need may more often be for short-term inputs by individual specialists.	International agencies need to find ways of being more flexible, nimble, and responsive to the needs of the reform process.
Government personnel assigned to new initiatives are transferred, or leave.	The training of such personnel, and the systems that were set up for them to operate, can be wasted; those systems can fall into disuse.	These personnel need to be adequately paid and have promotion prospects. As this is often difficult within the government, options are to contract operation of systems to the private sector, or to set up a new specialist agency modeled on commercial lines.
Routine activities are dependent on external funding.	There is no assurance that maintenance will be done once external funding ceases.	Devise a system that produces sufficient secure funding from domestic sources.

experience of other countries and to understand the principles and options, and realistic as to what can be changed, and how it can be changed, in a particular national context.

b. Understand What Has Gone Before

Inadequate maintenance is a burden on the economy in virtually every developing country. In many countries, and in regional forums, initiatives have been taken to develop an understanding of the issues and to initiate improvements, generally funded by international development agencies under road sector reform programs. Initiatives generally do not start from a position of complete ignorance of the issues and the implications of change.

Before starting anything new, it is wise to assess what has gone before. An objective assessment of previous failures may identify factors such as the following:

- Only a limited number of people (likely to be those who have attended national or regional seminars and have been involved with previous initiatives) have a good appreciation of the issues and the implications of different solutions. Other people may be unaware of the possibilities.
- There is widespread resistance to change, from inside the national road agency (as a result of

potential job changes or losses) and from the public (as a result of potential taxation and levy increases that have not been satisfactorily explained).

- Implementation of a road fund has been attempted, but failed to meet the intended ideal. Representation on the board may not have been balanced; methods of raising funds may not have been in line with good practice; decision making may not have been based on accurate and objective information.

2. Develop National Leadership

a. Recognize the Need for Self-Reliance

Experience shows that solutions developed and imposed by external development agencies are unlikely to be sustained. If the driver of change comes from outside a country, the momentum for change is soon lost when external consultants and development agency funding are withdrawn.

Sustainable improvement in road funding and maintenance is more likely if there is national self-reliance in every aspect of any new systems. This issue needs to be addressed at the beginning of the process of change, not as an afterthought. Achieving self-reliance requires, first, an objective assessment of the inputs that otherwise would be provided by external agencies; and, second, a realistic plan to develop a strictly local capacity to provide these inputs. The plan should cover the following activities.

- Incite enthusiasm for change—meaning a recognition that change is needed and the determination to carry it through.
- Take a comprehensive view of the road sector—and an understanding of measures and indicators of success in road maintenance funding and execution.
- Develop analysis to determine priorities, including deriving and updating all the required input information.
- Fund data collection and other recurrent activities—which need to become part of the routine annual activities in the road sector.
- Assign staff and pay adequate salaries and expenses.
- Provide services—vehicles, office space, and equipment.

The provision of resources by external agencies, to get the process of change started, can be counterproductive if it causes dependency and inappropriate expectations. Self-reliance will not be attained if the reason for following a new initiative is to create short-term benefits for certain individuals, or to satisfy external development agency wishes without understanding the reasons and principles involved.

b. Hold a Transformation Forum

It is not simple to achieve true national leadership for change supported, rather than driven, by external development agencies. Initially, key individuals may sponsor and promote change, but they can be reassigned overnight. Government personnel move with career progression. Politicians and political appointments are subject to political changes.

An accepted practice is to set up an RMF with a board representing a full cross section of road stakeholders to manage and monitor it. The board may not come into existence, however, for several years following the passage of new legislation to implement an RMF. Until such a board is set up, leadership of change may be spread over development agencies and their consultants appointed to implement changes, government agency staff, and political interests. If an RMF is not selected as a solution, a board with statutory powers may never be set up. A steering group or committee may exist, but more as a consultative body to approve proposed changes than as a dynamic leader and initiator of change.

Successful national leadership requires a strong local forum as the focus and initiator of change, with representation of a full cross section of road stakeholders. Such a transformation forum can be constituted from the outset, and be held responsible for deciding what needs to be done and for taking action. Rather than passively receiving and considering proposals presented by external consultants, this forum should actively decide its requirements and commission assistance as required.

c. Coordinate and Integrate Changes

Successful change requires coordination and continuity. A single transformation forum, responsible for all change in the road sector, is preferable to a specific forum on road funding and maintenance issues. A single forum also allows a more objective high-level view of what type of change is needed. For instance, implementation of a conventional RMF is one possible solution to solving the problem of road maintenance neglect, but local understanding of cultural and political realities may lead to a different solution.

For successful coordination, the transformation forum should not be sponsored by a single project or development agency. The forum must be the driver of change, coordinating all agencies' inputs and integrating the results of all technical assistance projects.

d. Keep Development Agency Inputs in Perspective

Under the transformation forum approach, development agencies become facilitators, rather than drivers, of change.

Involvement by a development agency has to be constant, long-term, and complementary to the activities of other development agencies. Implementation of road sector reform is to be divided up among different agencies, with one agency pushing forward an agreed component of reforms, while others stand back and concentrate on other areas. Every agency must stay involved and ensure that inputs and knowledge are properly coordinated and integrated.

Development agencies must work to overcome the failings of past technical assistance projects, such as the following:

- rigid timescales for technical assistance projects, which start and stop at fixed dates—regardless of the capacity of a country to absorb and utilize the results and of the real need for external input, as changes are implemented;
- fixed terms of reference that are difficult to adapt to take account of new approaches and local needs, as projects develop and the reform process advances;
- lack of continuity in inputs, resulting from piecemeal projects;
- inconsistent advice, due to the use of different consultants, who have differing opinions and experience; and
- failure to ensure sustainability of project results, notably the maintenance and updating of road network databases.

3. Build In Sustainability From the Start

a. Recognize what is Likely to Go Wrong

Enthusiasm for a proposed solution, supported by case study evidence that the solution is appropriate for the country, are not powerful enough to ensure that the results intended will be realized.

Table A2.1 listed some of the problems likely to be encountered and the effects that may result. It is impossible to predict and allow for every possible problem, and only limited resources are available to prepare for them. Nevertheless, it is necessary to face up to the fact that such problems will arise, and to anticipate how to respond and minimize their effect.

Every input by external agencies is a potential sustainability problem. Eventually, external inputs will be withdrawn. To minimize sustainability problems, it is necessary to look at the end, beyond development agency/lender assistance, when the process must run itself without external consultants and funding. This can be done by working through the annual cycle of funding and maintaining roads. From where will come the required skills that do not exist locally today, or that cannot be obtained at current salaries? Where might there be a lack of public or professional understanding that could delay or impede activities? Where are responsibilities difficult to define or allocate?

b. Establish Who Should be Involved, and When

The role of stakeholders in road funding and management is recognized, nowadays, by the presence of stakeholder members on RMF boards. But there is no need to wait for the establishment of an RMF to give stakeholders an official and accountable role in road maintenance funding and management. If ownership of the change process is to be local, rather than external, full stakeholder representation is needed from the outset, well before a decision is made whether to choose a second generation road fund as the solution.

There is no standard formula for deciding who should be involved in driving and monitoring the process of change, or in any new management set-up. The best representation will depend on many factors, such as past history of initiatives, local culture and politics, public opinion, plans for government reform, and more. When representation is decided, the following questions should be considered:

- Can the representatives provide a constructive contribution?
- Do they truly represent a useful cross section of road stakeholder interests?
- Will they work as a team to achieve results?
- Are they trustworthy, and generally respected as such?

In practice, it may not be easy or straightforward to make such an assessment, since representation may be individual, but by organization.

c. Delineate the Role of Development Agencies

Development agencies clearly have a role to play in encouraging and supporting improvements. If the solutions selected are to be sustainable, however, development agencies must be facilitators, not leaders. The challenge is to create sufficient local willpower to lead the change, and the base knowledge and skills to support the change and make it happen.

Change cannot be hurried by short-term inputs of targeted skills and financial resources, and cannot depend on individual personalities. For change to be sustainable, time is needed to ensure that the benefits and implications are understood by all—not only by currently influential government officials, but also by those who might replace them as a result of political or administrative changes.

Development agencies have a role to play in ensuring that monitoring and auditing of progress take place. External resources may be needed to comment objectively on progress, and to recommend refinements and improvements.

4. Develop the Local Solution

a. Establish an Agenda for Change

The first step in developing a local solution is to establish an agenda for change. This can be brought into focus by identifying currently perceived failings in the ways that roads are managed and financed, and how these should change in the future. The transformation forum described above is the ideal vehicle for this activity, especially if it includes a full cross section of road stakeholders. The agenda for change should cover all issues and not be constrained by previous initiatives. Changes already in progress may be included, in which case they become subject to the jurisdiction of the transformation forum. For each item on the agenda for change, there should be a statement of what is perceived to be wrong at the moment and a vision of a better state of affairs in the future.

The agenda for change should be formally approved by the transformation forum and be published. It should be reviewed regularly, and updated if warranted, so it represents current perceptions of what needs to change.

Development agencies may participate in the development of the agenda if they are members of the transformation forum, and may assist by providing supporting information and facilitation skills. They should not lead the development of the agenda, or attempt to develop it independently. The agenda must be locally owned.

b. Formulate a Plan for Implementing Change

Once an agenda for change has been developed, the transformation forum needs to formulate a plan of action for each item on the agenda. It must set priorities and determine methods of addressing each item on the agenda. The forum is likely to need assistance so that members understand the options and their consequences.

Development agencies have roles to play in providing finance and skilled resources to implement changes. If the development agencies are part of the forum, this can be discussed and agreed by the forum. Road user members of the forum can assist by informing and educating road users (who may, for example, face increases in levies or taxes).

c. Integrate the Activities of Development Agencies

The transformation forum should integrate the activities of the different development agencies into a common plan for change. Sustainable change is not served by piecemeal technical assistance projects, starting and stopping to fit funding deadlines and producing conflicting advice (that reflects the varying views of consultants, project officers, and development agencies). Development agencies must work to eliminate any distortions they might introduce into road sector management, and integrate their activities into an initiative that is locally owned and led.

5. Support the Process of Change

a. Develop Widespread Local Understanding

The public is generally well aware of poor road maintenance, but is unaware of the reasons for it. Government officials are often well aware of the difficulties faced, but are unaware of the potential solutions. Lack of understanding leads to strong public reaction against increases in charges, such as fuel taxes and vehicle licensing fees, because the public does not believe (often with reason) that increasing the charges will solve the problem. Insufficient knowledge by government officials and the public can lead to implementation of inappropriate solutions that leave the problems unresolved.

An information campaign to develop knowledge and understanding is an important step toward sustainable change. Information campaigns can take different forms, and all possible avenues should be considered: television discussions and debates, series of newspaper articles, and workshops and seminars at all levels (national meetings, local community groups, specialist interest groups such as transport operators). Preparation and use of standardized presentation and discussion materials can ensure that the subject matter discussed is consistent for all groups.

b. Exchange Experiences

To date, developing countries have had little exchange of experience and knowledge through ongoing direct dialogue; their channels of communications have been via intermediaries: development agency experts and consultants moving from country to country; and one-off regional or country workshops sponsored by development agencies. Self-reliance has been absent. A body of local knowledge is building in many countries, however, as experience of implementing road sector reforms expands. By now, countries should be exchanging experience directly in an ongoing way without the need for intermediaries.

The Internet offers a low-cost medium of communications, with country-to-country exchange of knowledge through web pages and e-mail. The Internet is also increasingly important as a means of communication within countries, among stakeholders. Direct sharing of experiences among countries, and among stakeholders, government officials, and road users, will increase the body of knowledge upon which the transformation forum can base its recommendations and decisions.

c. Make Information Available

Lack of information about what is happening can produce adverse results, especially if there are suspicions that decisions are not being based on objective criteria, or that money is being misallocated or misappropriated. The best means to overcome this is to make appropriate information freely available, and to ensure it is accurate and up to date. Beyond being publicly available, the agenda for change and the plan for its implementation should be actively publicized. The transformation forum should welcome the scrutiny this invites and be prepared to defend its recommendations.

The Internet should be the primary method of disseminating information. Although it is not yet freely available to everyone, it is available to critical groups—particularly the media and nongovernment organizations, which ensure widespread dissemination of important information. The Internet has the specific advantages of

- immediacy—as soon as information is on the Internet, it is available to everyone;
- uniqueness—if there is only one web site, there is only one version of information; and
- low cost—printing and transport costs are eliminated, and information can be free.

d. Use External Resources Wisely

Development agencies will usually offer resources to support change. Offers of technical assistance and external funding should be accepted, however, only after careful thought about how they fit into the overall plan. If new skills are required, a plan to develop these skills should exist from the start, stating which skills will be developed and by whom. Prospective external assistance should be viewed against the backdrop of when the required expertise could be available without assistance. The plan must be resilient enough to allow for critical individuals' changing jobs before the process of change is complete. It must provide for training of personnel to take over when current staff are promoted, retire, or change jobs.

If new equipment is needed to support road management and maintenance activities, a realistic assessment should be made of whether the resources and skills exist locally to operate and maintain such equipment. If external resources are required when a breakdown occurs, or when maintenance is required, use of the equipment will not be sustainable once external funding ceases. Long-term replacement also needs to be considered: if local funding may not be available to replace certain equipment, then its choice may not be appropriate.

The plan may call for external assistance and expertise over a long period. About 5–10 years may be needed for sustainable change. It is unrealistic to try to anticipate all the needs that will arise and when they will arise. To be useful, external assistance needs to be responsive to needs as and when they arise. There will often be a need for short-term skilled inputs, on demand, as and when the transformation forum identifies matters needing to be addressed quickly, to keep changes on track. Conventional technical assistance does not meet this need for short, flexible inputs from external sources. Conventional technical assistance projects usually have long lead times, imposed by budget planning, and provide intense inputs for short periods. Consultants follow terms of reference that were conceived at an earlier stage and may no longer be relevant. Another problem is the risk of confusion arising from the employment of different consultants, expressing different (sometimes conflicting) views. Development agencies need procedures for providing short inputs, on demand, in a manner that allows for long-term continuity of the same consultants.

6. Keep Changes on Track

a. Facilitate Public and Road Stakeholder Influence

When the process of change is open and details of what is happening are freely available, stakeholders and the general public should take an interest in ensuring that changes work and road conditions improve. Channels are needed for regular communications with stakeholders, to listen to their opinions and feedback. If the transformation forum includes effective representation of road stakeholders, and meets regularly, feedback should be easy to arrange.

b. Measure Regular Local Assessment Against Established Guidelines

The transformation forum's agenda for change can be likened to a living organism adapting to events and the environment. Likewise, the transformation forum must regularly take stock, and adapt as needed. For this purpose, the forum should schedule regular meetings— once, every two months.

To assist the transformation forum to assess and monitor progress, standard guidelines should be developed. Each meeting of the transformation forum would review every item on the agenda for change; record progress made or planned; and confirm, modify, or formulate future actions. The agenda for change would itself be reviewed, and either confirmed or amended. Each meeting of the transformation forum should review its own operations and current representation.

Immediately after each meeting, official minutes should be prepared and circulated to all stakeholders, including development agencies to disseminate and clarify issues.

c. Audit the Office Assessment

As soon as they are available, the official minutes should be subject to independent audit, measured against the same standard guidelines as used by the transformation forum. This will provide a quality check for all concerned that the transformation forum is carrying out its activities as intended. The audit should cover matters such as the following:

- whether all items on the agenda for change were considered in the meeting;
- whether, based on the information presented at the meeting, the actions recommended were in line with the guidelines;
- whether any recommendation to alter, or not to alter, the agenda for change was in line with the guidelines; and
- whether consideration of representation on the transformation forum, and any recommendations for any change, were in line with the guidelines.

The audit provides some reassurance to the public, road stakeholders, and development agencies that the transformation forum is acting in accordance with established guidelines. Without the audit, the transformation forum is accountable only in the court of public opinion.

d. Take Action When Things Go Wrong

In the process described above, there are no sanctions if the process fails to function as intended. Realistically, sanctions would be of little value since they would stand a good chance of being overridden politically. Rather than try to impose sanctions after the event, the process described aims to minimize the chance of failure before the event: to identify problems before they occur (or as soon as they occur) and to stimulate immediate remedial action. This is why the focus is on minimizing the problems of the past, and on regular and effective monitoring.

The above two-stage process—a local transformation forum deciding actions to be taken, followed by an independent audit to check the validity of the forum's deliberations—keeps the decision making local, but with accountability built in, for the benefit of all concerned. This process should quickly expose any weaknesses in local understanding or decision-making capacity, so that remedial action can be taken.

Appendix 3. Review of Selected Road Funds and Road fund Initiatives

1. Asia

Table A3.1. Legal and Administrative Arrangements for Road Maintenance Funds and Fund Initiatives

Country	Legal Basis Agency	Oversight	Type of Entity Composition	Board Financed	Type of Work of Revenue	Main Source	Remarks/Updates
India[a]	Draft legislation supporting bill to earmark funds for (a) road development and maintenance, (b) rural development, and (c) level crossing safety	Info not yet available	Info not yet available	Board to be set up at the federal/central level	Road development and maintenance, including rural development and safety measures	Cess on gasoline and diesel	Through the World Bank, the Government is in the process of enacting the draft legislation. Concern is raised on the unclear allocation mechanism for funds earmarked between road development and allocation.
Jordan[b]	Draft legislation prepared in 1997 with World Bank assistance for the National Road Maintenance Fund Administration (NRMFA) of Jordan	Public-private board (under the jurisdiction of the Ministry of Finance as parent ministry)	Separate agency with its own secretariat headed by an executive secretary	12 members: 5 government reps:Ministries of Finance, Public Works and Housing (MPWH); Transport; Planning; and Interior;7 from private sector: Chamber of Commerce, trucking industry, engineering profession, and agricultural community (remaining 2 are board nominees)	First priority: - Routine, recurrent, and resurfacing maintenance of classified road net-work under MPWH; - Administration costs;- Selected road safety improvements Second/other works: - Maintenance of classified network under municipalities and villages, on a cost-sharing basis; - Limited rehabilita-tion and minor works	- Fuel levy-International transit fees- Supplementary fees on heavy vehicles - Tolls on specific roads or structures - Fines on overloaded vehicles	Annual Road Program(s) are to be reviewed and approved by the board and submitted to the MPWH, Finance, and directors of other road agencies.

Con't. Table A3.1.

Country	Legal Basis	Oversight Agency	Type of Entity	Board Composition	Type of Work Financed	Main Source of Revenue	Remarks/Updates
Kazakhstan[c]	Government decree reestablishing a dedicated Road Fund, Decree No. 2701 on 21 December 1995	Ministry of Transport and Communication			Routine and periodic maintenance	- Revenue tax on all enterprises- Gasoline & diesel levy - Taxes on vehicles over 10 tons - International freight traffic (rates to take into account axle load, length and condition of road to be traveled, and nationality)	ADB TA 2631-Kazakhstan: Road Rehabilitation Project aims to determine the appropriateness of phasing out the Road Fund in light of the beneficial fiscal considerations and limiting the period it is to remain in place.
Kyrgyz Republic[d]	Legislation adopted by the Parliament in May 1998 and made operational through Presidential Decree No. 8 on 11 January 1999	Ministry of Transport and Communications (MOTC) is responsible for the technical and routine distribution of the funds;Ministry of Finance and Economy (MOFE) and Parliament decide the allocation of the Road Maintenance Fund (RMF).	Division within MOTC	The legislation allows for the creation of a Roads Board to advise MOTC on matters relating to the RMF, but its creation is not compulsoryBoard membership (between 9 and 12 reps) is to be appointed by the Government, at least half coming from NGOs and at least 2 from local bodies. No Road Board yet created.	All works (engineering and works) for the road sector, namely - Road engineering structure planning and design - Equipment and machinery procured for public roads - Technical aids to safe traffic flow including research work and traffic forecasting - Publications for road sector requirements - Maintenance and road improvement - Training and re-training of personnel- R&D planning and design works - Road business management. including salaries and administrative expenses	- Central Budget assignments- 50% of motor fuel excise tax- Vehicle tax payable by private individuals (100% remittance to RMF) - Road tax payable by legal entities but actually restricted to commercial enterprises at a rate of 0.8% turnover tax (100% remittance to RMF) - 90% of vehicle registration dutiesHeavy truck tolls and excess fees (100% remittance to RMF) - Tolls and construction fees paid on public roads- Nonspecific foreign investments and grants -Funds to be raised from lotteries,	A major difficulty is that MOFE has yet to implement the automatic transfer of earmarked funds to the RMF. Funds pass through the general budget mechanism and are thus subject to modification based on current cash flow status and overall state funding requirements. ADB TA 2587-Kyrgyz Republic recommends the periodic review of the RMF implementation and possible amendments, given arguments on earmarking of revenues.MOTC is to produce an annual budget called Road Activities Plan, which forms part of the annual budgetary submission to the MOFE. MOTC is also to produce a Long-Term Capital and Maintenance Plan for Roads, which sets out the relative priorities of expenditure items,

Con't. Table A3.1.

Country	Legal Basis	Oversight Agency	Type of Entity	Board Composition	Type of Work Financed	Main Source of Revenue	Remarks/Updates
con't. Kyrgyz Republic[d]					- Social welfare improvements in the road sector - Conferences and other international gatherings	penalties, charities, parking fees and fines, and local budget subsidies	be reviewed and revised annually. ADB TA 3065-Kyrgyz Republic recommendations: - Create a Management Services Directorate of MOTC to be in charge of daily RMF operations; - Set up of a Board of Road Fund Commissioners to provide policy directions; - Fund RMF from road user charges and exclude business turnover tax; - Develop systematic procedures for collection and transmittal of RMF to bank account; and - Formulate allocation criteria that should reflect weighted traffic volumes, within the context of both maintenance requirements and road user charges incomes.

Con't. Table A3.1.

Country	Legal Basis	Oversight Agency	Type of Entity	Board Composition	Type of Work Financed	Main Source of Revenue	Remarks/Updates
Lao People's Democratic Republic[e]	Draft Prime Ministerial Decree for the Establishment of a Road Maintenance Fund (RMF)	Ministry of Communication, Transport, Post and Construction (MCTPC)	Department within the MCTPC will be formed to administer the RMF.	7-member Steering Committee (public and private sectors) appointed by the Prime Minister from Ministry of Finance, MCTPC, provincial authorities, Chamber of Commerce and Industry, road and passenger transport operators, and the general public. Chairperson to be nominated by MCTPC.	- Routine maintenance, emergency and periodic maintenance works and administration- Renewal works (after all maintenance works have been provided for)- Road safety projects and activities- Other expenses incurred in administering the RMF - Other activities as the Minister may approve	- Surcharge on the prices of gasoline and diesel fuel (over and above ordinary import duties, general sales taxes, and other charges on fuel) - Heavy vehicle surcharge Tolls on roads wholly publicly financed - International transit charges that might be introducedAny other road user charges assigned by the National Assembly - Aid provider funding	Policy workshop on RMF was held in June 1999 and the consultant submitted his final report, Establishment of a Road Maintenance Fund, to MCTPC in September 1999.
Mongolia[f]	Legislation (Road Act, developed with assistance from ADB TA) enacted in February 1998 includes provisions for (i) road sector organizations and institutional jurisdictions, (ii) road infrastructure, including classification and technical standards; and (iii) road financing.	Department of Roads (DOR)	Division within the DOR (1 staff in DOR Administration and Finance Division is assigned to take charge of the RMF accounting work.)	Autonomous Board to be created by 30 June 2001, expected to be composed of representatives from the Ministries of Finance, Infrastructure Development, and DOR; and road users	- Construction/ rehabilitation of roads and bridges - Road maintenance- Road design - Research and lab expenditures- Equipment - Counterpart portion of foreign loan projects	- Fuel taxes on gasoline (approx. 5% of the retail tax) and diesel (approx. 0.4%) - Annual Vehicle Tax determined by the type or weight of the vehicle (vehicle license fees not earmarked for RMF but appropriated to the Aimaks and Ulaanbaatar Municipality) - 25–30% of total fuel tax collection allocated to the RMF (based on ADB TA Nos. 2380 and2827 estimates for 1996/97 and1998.) - Appropriations from state budget mainly as counterpart funds for foreign-assisted projects.	Government has an existing Road and Road Transport Policy Statement and is mainly based on two main pieces of legislation – The Road Act and The Road Transport Act, both formulated with ADB's assistance.ADB TA 3268-Mongolia: Policy Support in the Road Sector Project will provide assistance in the establishment of the Road Board, within the overall context of its scope, which includes improving the management of the RMF. TA recently started, with contract signing in March 2000.

Con't. Table A3.1.

Country	Legal Basis	Oversight Agency	Type of Entity	Board Composition	Type of Work Financed	Main Source of Revenue	Remarks/Updates
Nepal[g]	Draft legislation presented by Cabinet to Parliament on 24 January 2000	Autonomous Board, majority private sector with public sector representatives. Advisory committee to be created, composed of 6 government officials and the board chairman shall be created	Separate agency	11 members:5 from the Government, the rest from the private sector	- Road maintenance - Maintenance of district and urban roads on cost-sharing basis - Provide counter-part funds for aid provider-funded projects - Road safety projects Enforcement work (implementation of standards) - Research relating to maintenance and rehabilitation Administration	- Road user charges-Levy on fuel used by transport vehicles - Fines for overloading - International transit fees	Annual road maintenance program is reviewed and approved by the Board and submitted to the Govern-ment (through the Ministry of Works and Transport).
Pakistan[h]	Draft legislation formulated and under review by the National Highway Authority (NHA) as of Dec. 1999	(Proposed) public-private board	Separate agency (autonomous and independent) with own secretariat	9 members:4 public sector and 5 private sector representatives nominated by each concerned organiza-tion chairman to come from the private sector.	Road maintenance and rehabilitation needs	- Fuel levy- Road charges (axle load charges) - Annual vehicle charges - Tariffs to be imposed gradually and RMF to have a start-up capital of around PRs1 billion.	The Government approved the RMF concept in principle in July 1999. A workshop on Dedicated Highway Fund was convened in 1997.RMF and Road User Charges Study undertaken from Jan. to Oct. 1998 and the Association of Road Users of Pakistan formed Oct. 1998.An interim Road Fund Cell within the Ministry of Communications set up in Dec. 1999 to help establish the RMF and Road Board.Annual business plans to form basis for funding. Punjab Province expressed its strong intention to create its own RMF.

Con't. Table A3.1.

Country	Legal Basis	Oversight Agency	Type of Entity	Board Composition	Type of Work Financed	Main Source of Revenue	Remarks/Updates
Papua New Guinea[i]	Draft bill finalized In Aug. 1996 to establish a Road Transport Infrastructure Authority (RTIA) covering road planning, design, maintenance, and management of funds appropriated annually	Road Authority	(Proposed) Separate agency	Board to be appointed; managing director and other officers. The plan was for the Land Transport Division of the Department of Transport to become the Road Authority.	All works	Government's general budget and levies, fees, and charges that would be prescribed by the board to recover the costs and expenses incurred by RTIA.	Workshop on Road Management and Finance was held on 28–29 Feb. 2000 on restructuring and commercializing management of roads financing and operation of RMF. Workshop recommendations and agreements: - Road Sector Reform Task Force to prepare information paper on the workshop for National Economic Council (NEC) by May 2000 - Task Force to meet in June 2000 to discuss the policy for submission to NEC, including detailed implementation strategy reform; - Dedicated RMF preferred, with supplemental funding from road user charges (fuel levy, fees, charges, etc.) - RMF to be controlled by an independent body, created through an Act of Parliament and managed on business principles, with regular audits; private-public sector partnership, with the former having the majority. In 1998, in conjunction with a World Bank loan, NEC approved creation of Highlands Highway Rehabilitation Authority to be responsible for planning, design, construction,

Con't. Table A3.1.

Country	Legal Basis	Oversight Agency	Type of Entity	Board Composition	Type of Work Financed	Main Source of Revenue	Remarks/Updates
							planning, design, construction, maintenance, and funding of the highlands highways. Preparation of the bill was delayed due to disruptions in discussions between World Bank and Government.Government policy statements contained in current draft National Transport Infrastructure Plan include proposals for reform and modernization of land transport services, specifically (i) "the institution of a policy of recovering all necessary routine and periodic maintenance costs for highways" and (ii) "road user fees and charges… should reflect the extent of road use and road damage caused by different classes of vehicle." ADB has an ongoing TA (No. 3004-Papua New Guinea) on Road Asset Management System.
Philippines [j]	Draft legislation imposing a Motor Vehicle User's Charge (MVUC) on owners of all types of motor vehicles. Draft bill to include creation of Road Board and of 4 special trust accounts	Public-private Board (to be organized by the President)	Division in the Department of Public Works and Highways (DPWH) (needs to be clarified)	7-member Board composed of the secretaries of DPWH (ex-officio head), Finance, Budget and Management, and Transportation and Communications (DOTC) (as ex-officio	Use of MVUC: - Road maintenance and improvement of drainage- Installation of traffic lights and road safety devices - Air Pollution control. (i) Special Road Support Fund – 70%	- Vehicle charges - Penalties for overloading stipulated in the draft act, imposing an amount equivalent to 25% of MVUC on overloaded trucks and trailers.	The report of the Bicameral Conference Committee for the Road Users Tax was approved by the Senate. However, both Houses of Congress have yet to act on the draft legislation.The Lower House approved the passage of the Road Users

Con't. Table A3.1.

Country	Legal Basis	Oversight Agency	Type of Entity	Board Composition	Type of Work Financed	Main Source of Revenue	Remarks/Updates
	special trust accounts in National Treasury for (i) Special Road Support Fund, (ii) Special Local Road Fund, (iii) Special Road Safety Fund, and (iv) Special Vehicle Pollution Control Fund			members). Remaining 3 to come from transport and motorist organizations to be appointed by the President upon recommendation of DPWH and DOTC.	of funds to be used exclusively for the maintenance of, and improvement of drainage of, national primary roads. Remaining 30% for maintenance and improvement of drainage of national secondary roads throughout the country. (ii) Special Local Road Fund – to be apportioned to provincial and city governments in accordance with vehicle population and size of road network, to be used exclusively for maintenance of local roads, traffic management, and road safety devices.		passage of the Road Users Tax per news report 7 June 2000.
Sri Lanka[k]	Draft legislation on "National Highways Act" has been prepared (third version as of October 1999) with assistance from the ADB.						

Con't. Table A3.1.

Country	Legal Basis	Oversight Agency	Type of Entity	Board Composition	Type of Work Financed	Main Source of Revenue	Remarks/Updates
Uzbekistan[l]	Decree No. 334 issued by the Cabinet of Ministers 5 July 1993	Cabinet of Ministers		Board established within Cabinet of Ministers and chaired by the Deputy Prime Minister in charge of the road sector; it comprises 11 senior government officials as members	- Routine and periodic maintenance- New construction- Procurement of new equipment (such as asphalt/cement plants) - Training and relevant researches	- Tax on revenues of all enterprises- Turnover tax on road transport enterprises- Entry and documentation fee charged to foreign vehicles - Vehicle sales taxes for buses	Most of the RMF is collected by provincial units of Uzavtoyul, the ministerial-level government agency in charge of roads and transport, and remitted to the local RMF account administered by the units. Only 24% is collected by nationally based organizations and remitted to the central RMF. The RMF was envisioned to be transferred from Uzavtoyul to the Road Board by 1 January 2000; the Road Board to be made operational by end 2000. ADB TA 3118 aims to assist Road Board in performing its governance functions, including competitive bidding procedures and performance contracts.

Note: Format of table adapted from Heggie, Ian G. 1995. *Management and Financing of Roads: An Agenda for Reform.* Technical Paper 275. Washington, D.C.: World Bank, tables 7.4 and 7.5, pp. 82–83; and Heggie, Ian G., and Piers Vickers. 1998. *Commercial Management and Financing of Roads.* Technical Paper 409. Washington, D.C.: World Bank. Tables 8.1 and 8.2, pp. 82–83.

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[b] Draft National Road Maintenance Fund Administration Bill for the Hashemite Kingdom of Jordan. Amman; Sylte, Ole, and Piers Vickers. 1997. *Operating Modalities for the Proposed Road Fund in the Hashemite Kingdom of Jordan*. Report submitted to the World Bank. April.

[c] Asian Development Bank. 1996. Proposed Loan and TA Grant 2631-Kazakhstan for *Road Rehabilitation Project*. 6 August.

[d] Asian Development Bank. 1997. *TA No. 2587-Kyrgyz: Institutional Strengthening of Road Sector Project*. Final Report, prepared by FINNRA. August; Asian Development Bank. 1999. TA No. 3065-Kyrgyz: *Policy Support in the Transport Sector*. Interim Two Report Prepared by PADECO Co., Ltd. December.

[e] Robinson, Richard. 1999. *Establishment of a Road Maintenance Fund*. Final Report (Issue 3) submitted to Lao People's Democratic Republic-Ministry of Communications, Transportation, Post and Constuction. United Kingdom; Gwilliam, K.M. 1998. *Comments on the Proposal to Establish a Road Fund in Lao PDR*.

[f] Asian Development Bank. 2000. TA No. 3268-Mongolia: *Policy Support in the Road Sector Project*. Inception Report, prepared by Sheladia Associates, Inc. and Transportation and Economic Research Associates, Inc. April.

[g] Draft Bill for the Establishment and Operation of Road Board. 2000. Presented by the Cabinet to the Parliament. Kathmandu. 24 January.

[h] World Bank. 1999. Minutes of Meeting on National Road Fund—Information Dissemination Workshop held on 15 December 1999. Pakistan.

[i] Asian Development Bank. 1999. TA No. 3191-Papua New Guinea: *Road Sector Cost Recovery Improvement*. Inception Report, Workshop Briefing Paper, prepared by WD Scott International Development Consultants. December; Asian Development Bank. 2000. Summary Workshop, 28–29 February: Proceedings on Road Management and Finance. 1 March.

[j] Government of the Philippines. 2000. Draft Act Imposing a Motor Vehicle User's Charge on Owners of all types of Motor Vehicles and for other Purposes; National Economic Development Authority. 2000. Press release of Rep. Joey Salceda on the Non-Passage of the Road Users Tax. 15 March; World Bank. 1999. *Better Roads Philippines*. Draft Final Report, prepared by Scott Wilson Kirkpatrick and Co. Ltd., in association with Cesar Virata and Associates, Inc. March.

[k] Draft National Highways Act (as of 29 October 1999).

[l] Asian Development Bank. 1998. Proposed Loan and Grant for TA 3118: *Institutional Strengthening and Policy Support to the Road Sector*. 24 November.

Table A3.2. Financial Arrangments for Road Maintenance Funds and Fund Initiatives

Country	Size of Fuel Levy/Charges	Who sets Fuel Levy/Charges	Estimated Annual Revenue	Deposit Mechanism	Auditing Requirement	Remarks/Updates
India	Info not available	Info not available	Rs2,500 crores for developing national highways (cess on petrol and diesel)	Info not available	Info not available	Based on World Bank information (22 May 2000), the Government was in the process of enacting legislation supporting funds for (a) road development and maintenance, (b) rural development, and (c) safety at level crossings. While earmarking is provided for road development and maintenance, the allocation mechanism between the two is not clear. There is also a possibility, in World Bank's opinion, that some of the central funds may not get appropriately allocated based on priorities. A formal road fund board is thus needed. Strengthening of Central Road Fund is being pursued by Government to ensure that the cesses and other changes like tolls are placed in a nondiversionary fund.
Jordan	Info not available	National Road Maintenance Fund Agency (NRMFA) makes recommendations to the Minister and sets the level of charges within Framework Agreement agreed annually with MOF.	Info not available	Direct deposit in a separate account in one or more local banks. Collection to be by contract between NRMFA and oil companies, Customs Department, Ministries of Transport and Interior, and/or private contractors, as necessary.	Annual audit by independent autditors nominated by the Board and approved by the Auditor General's Office. Report to be submitted to the Minister.	
Kazakhstan	- 0.5% tax on revenues of all enterprises- Tenge 3.0 per liter of gasoline and diesel- Taxes on vehicles of more than 10 tons- International freight traffic (rates to be determined taking into account axle load, length and condition of road to be traveled, and nationality)	Info not available	RMF collection for 1996 was expected to reach $125 million.	Info not available	Info not available	

Con't. Table A3.2.

Country	Size of Fuel Levy/Charges	Who sets Fuel Levy/Charges	Estimated Annual Revenue	Deposit Mechanism	Auditing Requirement	Remarks/Updates
Kyrgyz Republic	Info not available	Government through Ministry of Finance (to calculate the levels of surcharges and road user charges), in consultation with MOTC.	Info not available	Separate account (central depository) to be maintained by the MOTC in the National Bank. As of December 1999, no separate bank account established.	Annual audit conducted by independent auditors	ADB TA No. 2587-Kyrgyz recommends that urgent steps be taken to replace existing methods of the Control Department (MOTC) with internal audit procedures that concentrate on discouraging theft, fraud, and corruption; ensure that financial procedures and systems are being performed properly; and internal controls are being observed
Lao People's Democratic Republic	Proposed initial levels of charging:- Fuel levy on gasoline at the kip (KN) equivalent of US$0.02 per liter;- Fuel levy on diesel at the kip equivalent of US$0.02 per liter;- Annual heavy vehicle charge at the kip equivalent of US$60 on vehicles with unloaded mass greater than 3,500 kg- No vehicles exempt from paying road user charge.)	MCTPC in consultation with the Ministry of Finance, and on the advice of the RMF Steering Committee.	Estimates made on potential revenue from different annual heavy vehicle charge show that for a minimum charge of US$10, revenue potential is US$100,000 (or KN820 million) and for a maximum of US$1,000, revenue is US$10.3 million (KN82.4 billion).(assumes a combined truck and bus fleet of 10,300 vehicles, 100% collection, and exchange rate of KN8,000 = US$1.)	Separate account (at a commercial bank) operated and managed by MCTPC.(MOF to collect revenues and deposit them directly into the RMF.)	Annual audit conducted by Government (annual report to the Prime Minister will include the audit report, which will be published.)	The proposed fuel levy includes the equivalent of US$0.50 per liter, which is currently allocated to road maintenance from the consolidated fund. Values will be adjusted on a monthly basis to reflect inflation and changes in exchange rates with the US dollar. This will ensure that the fuel price does not rise significantly above the US dollar equivalent prices of fuel in neighboring countries. The level of charges will be adjusted annually, so that after 5 years the full cost of maintaining the national road network that is in a maintainable condition and not funded through external assistance will be raised from the road user charge.It is estimated that this will require an increase in both the fuel levy and heavy vehicle charge of approx. 20% per year.The consultant proposed 2 implementation stages. The first and immediate tasks are for Government to accept the report, MOF and MCTPC to agree on the opening of a special account, drafting of RMF Secretariat, procedures, appointing committees and technical assistance team, including conducting capacity building program. Stage 2, starting September 2000, would focus on actual funds flow, funding activities

Table A3.2. Financial Arrangments for Road Maintenance Funds and Fund Initiatives

Country	Size of Fuel Levy/Charges	Who sets Fuel Levy/Charges	Estimated Annual Revenue	Deposit Mechanism	Auditing Requirement	Remarks/Updates
						September 2000, would focus on actual funds flow, funding activities taken over under new arrangements, and continuing development of processes and procedures, awareness campaigns, and capacity-building program.By October 2001, the RMF Decree was to have been issued, along with the formal appointment of the Steering Committee and issuance of RMF regulations.
Mongolia	Fuel Tax: - Gasoline – 5% of retail price (MNT23,025 per ton of diesel	Government through ministry of Finance	Estimates for 1996 indicate that approx. US$2.14 million was paid by road users to the general budget in the form of fuel taxes and annual vehicle taxes. An additional US$6.4 million was generated from import duties and VAT on vehicles, parts, tires, etc. In 1998, the amount allocated was MNT5.9 billion, which is only 54% of what is needed, per DOR.	Separate DOR Road Fund account in Trade and Development Bank	Since a government entity is responsible for the RMF, it is assumed that audit will be conducted by the Auditor General. No information was provided in the available material.	A study was made to assist DOR in identifying other options to address the financing gap. A two-step approach was recommended: (i) adjust the percent-age of the fuel tax allocated to the RMF (currently near 25%, and (ii) raise vehicle license fees to better reflect the damage caused by vehicle type and weight. ADB TA Nos. 2380 and 2927 concluded that fuel taxes are adequate for road sector needs, but the allocation to the RMS is not. An increase in allocation was therefore recommended. The RMF is the only source of current funding for all road works and hence, maintenance expenditures have even lower priority in terms of allocation.
Nepal	Info not available	Board to determine recommended road and fuel charges, penalties to Government, including changes.	Info not available	Deposits in a commercial bank account designated by the Advisory Committee	Audit to be conducted by Auditor General or committee appointed by him.	

Con't. Table A3.2.

Country	Size of Fuel Levy/Charges	Who sets Fuel Levy/Charges	Estimated Annual Revenue	Deposit Mechanism	Auditing Requirement	Remarks/Updates
Pakistan	(Proposed) Road maintenance tariff (as of December 1999): - PRs 0.11 per liter on gasoline, PRs 0.21 per liter on diesel - Axle load charges of PRs39,800/2xl truck, PRs75,400/3xl truck, PRs110.800 per multi axle-articulated truck (or PRs1.12/liter on diesel) - Graduated annual per vehicle charges of PRs1,600–16,000 (with rationalization of existing provincial road use tariffs)	(Proposed) Board to have authority to determine level of tariffs, maintenance requirements, cost-sharing and revenue allocation, including policy setting, financial manage-ment	Info not available	Separate account	Independent financial and technical audits	
Papua New Guinea	Info not available	(Proposed) RTIA would (i) levy tolls and other charges for the use of bridges, ferries, or tunnels forming part of the road transport infrastructure, and (ii) prescribe levies and charges to recover any costs and expenses.	Info not available	Info not available	Regular government audits	The proposed bill made separate provision for the receipt, administration, and disbursement of funds of the RTIA. In addition, it provided for the formulation of regulations on various matters such as "(d) fees for the use of road transport infrastructure." Final refinements in the draft bill were made in 1996; however, the bill has yet to be presented to Parliament for enactment.
Philippines		Draft bill provides for the President to adjust the rates. After the fourth year, the President may adjust rates to reflect but not exceed the annual rate of increase of the consumer price	Pesos 3.35 billion from road users tax (approx. US$80.3 million at P41.7 = US$1)	All MVUCs collected to be deposited in 4 special trust accounts in the National Treasury: (1) Special Road Support Fund: 80% (2) Special Local Road Fund: 5% (3) Special Road Safety Fund: 7.5%	Government audit	DPWH and DOTC to prepare the Implementing Rules and Regulations (IRR) within 30 days from the effectiveness of the Act. DPWH to prepare IRR for funds (1), (2), and (3) and DOTC to prepare the ICCs for the collection of the MVUC and use of fund (4).The 4 special funds to be distinct and separate from and in addition to any annual appropriation given to the

Con't. Table A3.2.

Country	Size of Fuel Levy/Charges	Who sets Fuel Levy/Charges	Estimated Annual Revenue	Deposit Mechanism	Auditing Requirement	Remarks/Updates
		index. Adjustments may be made not more than once every 5 years.		Fund: 7.5% (4) Special Vehicle Pollution Control Fund: 7.5% Funds (1), (2), and (3) will be under DPWH; while fund (4) will be under DOTC.		given to the departments to cover identified expenditures under the draft bill. Congress will continue to appropriate an amount in the budget for DPWH road maintenance works.
Sri Lanka	Draft legislation of National Highways Act (third draft as of 29 October 1999) aims to facilitate the planning, construction, maintenance, operation, and development of national highways. Among other things, it authorizes the Road Authority to impose user-pay charges for the use of national highways.	Info not available	Info not available	Info not available	Info not available	ADB TA 3691-Sri Lanka: Road Maintenance Budgeting and Expenditure Control, is reviewing the funding of road maintenance.
Uzbekistan	- 1.4% tax on revenues of all enterprises - 2% turnover tax on road transport enterprises - $40 entry and documentation fee charged to foreign vehicles - 20% vehicle sales tax for buses	Info not available	Info not available	Info not available	Info not available	ADB TA 3118-Uzbekistan: Institutional Strengthening and Policy Support to the Road Sector (1998) aims to (i) assist in updating the existing Road and Road Transport Act to include regulations on organizations, jurisdiction of sector institutions, road infrastructure, user charges, etc.; and (ii) review the existing RMF and make appropriate recommendations.

Sources: Same as Table A3.1.

2. Marshall Islands

Table A3.3. Legal and Administrative Arrangements for Road Maintenance Funds and Fund Initiatives

Country	Legal Basis	Oversight Agency	Type of Entity	Board Composition	Type of Work Financed	Main Source of Revenue	Remarks/Updates
Marshall Islands	Draft legislation establishing the Roads Trust Fund (RTF) as a special fund. The draft was initially prepared in June 1998 and approved by Cabinet on 21 August for submission to the Nitijela (House of Representatives).	Ministry of Finance (MOF), as Fund Administrator, Ministry of Resources and Development (MRD) to be responsible for the road maintenance.	Department/division within MOF	None	Road maintenance	- Road damage charges, levied on registration of motor vehicles based on kind of vehicle and weight, and equivalent standard axles - Road use charges, levied on imported fuel used for motor vehicles - Money appropriated by the Nitijela for payment into the Fund	Establishment of RTF is an agreed condition for the release of the third tranche of the ADB's Public Sector Reform Program. Government is committed to "establish the Road Users' Trust Fund to ensure adequate funding for routine and periodic road maintenance and road traffic safety and [to] assign an adequate proportion of the proceeds of road user charges to such fund and the balance to the general budget." Original target date of October 1997 unofficially extended. Nitijela failed to act on legislation recommended by ADB TA No. 2756-RMI in its August 1998 session, was expected to reconvene in January 1999 to consider it.

Source: Asian Development Bank. 1998. TA No. 2756-RMI: *Institutional Strengthening of the Transport Sector*. Final Report submitted to the RMI Ministry of Transportation and Communications, prepared by WD Scott International Development Consultants Pty Limited. December.

Table A3.4. Financial Arrangements for Road Maintenance Funds and Fund Initiatives

Country	Size of Fuel Levy/Charges	Who sets Fuel Levy/Charges	Estimated Annual Revenue	Deposit Mechanism	Auditing Requirement	Remarks/Updates
Marshall Islands	Road damage charge by vehicle type and weight, reflecting pavement wear when at manufacturer's maximum permitted weight.Road Use Charge:gasoline US$0.10 per gal., diesel US$0.0 per gal.	MOF The draft legislation requires the MOF to consult with road users when reviewing the rates for the user charges.	The consultants estimated an annual revenue of US$271,500 (1998 prices) based on a flat increase in annual vehicle registration fee, road use charge of US$0.10 per gal. of gasoline, and a road damage charge.	Revenues collected by Police Department from road damage charge to be paid monthly to MOF on behalf of Ministry of Justice.The Chief, Revenue and Taxation, on behalf of MOF, to transfer all revenues collected from the road use charge to the RTF on a monthly basis.	Independent audit conducted annually	The charges set/fixed by MOF are based on the requirements set out in the Long-term Maintenance Projection (Plan/Program) prepared by MRD over the next 20 years. Projections are revised every 4 years. MRD is required to submit an annual road maintenance plan to MOF, prepared in prior consultation with major road users. The annual plan is the basis for annual drawdowns from the RTF.

Source: *Same as Table A3C.3.*

3. Latin America

Table A3.5. Legal and Administrative Arrangements for Road Maintenance Funds and Fund Initiatives

Country	Legal Basis	Sources of Revenues and Features for Road Fund	Features of Road Board	Issues/Problems/Updates
Costa Rica	Legislation establishing a road maintenance fund (RMF) passed mid-1998	Mainly funded by a fuel levyThe RMF is utilized for maintenance, rehabilitation, and improvement of the national road network. Priority is given to routine and periodic maintenance.All works and services are contracted out to the private sector.	The board is composed of 7 members: 3 members from the central Government (all from the Ministry of Public Works and Transport), 1 member representing municipalities, and 3 members from the private sector. The private sector representatives are nominated by their respective organizations.	The RMF is governed by government rules concerning wages and letting of contracts, which might have negative effects on its efficiency.
Guatemala	Legislation was passed in 1996 increasing the taxes on motor fuel and dedicating this increase, plus part of the existing fuel taxes, to a special fund exclusively for road maintenance.	(Increased) taxes on motor fuel and part of existing fuel taxes, fuel levy, vehicle fees, tolls, miscellaneous Funds utilized for maintenance of national roads only. All works and services are contracted out to the private sector. Administrative cost of the road fund is limited to 2% of its annual turnover.	Decree creating the board was made in early 1997 and mandates 6 representatives, 3 members each from the Government and the private sector.	The original intention of the Ministry of Transport was to create an autonomous RMF. However, the legislation did not secure the required two-thirds majority vote of Parliament, so the idea was no longer pursued by the Government.

Table A3.5. Legal and Administrative Arrangements for Road Maintenance Funds and Fund Initiatives

Country	Legal Basis	Sources of Revenues and Features for Road Fund	Features of Road Board	Issues/Problems/Updates
Honduras	Legislation creating a road maintenance fund (RMF) was passed in 1993.	Principal source is a levy on fuel in the form of a dedicated tax. Up to 10% of funds can be utilized for rehabilitation works. All works as well as services contracted out to the private sector.Administrative cost of the RMF is restricted to 2.5% of the annual budget.	An 8-member board has executive functions and supervises the fund (4 representatives from central government, 1 from the Association of Municipalities, and 3 from the direct and indirect road users). The Minister of Transport and Public Works (MTPW) is the board chairman and appoints the members of the private sector upon nomination by the organization they represent.The board is responsible for the routine and periodic maintenance of the official road network, excluding urban and municipal roads. Execution and supervision of road maintenance is contracted out by the Board to the private sector, while planning is being done by MTPW.	The specific provision of the law stipulating that the proceeds from taxes related to road transport, such as fuel taxes, import duties on motor vehicles, licensing fees, etc., form part of the income of the RMF was amended by the new government. As revised, a specific portion of the fuel tax would be dedicated to the RMF.(The above-cited revenues would provide twice the amount of funds needed for road maintenance.)
Countries with Road Funds in Initial Stages of Preparation				
Brazil				Brazil is still far from reaching a consensus on creating a road maintenance fund. However, the urgency to reform the existing inefficient and ineffective system of road maintenance is being felt, so there is pressure to undertake major reforms to finance and manage road maintenance.
Colombia				Initial progress toward establishing an RMF has suffered major setbacks due to the change in government.
Ecuador				Ecuador is still far from reaching a consensus on creating a road maintenance fund. However, the urgency to reform the existing inefficient and ineffective system of road maintenance is being felt, so there is pressure to undertake major reforms to finance and manage road maintenance.

Table A3.5. Legal and Administrative Arrangements for Road Maintenance Funds and Fund Initiatives

Country	Legal Basis	Sources of Revenues and Features for Road Fund	Features of Road Board	Issues/Problems/Updates
Nicaragua	The Government has submitted draft legislation creating the road maintenance fund (RMF) to Parliament.	Main source would be a fuel levy, to be increased gradually. 10% of the RMF's annual budget is intended for rehabilitation works. Eventually, the RMF would be used for the entire road network, including urban and municipal roads. All works and services must be contracted out to the private sector. A cap on administrative cost is set at 5% of its annual budget.Internal audit will be undertaken, together with an annual audit to be done by an independent auditor	A 6-member Board will oversee the RMF, with private sector having 3 members (representing direct and indirect road users), 2 from government, and 1 from local governments.	The Government has taken on an extensive public awareness campaign. It has decided not to increase fuel prices at the initial stage of the RMF. Part of the existing fuel taxes will be allocated to a dedicated fuel levy.

Notes: Based on Dr. Zietlow's paper presented during the XXI[st] World Road Congress in October 1999, it would be too early to assess the performance of the road maintenance funds (RMFs) in Latin America. Nonetheless, there are several lessons that can be learned from the process of establishing these funds in the region.

- Achieving a broad consensus among all stakeholders is an essential prerequisite for creating an RMF. This could be achieved by: (i) creating a forum for discussion (seminars) with the stakeholders, government, political parties, associations/organizations representing direct and indirect road users; (ii) demonstrating clearly the economic consequences of poor road maintenance to all parties involved; (iii) presenting a concept that will reform the financing and management of road maintenance on a long-term basis; and (iv) keeping the public informed through a media campaign, print, and TV.
- Creating an RMF in smaller countries with poor road conditions is easier and faster than in bigger countries with better roads. Countries in Central America were fairly quick to create such funds, while Brazil and Peru are faced with difficulties in coming to agreement.
- Timing of new legislation (i.e., creation of an autonomous fund and establishment of a fuel levy) is crucial, as governments and parliaments often are reluctant to act swiftly when elections are coming up. It would be strategic to pass the new laws during the early days of a new administration, while having achieved a broad consensus among major stakeholders during the preceding period. (However, there are also risks to be considered, such as new governments' policies and thrusts (continuity), and champions, especially within government.)
- Increasing fuel prices through a fuel levy has to be done gradually in view of its political sensitivities and in line with the projected savings in vehicle operating costs from improvements in road conditions, to avert inflationary effects. To ease the burden on road users, it is suggested that in the beginning, a portion of the existing fuel taxes be transformed into a fuel levy for maintenance, as in Guatemala.

Sustainability of an RMF depends not only on the principles, but also on the environment in which it operates. The political, economic, and social stability of a country, as well as a well-established culture of citizen participation in public and communal affairs, are deemed essential for long-term survival of RMFs.

Appendix 4. Summary Report of the Regional Workshop

1. Introduction

The Transport and Communications Division West (IWTC) of the Asian Development Bank (ADB) organized a 2-day regional workshop from 6 to 7 March 2001 at the ADB Headquarters in Manila, Philippines. This appendix summarizes the workshop proceedings. Additional details are included, in four annexes.

2. Purpose and Objectives of the Workshop

The main purpose of the workshop was to solicit, exchange, and generate views and ideas on the findings and recommendations of a draft working paper, prepared under a regional technical assistance (RETA), Road Funds Strategy (RETA 5871), on how best to provide sustainable funding for road maintenance.

Specifically, the objectives of the forum were to:

- Present the different views of the stakeholders, ADB, and other funding agencies on how to address the continuing road maintenance issues and provide for a sustainable road maintenance funding;
- Learn from neighboring Asian countries, including those from Africa and Latin America based on the World Bank's and German Agency for Technical Cooperation's[18] (GTZ) experiences, respectively;
- Present the framework for the Road Maintenance Fund and its applicability to developing member countries (DMCs); and
- Identify probable solutions and joint efforts for sustainable road maintenance.

Annex A, Workshop Program, is found at page 75.

3. Attendance

A total of 88 delegates attended the workshop representing the government sector, major funding agencies, and private sector/consultants. The workshop was specifically targeted to have the participation of two critical government stakeholders in the road sector, namely, the ministries of finance and transport/communications, or road agencies. Twenty DMCs of the ADB were represented and almost half of the participants were from the ministries of transport/communications and road agencies.

There was a high level of representation from these ministries as secretaries and deputy ministers or undersecretaries attended the workshop. Having these officials in the workshop was useful because of their role in decision-making processes. Officials involved in actual operations and day-to-day management of road networks were also present.

Resource persons were from ADB's partner institutions, namely, the World Bank, GTZ and United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP). Major donor "development lending" agencies active in the road sector were also represented, namely, Department for International Development (DFID) (United Kingdom), International Labor Organization, Japan Bank for International Cooperation, and Swedish International Development Agency. Consultants working on ADB-funded projects and the private sector also participated. The complete list is found in Annex B, page 77.

[18] In full, GTZ is the Deutsche Gesellschaft für Technische Zusammenarbeit GmbH.

4. Overview of the Workshop

a. Process and Important Points Raised

The workshop was structured to provide information on actual experiences regarding the establishment of road funds worldwide. Interaction among and between participants was built into the workshop through preassignment into specific work groups of at least six members each. (See Annex C, page 85, Groupings for the Work Sessions.) There were four workshop sessions conducted, the first three having the same membership, while the last workshop grouping was designed to cluster finance officials into groups and roads people into another group. Funding agencies and consultants were also grouped separately for the last workshop session. After each session, group representatives reported to the plenary and questions were then entertained during the open forum/discussion.

Mr. Myoung-Ho Shin, Vice-President for Region West, ADB, gave the welcome address. In his address, Mr. Shin noted that the subtitle of the workshop, "Solving the Maintenance Neglect," was the main challenge for all the participants to address. He explained that ADB used these words deliberately because poor road maintenance has been a thorny and frustrating problem caused by lack of funds, which also meant lack of quality personnel, equipment, materials, and facilities. Poor maintenance further leads to capital investments being lost in main roads amounting to about $43 billion in the 1980s, as shown by a World Bank study of 85 developing countries. With poor roads, vehicle operating costs, borne by road users, increase by about $2-3 per vehicle-kilometer annually. Citing India as an example, Vice-President Shin said that with better road maintenance, vehicle operating costs could be reduced by $4 billion a year.

In response to these problems, ADB provided funds for a RETA to investigate effective mechanisms and ideas to address the maintenance problem such as transforming road agencies into commercial entities by establishing a road maintenance fund (RMF). During the process of coming up with the mechanism for an RMF, Vice-President Shin emphasized the importance of the role and responsibilities of the local governments and private sector. He also cited the need for the RMF to attain ADB's fundamental goal of poverty reduction and to adhere to the principles of better access to basic services for the poor and a greater or equal voice for them in decision making. The RMF should also have a road board based on the principle of governance—accountability, predictability, and transparency as important ingredients.

Vice-President Shin affirmed ADB's commitment to work with its DMCs, partner institutions, and the private sector to overcome the culture of neglect of maintenance.

Following the welcome remarks was a presentation by Mr. Marcelo Minc, ADB, of an overview of the road maintenance scene—its importance to the economy and society, the costs of building roads not only to the road agency, but also to the road users as well. In the objective analysis of the costs, using data from Papua New Guinea, it was shown that road user costs were much higher than road agency costs. Achieving a small percentage reduction in the user costs would result in more savings to the economy. But to realize these savings requires that governments spend four times as much on maintenance. The reality, however, was that maintenance budgets were less than a third of what was needed.

Mr. Minc then enumerated the reasons why maintenance struggles for money: capital bias (to build new roads), equity and fairness (resealing a village access road seems unfair when other villages still have no roads), poor roads not being the road agency's main concern, problems of the national budget process (giving more money for roads means less for health, education, etc.) and the road agency, may be asking for too much money.

While there have been past efforts to improve the situation, these have produced few successes. Lending agencies have urged governments to earmark user charges but countries have had difficulties keeping their commitments, with the countless demands on government general revenues. Earmarking has not been favored by ministries of finance because they want control of all government revenue collection. There is a fear that earmarking will result in fiscal inflexibility, which the International Monetary Fund (IMF) opposes, along with the fear that earmarked funds give road agencies even more money "to waste."

But there is room to change for the better. Given that every dollar "saved" on road maintenance costs $2–3 dollars to road users, road maintenance requirements may be funded off-budget by making road users pay. In the end, the users will still be better off. The Ministry of Finance should be concerned about poor road condition because its responsibilities include the efficient use of money, and value-for-money, effective implementation, and fighting corruption. Thus, the same Ministry should create a system that provides the road maintenance that users need and which they are willing and prepared to pay for.

The present situation of road maintenance is not encouraging. This was shown through pictures taken in countries where a once paved two-lane road has become a very rough one-lane road and a paved two-lane road that has a sliver of seal remaining.

Picking up from what Mr. Minc presented, the first work session focused on getting the views of participants regarding the assertion that "You should first preserve what you have." Discussions centered on questions directly associated with each participant recognizing if his/her country has a problem of inadequate maintenance and commenting on the problems of (i) money not spent efficiently, (ii) money not spent effectively, (iii) money allocated but not spent, and (iv) money not allocated. The detailed tabulation of all workshop sessions and group responses are presented in Annex D, Workshop Sessions, Results and Recommendations, found at page 91.

The afternoon session then provided the experiences of three funding agencies active in the road sector and what could be imparted based on their experiences. Dr. William Paterson of World Bank presented the recent findings of a World Bank assessment on selected road funds in Africa under its Road Maintenance Initiative (RMI) — Sub-Saharan Africa Transport Policy Program (SSATP). Under the RMI-SSATP, more than 16 countries have established an RMF. The assessment, however, focused on six countries, namely, Benin, Ethiopia, Ghana, Kenya, Malawi, and Zambia, with relevant examples taken from other countries.

Dr. Paterson's presentation was divided into three parts: (i) Road Board structure — management focus, legal basis, and road user participation; (ii) process — adequacy and stability and performance monitoring; and (iii) objective achievements — road quality, resource allocation, operational efficiency, and capacity of local construction industry. He then proceeded to present the outstanding issues.

In terms of the performance of the Road Board structure, the overall reform process enjoyed widespread public support and activities were widely shared, including transparent allocations, publication of annual reports, and media coverage. With regard to the process, it was found out that money was still insufficient to address full maintenance needs. The road board was unable to match/adjust road user charges with maintenance needs. Delays were also experienced in transferring money due to the RMF. Specific to Zambia, only 30% of government contribution was channeled through the Road Board. There was a need to put in place auditing arrangements except for Ghana. Strong pressure was felt to fund rehabilitation of the primary and city network. For example, in Malawi and Zambia, more than 50% of the road fund resources were spent on rehabilitation of capital city roads in fiscal year 1999.

Objectively, the achievements indicated that the share of paved roads in good condition has increased for Ethiopia, Ghana and Zambia, but the benefits have been confined to main and urban roads. The RMF has stabilized road financing, which helped reduce uncertainties in the budgetary process. It also addressed the problem of lack of synchronization between the budget year and construction season. By providing funding certainty, effective competitive bidding was undertaken that resulted to reduced unit costs for maintenance (particularly for Ghana). The share of force account in road maintenance works decreased and it allowed the increase in the use of local contractors.

The key lessons from the assessment were:

(i) Road funds were necessary but not a sufficient condition to ensure sustainable road maintenance;

(ii) Road funds have to increase in step with absorptive capacity to deal with maintenance needs;

(iii) There is a need to work harder on non-primary roads;

(iv) There is a need to strengthen capacity of road agencies and private contractors in parallel with stabilizing road funds;

(v) The flow of fuel levy revenues to the road fund must be efficient and transparent with a premium on reducing the number of intermediate steps;

(vi) There is a need for built-in mechanisms which are necessary to adjust fuel levy regularly (as inflation erodes the real value); and

(vii) There is a need for continuous independent performance monitoring for both financial and technical aspects.

Based on these lessons, the following outstanding issues need to be addressed:

(i) What is the optimum staff size of the board and its compositions?

(ii) What are the sufficient conditions for sustainable reforms in road management and financing?

(iii) How to define "maintenance" and what should be the road fund mandate.

(iv) How best to relate road user charges to damage caused in an economic sense.

(v) How to address maintenance needs of rural network given insufficient resources and greater perceived needs of capital city and primary network.
(vi) How to protect the real value of fuel levy.
(vii) How to protect nonusers of road from fuel levy.
(viii) What is the time frame to use for evaluating performance and amending initial design?

Dr. Gerhard Metschies of GTZ gave an account of GTZ's experience on "Introducing Road Funds in Latin America." He provided nine summary points.

(i) Roads in Latin America are deteriorating and their replacement cost is valued at $350 billion;
(ii) Road funds are important means but are only a part of the general issue of reestablishing financial discipline in the country. With an unstable financial sector in Latin America, the establishment of an RFM has to go hand-in-hand with the financial stabilization of the state;
(iii) Given the presence of interest groups and objectives of international banks, the roads sector must be formed into an economic growth-oriented sector. This requires professional asset management;
(iv) The first priority should be given to maintenance, which gives the highest economic yield;
(v) Revenues from the fuel levy have to be adequate and earmarked for maintenance;
(vi) The lessons learned in introducing RMFs in Latin America are:
   (a) The road fund initiative has to be spearheaded by a high-ranking government official, preferably the prime minister, minister of finance, or the transport committee of the parliament and not only the minister of works;
   (b) Establishing the fund as part of the general stabilization strategy of public finances, it has to be approved by the ministry of finance; otherwise, it is bound to fail;
   (c) The political pressure has to be harmonized with a well-planned public relations campaign to win public support;
   (d) The formation and support of road user lobby groups (transport-driver unions) may be decisive for the acceptance of financial burdens for new transport, vehicle, and road fees; and
   (e) The road maintenance charges can only be raised gradually in line with road network improvements. Charges should be introduced constantly, step-by-step, and reflective of the world market prices.
(vii) There is a vehicle taxation strategy in many South American countries that is nonexistent in the United States (US) and in many other countries;
(viii) Latin American countries often follow the US in terms of economic policies and programs, and this includes the example set by the US road fund. The US road fund comes from earmarked fuel taxes. The Federal Road Fund provides for an internal cross-subsidization from richer to poorer states, e.g., California to Alaska. It allows funding for road safety measures, mass transit, and research. Hence, the US experience is of major importance for the political and economic changes in the Latin American region; and
(ix) Highway Development Management System (HDM4) may be considered the best model but a precondition would be the use of a road and bridge data bank. Careful asset management of road investments is another precondition and this is a crucial first step to reducing the total transport costs.

The Asian and Pacific initiatives to improve road maintenance financing were presented by Dieter Niemann of the UNESCAP, which has been the World Bank's and ADB's partner in organizing road fund seminars and workshops.

Mr. Niemann explained the current situation in Asia and noted those countries had undertaken country-level workshops. Since 1997 until 2000, 10 countries have conducted these workshops, namely: Pakistan (April 1997), Philippines (May 1997), Lao People's Democratic Republic (Lao PDR) (February 1998), India (May 1998), Nepal (May 1998), Bangladesh (November 1998), People's Republic of China (December 1998), Sri Lanka (June 1999), Papua New Guinea (February 2000, jointly with ADB), and Viet Nam (May 2000). Results of the workshops indicated that all these countries, except Sri Lanka, opted for a road fund to be financed mainly by road user charges. All countries have voted for an oversight body/board comprising all stakeholders, particularly the road users. The majority of these countries also opted for a majority private sector board to ensure efficiency through commercial management.

From the Asian experience, it was learned that each country has to develop its own policy and institutional approach to road sector reform. Setting up an RMF is a formidable challenge and a time-consuming process. To meet the challenge and go through the process, four important objectives have to be reached:

(i) A realistic action plan has to be prepared to keep things on track;
(ii) Detailed studies have to be made to define implementation strategy. Procedures and modalities are important to be defined;
(iii) Study tours must be undertaken to other countries to learn from their practical experience with setting up a road fund and to view day-to-day operations of an active road fund; and
(iv) Continuing donor follow-up and support is imperative.

Conclusions from the Asian initiatives point to two main factors: (i) that the key element is the active involvement of all stakeholders, the different public sector agencies, in particular, the finance ministry as well as the different road user/private sector groups; and (ii) that strong political commitment and determination for reform is crucial.

Mr. Niemann noted that Asia was different from other regions because it started much later in recognizing the need to seriously address road maintenance for the many new roads built during the rapid economic growth of the last two decades. Furthermore, the initiatives in Latin America and Africa were coordinated through regional programs of interventions supported by a number of donors and other actors. In Asia, however, these initiatives were either single-lender activities in individual countries or as joint World Bank/UNESCAP programs and were often confined to awareness creation, experience exchange, and providing a forum to discuss available options.

Yet, he was optimistic that there was hope for Asia and he noted that the RETA 5871 workshop might be a starting point for a coordinated multi-funding agency program. While good progress has been achieved in a number of countries and in the region, further funding agency support to complete the process and implement the reform is required. However, Mr. Niemann noted that to bring forward reforms for sustainable road maintenance in Asia, a "success story within the region" was urgently needed.

The main topics discussed during work session 2 centered on the applicability of other countries' experiences on road maintenance and funding, considering differences in policy environments, culture and institutional capabilities, among others. (Refer to Annex D, page 93 for details.)

Day 2 of the workshop had the theme "The Way Ahead" to tackle matters regarding the framework of road maintenance funds, stakeholder participation, and self-reliance in the process of change.

Dr. K.E. Seetharam of ADB's Operations Evaluation Office provided a briefing on its findings and recommendations regarding problems associated with road projects and solutions to address these, specifically on maintenance and safety. A total of $11.2 billion worth of investments for 151 road projects were funded by ADB. Additionally, $5.16 million in technical assistance has been extended for road safety measures. In year 2000 alone, the road sector accounted for 13% of the total loan portfolio.

The solutions to road maintenance and safety problems, according to Dr. Seetharam, could be seen once these problems were viewed together from a higher level. Using the GOODS principle, new solutions to the problems could be seen. The first is to *Build **G**enerously*. Lessons from externally funded road projects show that designs with high investment costs warrant lesser (routine) maintenance. Second, *Maintain and **O**perate with **O**wnership*, which means that sustainability is directly related to maintenance. And to achieve this, ownership is a prerequisite, including community-oriented initiatives, user fees as maintenance funds, no delays and no compromises, and budget for routine maintenance. The last solution is to ***D**eliver goods and people **S**afely*. Safety is the benefit that accrues to all road users.

In the design of road investment projects, reflecting well on the following would help out in finding solutions:

(i) IRRs and least-cost analysis can be misleading. Road projects always achieve greater than 12% EIRRs but they can perform better; and
(ii) "Maintenance" is taken for granted at appraisal stage. Even in sensitivity analyses, maintenance is not quantified.

Dr. Seetharam informed the group that ADB could provide grant assistance for capacity building; information, education, and communication campaigns; and community initiatives to improve safety and maintenance, which in turn, contribute directly to poverty reduction. Providing grant funds also frees up scarce government resources for other poverty-related activities.

Four Asian countries, namely, Lao PDR, Nepal, Pakistan, and Philippines, gave an account of their experiences on setting up an RMF and the status of these funds. From Lao PDR, Mr. Sisomphanh Phinsipasom, Deputy Director of the Road Administration Division, Department of Roads, made the presentation. He provided the background of Lao PDR's road transport system, its road strategy, maintenance performance indicators, and road conditions. In early 1998, the

Government initiated a dialogue with funding agencies on setting up a road fund. Several activities followed including funding agency missions, study tours, policy workshops, and intergovernmental meetings. On 12 October 2000, the Prime Minister signed Decree No. 146/PM establishing a Public Road Maintenance Fund, which was later replaced with Decree No. 09/PM, signed on 15 January 2001, setting up a "Road Maintenance Fund." Another decree was signed on the same day for the establishment of the Road Advisory Board. The main source of revenues will be a fuel levy and a heavy vehicle surcharge. The revenues will then be deposited in an independent account in the Bank of Lao PDR and subject to annual audit. As of 16 March 2001, a consultant was hired to assist the Ministry of Communications, Transport, Post and Construction to establish the operation procedures for the road fund, draft operational regulations, and assist the secretariat. It is expected that the fund will be operational within the current financial year.

Director-General A.P. Khanal, of the Department of Roads, explained the Nepalese Government's approach to the problem on funding road maintenance. Toll charges have been instituted in the country to be used to support routine, recurrent and emergency maintenance activities on specific road sections. Based on the encouraging results of having toll revenues, the Parliament approved a dedicated road fund mechanism in December 1995 and it became a statute as an enabling Bill in February 1996. The Bill allows for the creation of an RMF to be administered by a steering committee. Revenues from toll roads and other sources would accrue to the fund. In November 1997, a central toll road account was formally established.

As a result of the Road Management and Finance workshop in May 1998, a road management and finance reform implementation committee was set up to prepare a proposal for sustainable funding and improved management of road maintenance, together with the necessary legal and regulatory framework. The committee drafted the "Road Board Act," which was modeled according to other countries' experiences. Basically, the draft Act proposes to create a road board and a secretariat to manage the RMF, which will be funded from road user charges for routine, recurrent, emergency, and periodic maintenance on all public roads. The draft Act was presented to the Parliament on 24 January 2000 for approval. To date, the draft Act is still being discussed.

Mr. Syed Najmul Hasan of the National Highway Authority (NHA) shared Pakistan's experience. Similar to other countries, Pakistan's problems have resulted from excessive loading of heavy vehicles and high traffic volumes. Road pavements do not have the carrying capacity to cope with present usage due to poor pavement structures constructed in the 1970s. The pavements were designed to carry traffic volume between 2,000 and 4,000 vehicles per day. Inadequate funding for maintenance further aggravates the situation; maintenance allocation given is usually 25% of the total requirements.

In the April 1997 country-level workshop, the main recommendation was to create a Road Fund and Management Board. Two years after, the Government approved a policy on the establishment of a road fund. The Cabinet Committee decided in January 2000 for the "road fund (to) be constituted with details to be finalized by the Ministries of Finance and Communications." Draft legislation on Road Fund Administration Ordinance 2000 was prepared by the NHA and commented upon by the World Bank. By June 2000, the Ministry of Finance notified the interim Road Fund Management Board. However, the modalities of the road fund have yet to be finalized. At this time, the decision on the RMF is still under consideration by the Ministry.

The Philippine presentation focused on the progress of implementation of the Motor Vehicles User Charges Act (RA 8794), which serves as the legal basis for the creation of the dedicated Road Fund and the Road Board.

Director Linda Templo enumerated the background work and studies undertaken by the Government leading to the Act. The first transport strategy study was done from 1996 to 1997 and at this time one of the recommendations was for the establishment of an RMF. This initiative was then followed by a workshop in 1997; a "Better Roads Philippines Study" funded by the World Bank in 1998–1999, and a simultaneous study on rationalizing road user charges. Further, in the Government's Medium-Term Philippine Development Plan for 1999–2004, one of the policy thrusts and programs of the road sector was the road fund.

The Motor Vehicles User Charges Act was signed into law on 27 June 2000 and its Implementing Rules and Regulations became effective on 5 September 2000. The Act provides for the (i) imposition of user charges on owners of all motor vehicles, including government vehicles; (ii) setting up a dedicated RMF; (iii) continuing budgetary appropriation to the Department of Public Works and Highways (DPWH) for maintenance of national roads; (iv) establishment of a road board and secretariat; (v) establishment of a road program office; and (vi) establishment of a Vehicle Pollution Control Fund Committee.

In terms of allocation of road fund revenues, these will be dedicated for the (i) maintenance and drainage improvements on national roads (80%); (ii) maintenance of local roads (5%); (iii) installation of traffic lights and road safety devices (7.5%); and (iv) air pollution control (7.5%).

The Government/public sector has the majority of the membership in the Road Board with four seats and with the DPWH Secretary as the ex-officio head. Other public sector members are from the Department of Finance, Budget and Management and the Department of Transportation and Communications. The private sector has three seats as members and they are representatives from transport and motorist organizations. Private sector representatives have been appointed. So far, the Board has had four regular meetings since November of last year and regular meetings are scheduled every first Friday of the month. The Road Program Office has already started work on the annual work plans and preparation of criteria for project selection and fund allocation, organization and staffing requirements, among other things.

In conclusion, Director Templo cited that the initial activities of the Board and the Road Program Office show DPWH's commitment to road reform. Further, she emphasized the DPWH's willingness to engage in discussions with stakeholders regarding strategies to ensure successful transition and implementation of these reforms.

Dr. Ronald Allan, a consultant engaged under RETA 5871 Road Funds Strategy, presented a suggested framework for a road maintenance fund. Citing the lessons from toll roads being properly maintained, attracting users due to savings and taking account of users cost, the message was to reform road administration. Road administration should try to imitate toll roads and view its custody of roads as providing a service to users. To do this, the road agency should have (i) the analytical ability to take account of road users' costs, (ii) harness user involvement, and (iii) charge road users for the service they receive.

One approach to reform is to set up an RMF based on (i) a "road tariff" (road user charges), (ii) an independent board, and (iii) a small secretariat to serve the board, while keeping the road agency intact. The Fund should meet the funding requirements for routine and periodic maintenance; rehabilitation;[19] minor road improvements to be implemented during rehabilitation work; and administration costs, planning and programming activities, training, and research and development.

Revenue sources of the RMF would be road tariffs directly levied on road users as fees for access (time-related fee) and fee for usage (fuel tax). Dr. Allan mentioned that tariffs should be set to meet expenditure requirements and not the other way around. Further, tariffs should mirror maintenance costs for deterioration due to time and weather and pavement wear. Specifically, these earmarked charges/road tariffs paid directly by road users should include:

(i) Levies on consumables, mainly fuel,[20]
(ii) Annual vehicle license fees,
(iii) Supplementary heavy vehicle fines,
(iv) Fines for overloading, and
(v) International transit fees.

Dr. Allan emphasized that earmarking should not affect the consolidated revenue fund and the budget allocation for health and education, among others. The consolidated revenue account would lose revenues due to earmarking but these are transferred to the RMF. Essentially, in the consolidated revenue fund, re-labeling of some taxes (i.e., petrol levy, diesel levy, and license fees) would be done. These levies are transferred to the RMF, and also include new charges. Introduction of new charges would be based on the premise that the money goes to road maintenance and, thus, the road users would be willing to pay these new charges. Mechanisms must be put in place to accommodate diesel fuel not used by road vehicles, rather on electricity, railways, industries, boats, farms, etc. Possible solutions may include coloring diesel fuel that would exclude payment of charges, exemptions, refunds, and compensations.

In the creation of an RMF, it would be useful to have a mission statement that may read as follows:

"The mission of the RMF is to promote road network maintenance to a standard users want and are willing to pay for, by collecting a road tariff and by allocating funds to road agencies that comply with RMF standards for sound planning and execution of works."

The mission statement formulated by Dr. Allan implies that:

(i) There is strong user involvement;
(ii) There is an existing customer-supplier relationship with road agencies which indicates:
  (a) the RMF sets the rules; and
  (b) the road agency role remains focused on planning and programming, contract procurement and supervision, 'force account' work (if RMF permits) and financial and technical audits.
(iii) The road agency is accountable to the RMF; and

[19] Rehabilitation is defined as overlays to be done every 15 years to restore smoothness and durability.

[20] In Latin America, fuel levies of 7–9 US cents per liter would maintain the whole road network.

(iv) The RMF is accountable to road users and therefore should be transparent by undertaking information dissemination activities.

With regard to the establishment of the RMF Board, the members must be able to pursue the interests of road users. Hence, the private sector must have majority membership (with the chairman coming from this group)[21] chosen for their expertise and contribution. The public sector, who may be appointed ex-officio, would be in the minority, with representatives chosen from the ministries of finance and transport and local municipal and rural local governments. Road agencies are not included as they supply the services to the RMF. A nine-membership board with a staggered three-year term may be the standard.

The RMF must have a secretariat headed by a chief operating officer (CEO) appointed by the Board. The CEO then appoints professional staff with expertise on administration, economics, accounting, planning and engineering. Outsourcing of functions on revenue collection, monitoring and special projects may be done.

Setting up the RMF with legislation would be the best arrangement. The Board would be given full legal powers to enter into legal agreements, collect road tariff and open bank accounts for the revenues. Moreover, the Board must have fiduciary duty as trustees of the revenues to protect the revenues against "raids" and ensure the revenues are spent in users' interests.

With the RMF, (i) money would be spent efficiently—the RMF sets rules for identifying and prioritizing work; (ii) money is spent effectively—the RMF sets rules for carrying out maintenance work; (iii) money is disbursed in timely way—the RMF gets, and disburses a steady revenue stream; and (iv) enough money is allocated—as RMF revenues match maintenance needs.

In implementing the reform, Dr. Allan explained that it should be the finance ministry that should sponsor the reform. It is the primary government agency that is concerned about getting value for money in terms of the economic allocation of resources, effective program/project implementation and fighting corruption. Sponsorship by the road agency would present a conflict of interest because the agency is the supplier to the RMF and the Fund its customer.

The points enumerated by Dr. Allan were considered to be "best practice." In actuality, lending agencies working with the road agency are pushing reforms. Strengthening road agencies usually take the form of being provided with a pavement management system (PMS). The road agency therefore becomes the sponsor of reform, calling for more funding. With lack of commitment, reforms often progress slowly, then stall; or implementation becomes selective and the RMF defective. Most often, the PMS is eventually abandoned.

Dr. Allan concluded by stating that there is a better way to achieve the reforms. First, the country must recognize its problems and take the initiative to investigate solutions. Second, funding agencies/lenders should support the initiative by promoting intellectual independence, offering "on demand" technical support, "strengthening" activities using locally sustainable technology. And, lastly, local solutions should be developed to match local absorptive capacity.

He ended the presentation by showing pictures taken in Papua New Guinea depicting community action for road maintenance. The sign shows the toll collection of five kina ($2) to pay for "maintenance" evidenced by a pothole filled with soil.

Following the presentation of the RETA 5871 draft working paper, the groups were again convened for work session 3 to consider the applicability and feasibility of the RMF in their specific countries. The workshop questions were based on the framework provided by Dr. Allan on the composition of the Board, the role of the Ministry of Finance, and sources of revenue for the RMF, among other things.

Given the importance of road stakeholders' participation in the process of improving road management and funding, including setting priorities and monitoring the effectiveness of expenditures, a case study of Pakistan was presented by Mr. Stephen Vincent,[22] Road Management Specialist.

Mr. Vincent recounted the activities leading to the creation of the Association of Road Users of Pakistan (ARUP) from the conception of the idea, to its establishment and updates on recent initiatives. The country-level road fund workshop in 1997 provided the opportunity for the contractors' association and truckers' representatives to request a seminar to discuss road sector problems and potential areas for improvements. The seminar, sponsored by the contractors' association, was convened in spring of 1998, in Islamabad. This was followed by the National Road Users Workshop in October of the same year, attended by transport sector representatives, con-

[21] The private sector members may be chosen from among road user organizations representing the chambers of commerce, industrial and mining associations, agricultural groups, tourism industry, motorists associations, truck operators associations, bus operators associations, taxi associations, NGOs with special interests (poverty, environment, etc.), scientific and academic institutions, and professional associations (engineers, lawyers, etc.).

[22] Mr. Vincent has had actual experience in Pakistan and is presently involved with the Road Information and Management System (RIMS) Project of the Philippine Government's Department of Public Works and Highways.

tractors and consultants, government, NGOs, international agencies and representatives from all provinces of Pakistan. In this workshop, the decision to form an organization was made, together with the creation of an ad-hoc committee representing all regions and groups.

A series of provincial workshops was then convened in Lahore, Peshawar and Karachi in 1999. By the year 2000, ARUP had conducted a road safety seminar and produced a road safety brochure. Each regional office in Sindh, Punjab and Islamabad concentrated on different initiatives, from road safety, commercial driver training, accident reporting, environment and control of pollution emissions. Although the World Bank had originally hoped that ARUP would take the debate on Road Fund further, sponsorship and member interests moved to road safety and environment. Experiments with the use of the Internet also started, such as the independent "RoadPeople.org" and the World Bank's Transport Sector Development Initiative, which provides internet support for transport sector consultations.

With assistance from the World Bank, the ARUP convened "Road Stakeholder Consultation Program" workshops in each of the four provinces of Pakistan from August to September 2000 and the concluding session was held in Islamabad on 18 January 2001. At the concluding session, the main recommendations, endorsed by the Federal Minister for Communications and Railways were:

(i) To gradually move the National Highway Authority (NHA) from a highway department/road construction agency mindset towards a network operator/service provider role, with greater customer focus;

(ii) To establish feedback mechanisms to enable regular interaction with road users, and meaningful civil society participation at all levels, in all aspects of NHA's work; and,

(iii) To address issues on standardization for the construction industry, prioritization of maintenance over construction, allocation and distribution of funds, etc.

After four years since the first initiative, the ARUP now has nine offices throughout the country, with 800 individual members, 30 life members, and 20 corporate members such as Volvo, Indus Motors, Caltex, and Pakistan State Oil Company. The Pakistan experience points to 3 important observations:

(i) the Association was not part of any grand plan—it was formed because there was local demand for it;

(ii) the ARUP has a very broad range of representation and interests; and

(iii) the ARUP is self-funded through a combination of membership fees, sponsorships, and payments for projects.

Success of the ARUP was achieved because (i) it was people-driven and led by several individuals who wanted to make it happen; (ii) there was only minimal funding which required careful analysis of benefits of each action to be taken; (iii) there was a wide cross-section of contacts and support; and (iv) it was supported and encouraged by the World Bank through payment of some expenses and consultation contracts.

The Pakistan case study highlighted the importance of the principle of self-reliance, which was considered one of the main ingredients to a successful road maintenance fund. Self-reliance was defined as having the countries develop local self-sustaining capacity to drive the transformation process and identify appropriate and tailored solutions to address their maintenance problems.

Mr. Vincent explained that transformation would be possible with changes in attitudes of external agencies and consultants, government agencies, and stakeholders. A learning environment must be in place and learning opportunities could be created through media, meetings and discussion groups, educational system, and the internet. Transformation takes time; thus, it would be material to have a long-term perspective to anticipate changes and their impacts. The internet would be a useful tool for information dissemination, coordination of activities across countries, discussion and feedback mechanism, and forum for exchanges of experiences between and among countries. And in the transformation process, the stakeholders have to see the "big picture" where funding is an integral part of road management, with customers wanting a complete service. In turn, this requires the integration of all plans from all agencies and interested parties.

Suggestions on how to implement road sector transformation were given by Mr. Vincent. He mentioned 11 components of a solution, namely:

(i) Finance Ministry as lead – The Finance Ministry should drive the initiative to improve the economic performance of the road sector;

(ii) Self-reliance goal – The overall goal of the transformation of the road sector must be to achieve national self-reliance in all aspects of road management and financing;

(iii) Road transformation board – A national "road transformation board" is needed from the start as a local focus for all initiatives, to oversee the transformation from start to finish;

(iv) National road transformation initiative – A single nationally-owned road sector transformation initiative should form an umbrella for all relevant projects and activities;

(v) Transformation route – A "transformation route" to achieving national self-reliance in the road sector should be selected from the different possibilities by the Road Transformation Board;

(vi) Intellectual independence – National "intellectual independence" should be developed in all aspects of road sector decision making. This should include public and political awareness of possibilities and consequences, as well as technical skills;

(vii) Information infrastructure – A national information infrastructure should be developed to make appropriate and accurate information about the road sector available to all who need it at a realistic and locally sustainable cost. This should include current data about roads, decision-making criteria, and current maintenance and investment plans;

(viii) Progress measurement – Define a method of and responsibilities for measuring against the transformation route. This should include the publication of performance measurements and responsibilities for actions to overcome any problems identified;

(ix) Consultancy on demand – A mechanism is needed for providing short-term technical consultancy inputs at short notice to address requirements identified by the Transformation Board. This should be independent of normal technical assistance project procurement delays and cut-off dates;

(x) Exchange of Information – Assist the direct exchange of international knowledge and experience between and among all stakeholder groups in countries considering changes and those already involved in road sector transformation; and

(xi) Removal of lending agency distortions – In the long-term, acceptance by all funding agencies of national decision-making methods and priorities, subject to independent audit, and the removal of lending agency-specific distortions of the road sector.

After the last two presentations, the last work session was grouped according to the functions of all the participants—Finance and Budget Ministry, road agencies, and the donor agencies and consultants forming their own group. Session 4 dealt with the topic on "Self-Reliance in the Process of Change: How can road sector transformation be achieved? What needs to be done?" (Refer to Annex D, page 97.)

This was followed by an integrating session on the results of all the workshop reports and discussions. The points on which consensus was reached are set out below together with concluding paragraphs on "The Way Ahead."

The workshop ended with a closing address from Mr. Tadashi Kondo, Manager, Transportation and Communications Division (West). Mr. Kondo summarized the key points in all the presentations and proceedings during the last two days. He expressed ADB's continuing support for road development in its developing member countries (DMCs) and confirmed that road maintenance funding will be an important element in policy dialogues and partnerships with ADB's member countries for sector developments. Further, Mr. Kondo also confirmed that ADB will make every effort to secure resources to move forward the work under RETA 5871, one option being to hold national level workshops. He suggested that donor consultations be undertaken to identify appropriate mechanisms to assist DMCs in conducting these workshops. For country representatives, ADB would welcome feedback on (i) when the workshop should be held, (ii) who should participate, (iii) budget requirement, (iv) topics to be included in the workshop, and (v) specific advice needed from ADB.

In conclusion, Mr. Kondo congratulated all the participants for making the workshop a successful one through everybody's keen interest and active participation. He further added that the objective of sharing knowledge and practical experience of RMF has been achieved. He also expressed hope that each would be able to take back to their countries and institutions some valuable insights into the problem of "Sustainable Funding for Sustainable Roads."

b. Workshop Sessions and Results

The detailed tabulation of the results of the discussions and each work group's comments and recommendations are shown in Annex D, pages 91-99. Summaries for each of the work sessions are provided below.

Session 1 – Painting the Road Maintenance Scene

The majority of the member country participants agreed that not enough money is allocated to maintenance and of the money allocated to the road sector, not enough is spent on maintenance. Too much money is spent on improvements and construction of new roads and bridges. Moreover, the money actually allocated for maintenance are not released for spending or released too late to be spent for the current year. These factors led to the participants agreeing that maintenance work is not done effectively and that maintenance money is not allocated to the right things. However, the majority disagreed with the statement that no more roads should be built or improved, until existing roads are being properly maintained.

The groups made several points on the road maintenance problem. They recognized that inefficiency, lack of (law) enforcement, and inadequate system of accountability are contributing factors. Furthermore, new roads are not of good quality, thus requiring higher maintenance costs. Quality of roads is critically dependent on good governance/management. The problem is also aggravated by a tiered management/ government structure that makes it difficult to balance the allocation of funds between development and maintenance. On the private sector side, there is lack of capacity/capability on the part of the construction industry to undertake road maintenance. Addressing this maintenance funding problem may require that money be sourced from road user charges or a road fund.

Session 2 – Your Ideas on Solving Road Maintenance Problems: What can you learn from others? What should be done?

Learning from the experiences of other countries was considered to be beneficial by the participants. The majority was of the opinion that government agencies/politicians agree that an RMF is a good idea, and that technical assistance projects aimed at improving road maintenance have been a big help.

To solve the problems, most of the groups had similar responses. First, a culture of maintenance is required, together with a good maintenance management system involving institutional capacity, equipment and resources. Second, road users must recognize the link between fees they pay and the conditions of the road. The third important factor is for government to have the (political) will/ commitment through a legislation to create a road fund. Local consultants should also be made part of the core team to ensure ownership and sustainability. Fourth, when the funding for a road fund is from a fuel levy, this levy should take into account axle load/damage to roads and should be based on fuel consumption. Last, good governance and transparency would be required in the use and allocation of the funds.

Session 3 – "Best Practice" – An Independent Road Maintenance Fund as a Path to Proper Road Maintenance

Most of the participants disagreed with the statement that maintenance and new works must be placed in the same pot and prioritizing them based on economic returns. Their view was that social considerations must also be considered.

In terms of the RMF structure, the majority agreed that an independent board must control the fund to promote proper road maintenance. The RMF board members should be persons representing road user interests. In terms of funding, a road tariff should fund the RMF and the Ministry of Finance should promote the establishment of such a fund. However, most participants disagreed that the RMF Board chairman should be chosen from among the members representing road user interests.

While agreeing to the RMF, the groups emphasized that there must be a clear separation of responsibilities between the road board and the road agency. There should also be a road authority which implements maintenance works as one of its functions. The fund should be created with assured revenues, empowered by law and with inspection, supervision, and quality control systems. In the use of funds, the RMF should cover main roads and lend support to secondary and minor roads subject to availability of funds.

The need for donors/lending agencies' support was also pointed out. Aside from technical assistance and loan funding, donor should be flexible in order to contribute to the government priorities with minimal, affordable conditions. Other forms of funding agency support mentioned were the provision of seed money for setting up the RMF, until it becomes self-sustaining, and funding of maintenance works for new road projects.

Session 4 – Self-Reliance in the Process of Change: How can road sector transformation be achieved? What else needs to be done?

The member countries were mostly in agreement with the statement that the "Finance Ministry should drive the initiative to improve the economic performance of the road sector." The majority of the donor/lending agency representatives and consultants, however, disagreed with this statement.

In the succeeding statements, both the DMCs and the funding agencies/consultants indicated the same response/view. In particular, they all agree that:

(i) National self-reliance is essential for sustainability of improved economic performance of the road sector;
(ii) A transformation board should be created from the start;
(iii) A national "intellectual independence" should be developed in all aspects of road sector decision-making;
(iv) It is essential to make road sector information easily available to all stakeholders;
(v) Arrangements are needed for "rapid response" consultancies;
(vi) Arrangements are needed to improve international exchange of knowledge;
(vii) Lending agency requirements/procedures adversely distort local decision-making process; and,
(viii) In the long term, lending agencies should trust local decision making processes that have been subject to independent audit.

Given all these considerations, the groups emphasized the importance of the following factors:

(i) Political will and joint initiative coming from the Ministry of Finance and concerned departments;
(ii) Support of road users generated through participatory initiatives and consultative processes to drive the road sector reforms;
(iii) Legal coverage (legislation) for effective implementation;
(iv) Institutional reforms in concerned agency. Donor/lending agencies should help to develop local capacity to sustain these reforms; and
(v) Review and improvement of procurement guidelines and procedures needed from both the funding agencies and recipients.

c. Conclusions: The Way Ahead

The issues raised and perspectives shared by the participants during the workshop sessions indicated approval of the basic proposal to establish an independent road maintenance fund. However, the participants were not in full agreement that first priority should be accorded to maintenance. Many of the participants also did not agree with the test of economic return as a means of allocating funds. Economic plus social return was the acceptable means. In this regard, the message emphasized by the member countries was that road network development was so important that maintenance may be sacrificed in favor of development.

There was recognition of the benefits provided through technical support from international agencies. Further and continued support from these agencies was mentioned. The uniqueness of each country was made clear, as well as the value of learning from the experiences of other countries. Exchange of ideas was one of the approaches identified.

The 20 member countries acknowledged that initiatives, even in collaboration with funding agencies, to improve the road sector have often stalled or improvements have been slow because of inadequacies relating to (i) governance, (ii) "ownership," and (iii) self-reliance. In this regard, they strongly supported (i) self-reliance as a goal, (ii) the proposition that they should determine their own future, and (iii) continued funding support.

There was strong agreement with self-reliance as a national goal. Pursuing reforms in the sector would have to be initiated by the DMCs through a "transformation process" that is "owned" by the countries themselves. They would have to discover for themselves what needs to be changed in the road sector to remedy deficiencies, one of which is poor maintenance. A road maintenance fund may, or may not, be one of the changes they would identify as a need.

In all the processes that each DMC would go through, ADB will make every effort to assist their initiatives through on-going policy dialogues and donor consultations.

Appendix 4. Annex A: Workshop Program

Day 1 – Understanding the Problem
6 March 2001
Chairperson: Mr. Preben Nielsen
Deputy Director, Infrastructure, Energy, and Financial Sectors Department (West), ADB

08.30 – 09.00

09.00 – 09.15 Welcome Address: Myoung-Ho Shin, Vice-President (Region West), ADB

09.15 – 10.00 Painting the (Maintenance) Scene
Marcelo Minc, Country Portfolio Manager, Philippines Country Office, ADB

10.15 – 10.30 Introduction of Questions and Instructions for Work Session 1

10.30 – 12.00 Work Session 1

"You should first preserve what you have." Is this ever wrong?
Does your country have a problem of inadequate maintenance?
Prioritize and comment on the problems…
- Money not spent efficiently
- Money not spent effectively
- Money allocated but not spent
- Money not allocated

12.00 – 12.30 Plenary Session: Reporting and Discussion

13.45 – 15.30 Learning from Others African Roads
William Paterson, World BankLatin American Roads
Gerhard Metschies, GTZ Asian and Pacific Road Fund Initiatives
Dieter Niemann, UNESCAP

15.45 – 16.00 Introduction of Questions and Instructions for Work Session 2

16.00 – 17.00 Work Session 2

How can the experience of others help you (in road maintenance)
Commercialization
Stakeholder involvement/control
Applicability in your country

17.00 – 17.30 Plenary Session: Reporting and Discussion

Day 2 – The Way Ahead
7 March 2001
Chairperson: Mr. Khaja Moinuddin
Deputy Director, Infrastructure, Energy and Financial Sectors Department (East), ADB

08.30 – 09.15 Roads for Leading the Way to Development: Build Nicely, Maintain Properly, and Drive Safely
K.E. Seetharam, Operations Evaluation Office, ADB

09.15 – 10.30 Road Fund Experience in Selected Asian Countries (Country Presentations and Discussions)
- Lao People's Democratic Republic: Veingsavath Siphandone, Acting Director-General, Department of Roads, Ministry of Communication, Transport, Post and Construction
- Nepal: A.P. Khanal, Director-General, Department of Roads · Pakistan: Syed Najmul Hasan,

Member, Operations Unit, National Highway Authority·
Philippines: Linda Templo, Director, Planning Services, Department of Public Works and Highways

10.45 – 11.15 Suggested Framework for a Road Maintenance Fund
Ron Allan, TA 5871 Road Funds Strategy Consultant

11.15 – 12.15 Work Session 3

Will a road maintenance fund work? Is there a better way?
What do you need to make the road maintenance fund work?Who should be involved?
How can donors assist?

13.15 – 13.45 Plenary Session: Reporting and Discussion

13.45 – 14.15 Stakeholder Participation: Case Study, Pakistan
Stephen Vincent, Road Management Specialist

14.15 –15.00 Self-Reliance in the Process of Change
Stephen Vincent and Ron Allan

15.15 – 16.15 Work Session 4

Group Discussions according to functions: (1) Finance and Budget Ministry and (2) Road Agencies Agreements on the Way Ahead

16.15 – 17.00 Plenary Session: Reporting and Discussion

17.00 – 17.45 The Way Ahead
What is the Consensus?
Timetable for the Next Steps

17.45 – 18.00 Closing Remarks
Tadashi Kondo, Manager, Transport and Communications Division (West), ADB

Appendix 4. Annex B: List of Participants

1. Developing Member Countries

Country	Name/Position	Organization	Address
Bangladesh	Md. Afsaruddin Deputy Secretary A.M. Gias Chowdhury Additional Chief Engineer Network Management & BOT S. Abdul Malek Joint Chief Syed Golam KibriaJoint Secretary	Ministry of Communications Road and Highways Dept. Physical Infrastructure Div. Planning Commission Finance DivisionMinistry of Finance	✉ : Bangladesh Secretariat, Dhaka ☎: ✉ : Sarak Bhaban, Ramma, Dhaka 1000 ☎: (+880-2) 9661186 (Fax) 💻: dialcom@neksus.com ✉: Block 4, Rm 17, Sher-e-Bangla Nagar, Dhaka ☎: (+880-2) 8114707, 9115011 ✉: Bangladesh Secretariat, Dhaka 1000 ☎: (+880-2) 8614484; 8620519; F-8615581
Bhutan	Lam Dorji Director of Budget Tshering Wangdi 'B' Superintendent Engineer	Ministry of Finance Road Maintenance Department of Roads	✉: P.O. Box 1032, Thimpu, ☎: (+97-52) 326775-80; 324121; 325748; F-325748 💻: lamdorji@druknet.net.bt ✉: Thimpu, Bhutan ☎: (+97-52) 325913; F-323177 💻: domp@druknet.net.nt
Cambodia	Thirong PenDeputy Director	Department of Investment and CooperationMinistry of Economy and Finance	✉ : Street 92, Sangkat Watt Phnom, Khan Daun Pen, Phnom Penh ☎: (+855-23) 430774; F-430137 💻 : pthirong@mef.gov.kh and p_thirong@hotmail.com
China, People's Republic of	Dongxiang Li Deputy Director Wen Zhang Deputy Division Chief	IFI Division III, International Department Ministry of Finance Foreign Capital Utilization Office, Planning Dept., Ministry of Communications	✉ : San Li He, West City District, Beijing 100820 ☎: (+86-10) 68551170; 68551120; F-8551119 💻 : dx.li@mof.gov.ch ✉ : 11 Jianguomennei Avenue, Beijing 100736 ☎: (+86-10) 65293101; 65293103; 65292345; 65293163; F-65292101 💻 : wenjohn@btamail.net.cn

Country	Name/Position	Organization	Address
Fiji Islands	David Kolitagane Economic Planning Officer Cama Tuiloma Acting Deputy Secretary	Budget Division Ministry of Finance Planning and Design Public Works Department Ministry of Works and Energy	✉ : Ro Lalabalavu House, Victoria Parade, Suva, Fiji Islands, or P.O. Box 2212, Government Buildings, Suva ☎: (+67-9) 962284; 395595; F-315728; 308096 🖳 : dkolitagane@govnet.govt.fj ✉ : Nasilivata House, Kings Road, Samabula ☎: (+67-9) 384111; F-383198 🖳 : baleilevuka@is.com.fj
India	Deepak Dasgupta	ChairmanNational Highways Authority of India	✉ : 1, Eastern Avenue, Maharani Bagh, New Delhi 110 065 ☎: (+91-11) 6923901; F-6924383: : nhai@vsnl.com
Indonesia	Imron Bulkin Bureau Chief Hendrianto Notosoegondo Director General of Regional Infrastructure	Transportation, Post, Telecommunications National Development Planning Agency Ministry of Settlements and Regional Infrastructure	✉ : Jalan Taman Suropati 2, Jakarta 10310 ☎: (+62-21) 3148550; 3905650; F-3148550 🖳 : ibulkin@dnet.net.id ✉ : Jalan Patimura No. 20, Jakarta Selatan ☎: (+62-21) 7221039; F-7201760 🖳 : dirjenppw@kbw.go.id
Kazakhstan	Djalmukhanov Erjan Leading Economist/Specialist Chingiz Sadvakassov Leading Economist/Specialist	Department of External State Borrowing Ministry of Finace Department of External State Borrowing Minsitry of Finance	✉ : 52 Abai Avenue, Astana 473000 ☎: (+731-72) 117704; F-321058 🖳 : ermek@minfin.kz ✉ : 52 Abai Avenue, Astana 473000 ☎: (+731-71) 117704; F-117762 🖳 : oksania@minfin.kz
Kyrgyz Republic	Ahmatbek K. Keldibekov Deputy Minister Kubanychbek A. Mamaev First Deputy Minister	Ministry of Finance Ministry of Transportation and Communications	✉ : 58 Erkindik Avenue, Bishkek 720874 ☎: (+996-213) 610073 (c/o KRM) 🖳 : aziz28@mail.kg (c/o Aziz Aaliev) ✉ :42 N. Isanov St., Bishkek 720017 ☎: (+996-312) 262672; 662148: F-610810; 621710; 662148 🖳 : drysalieva@adb.elcat.kg (c/o KRM)
Lao People's Democratic Republic	Sayphet Aphayvanh Deputy Director and Deputy Chairman of the Road Maintenance Fund Board Sisomphanh Phinsipasom Deputy Director Sivixay Sayanavongphet Deputy Director General Viengsavath Siphandone Acting Director-General	External Relations Dept. Ministry of Finance Road Administration Division Department of Roads, MCTPC Office of International Cooperation, CIC Department of Roads, MCTPC	✉ : Thatluang Road, Vientiane ☎: (+856-21) 412847; 414358; F-414358 🖳 : tomkins@laonet.com (c/o Mr. Richard Tomkins) ✉ : Lanexang Avenue, P.O. Box 4467, Vientiane ☎: (+856-21) 415378; 451541; F-414553 🖳 : sweroad.laos@laonet.net ✉ : Luangprabang Road, Vientiane ☎: (+856-21) 216654; 417073; F- 222213 🖳 : svxay@hotmail.com ✉ : Lanexang Avenue, P.O. Box 4467, Vientiane ☎ : (+856-21) 412741; 512678; F-414132 🖳 : vsv@laonet.net

[redacted]

Country	Name/Position	Organization	Address
Mongolia	Gombo Lkhamjav Head of Division and Project Manager Tungalag Tserennadmid Desk Officer for ADB, USA and Canada	Planning and Research Division Department of Roads Department of Economic Cooperation and Coordination Ministry of Finance and Economy	✉ : Government Bldg. 2, Ulaanbaatar 210646 ☎: F-(+976-11) 310612 💻 : roads@mongol.net ; roads@mongol.mn ✉ : Negdsen Ubdestnii gudamj-5/1, Ulaanbaatar 210646 ☎: (+976-11) 329044; 321806; F-320247; 329044 💻 : ts_tungaa@yahoo.com
Nepal	Mahesh B. Karki Undersecretary A.P. Khanal Director General	Ministry of Finance Department of Roads	✉ : Bagdurbar, Kathmandu ☎: (+977-1) 259779; 490753; F-259779; 227529 💻 : mahkarki@yahoo.com ✉ : Babarmahal, Kathmandu ☎: (+977-1) 262675; 417743; F-626993 💻 : dgdor@mos.com.np
Pakistan	Syed Najmul Hasan Member, Operations Mohammad Sarwar Deputy Secretary Nazar Mohammad Shaik Secretary	National Highway Authority Ministry of Finance Communications Division Ministry of Communications and Railways	✉ : 27 Mauve Area G-9/1, Islamabad ☎: (+92-51) 9260407; 2252006; F-9261139 💻 : shabzaad@hotmail.com ✉ : Room 326, Pak Secretariat, Block Q, Islamabad ☎: F-(+92-51) 9211316 💻 : ✉ : D Block, Pak Secretariat, Islamabad ☎: (+92-51) 9201252; 9208694; F-9221300 💻 : mincom1@hotmail.com
Papua New Guinea	Isaac Lupari Secretary Alphonse Niggins Secretary Kain Wosae Senior Economic Policy Expert	Department of Transport and Civil Aviation Department of Works and Implementation Department of Treasury	✉ : P.O. Box 1489. Port Moresby, NCD(: F-(+67-5)3236186 💻 : ✉ : P.O. Box 1108, Boroko, NCD ☎: (+67-5) 3241401; F-3241277 💻 : ✉ : Vulupindi Haus, P.O. Box 710, Waigani, NCD ☎: (+67-5) 3288141; 3288441; 3288472; F-3288425 💻 : mkwayail@treasury.gov.pg
Philippines	Cynthia G. Castel Undersecretary for Policy and Management Jocelyn M. Isidro Assistant Director Ruben S. Reinoso, Jr. Director Linda Templo Director	Department of Budget and Management Foreign-assisted Projects Bureau, BM-E Department of Budget and Management Infrastructure Staff National Economic and Development Authority Planning Services Department of Public Works and Highways	✉ : Malacañang, Manila ☎: (+63-2) 7351981; 7351650; F-7354845 💻 : ccastel@dbm.gov.ph ✉ : Malacañang, Manila ☎: (+63-2) 7351789; F-7351742 💻 : jisidro@dbm.gov.ph ✉ : Amber Avenue, Pasig City ☎: (+63-2) 631-0957 to 64; F-6312188 💻 : rsreinoso@neda.gov.ph ✉ : Bonifacio Drive, Port Area, Manila ☎: (+63-2) 3-43267; F-3043033

Country	Name/Position	Organization	Address
Sri Lanka	K.N.J. Cooray Deputy Director S.L. Seneviratne Secretary	National Budget Department Ministry of Finance and Planning Ministry of Highways	✉ : Gall Face Secretariat, Colombo 01 ☎: (+94-1) 32870; F-433674; 324784 💻 : info@erd.gov.lk ✉ : 9th Floor, "Sethsiripaya," Battaramula ☎: (+94-1) 862746; 862712; F-862705
Tajikistan	Pulat K. Ishmatov Chief Rano Zabirova Deputy Chief	Construction Department Ministry of Transport State Budget Department Ministry of Finance	✉ : Dushanbe 734042, 14, Aini St. ☎: (+737-73) 211713; F-212003; (+992-91) 9015051 (c/o ADB Tajikistan Liaison Office) 💻 : liaison@adb.tajik.net ✉ : Room 23, 3 Academician, Rajabov's Avenue 734025, Dushanbe ☎: (+992-372) 213905; 350832; F-216796 💻 : liaison@adb.tajik.net
Thailand	Sirasa Kanpittaya Senior Economist Khun Likhit Khaodhiar Director General	Government Loan Project Section Public Debt Management Office, Ministry of Finance Department of Highways Ministry of Transport	✉ : Rama VI Road, Bangkok 10400 ☎: (+66-2) 2739020 ext 3417; 2519078; F-2739058 💻 : suwitroj@mof.gov.th ✉ : Sri Ayuthaya Road, Bangkok 10400 ☎: (+66-2) 2455501
Uzbekistan	Mahmudjon S. Abdurahmanov Deputy Minister Abdusalom M. Alimov Manager	Ministry of Finance Project Implementation Unit Uzavtoyul	✉ : 5 Mustakillik Square, 700008 Tashkent ☎: (+998-71) 1394949; F-1394539;1391033 💻 : c/o maksimkim@altavista.com ✉ : 68-A Pushkin St., Tashkent 700000 ☎: (+998-71) 1372628; F-682711; 1362276 💻 : lmalygiro@mt.uz
Viet Nam	Nguyen Thanh Phuong Deputy Head	Financing and Accounting Division Viet NamViet Nam Road Administration, Ministry of Transport	✉ : 106 Thai Thinh St., Dong Da District, Hanoi ☎: (+84-4) 8571449; F-8571440 💻 : c/o furst_steve@bah.com

2. Resource Speakers

Name/Position	Organization	Address
William Paterson Task Manager	East Asia Transport UnitWorld Bank	✉ : 1818 H NW St., Washington D.C., USA ☎: 💻 : wpaterson@worldbank.org
Gerhard Metschies Senior Transport Engineer	German Agency for Technical Cooperation (GTZ-Deutsche Gesellschaft für Zusammenarbeit GmbH)	✉ : Dag-Hammarskjöld-Weg 1-5, Postfach 51 80, 65726 Eschborn, Switzerland ☎ : (+41-6196) 791354; F-797194 💻 : Gerhard.Metschies@gtz.de
Dieter Niemann Highway Transport Engineering Expert	Transport, Communications and Tourism Division United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP)	✉ : UN Building, Rajademnern Nok Avenue, Bangkok, Thailand 10200 ☎ : (+66-2) 2881568; F-2806042 💻 : niemann.unescap@un.org
Stephen Vincent Road Management Specialist	Scott Wilson	✉ : Scott House, Basing View, Basingstroke, Hampshire RG21 4JG, England ☎ : (+44-0) 1256461161; F- 1256 460582 💻 : stephen_vincent@infoculture.co.uk
Marcelo J. Minc Country Portfolio Manager	Philippine Country Office Asian Development Bank	✉ : #6 ADB Avenue, Mandaluyong City, Philippines ☎ : (+63-2) 6324444 ext. 1021 💻 : mminc@adb.org
K. Seetharam	Operations and Evaluation Office Asian Development Bank	✉ : #6 ADB Avenue, Mandaluyong City, Philippines ☎ : (+63-2) 6324444 💻 : kseetharam@adb.org

3. Funding Agencies

Country	Name/Position	Organization	Address
Germany	Werner P. Meyer Senior Technical Adviser Rural Development Program	German Agency for Technical Cooperation (GTZ)	✉ : GPO Box 1457, Kathmandu, Nepal ☎ : (+977-1) 526454; 530299; F-535896 💻 : werner.meyer@gtz.org.np
Japan	Rose Angeles Project Officer Mr. Takao ShimokawaRepresentative	Japan Bank for International Cooperation – Manila Representative Office Japan Bank for International Cooperation – Hanoi Representative Office	✉ : 31st Floor, Citibank Tower, Valero cor. Villar St., Makati City, Philippines ☎ : (+63-2) 8481828; F-8481833 💻 : r-angeles@jbic.go.jp ✉ : 4th Floor, 63 Ly Thai To St., Hanoi, Viet NamViet Nam ☎: (+84-4) 8248934; F-8248937 💻 : t-shimokawa@jbic.go.jp
Sweden	Nils Bruzellius Consultant	Swedish International Development Cooperation (SIDA)	✉ : Mataregranden 6, S-226 47 Lund, Sweden ☎ : (+46-46) 151354; 151351; F-(+46-708) 151356 💻 : nils.bruzellius@euromail.se

Country	Name/Position	Organization	Address
Sweden	Klas Rasmusson First Secretary	Embassy of Sweden	✉ : P.O. Box 800, Vientiane, Lao PDR ☎ : (+856-21) 315017/8; F-315001 🖳 : klas.rasmusson@sida.se
United Kingdom	Colin Benham Sector Manager Peter Roberts Deputy Chief Engineering Adviser	Department for International Development (DFID) –Bangladesh Office Department for International Development (DFID)	✉ : British High Commission, Dutabresh Road, Bardhara, Dhaka 1212, Bangladesh ☎: (+880-2) 8822589; F-8823181 🖳 : C-BENHAM@dfid.gov.uk ✉ : (: (+020) 79170542; F-79170864 🖳 : p-roberts@dfid.gov.uk
	Geoff A. Edmonds	Programme Coordinator ASIST-Asia Pacific International Labor Office (ILO)	✉ : United Nations Building, Rajdamnern Nok Avenue, P.O. Box 2-349, Bangkok 10200, Thailand ☎ : (+66-2) 2882302; F-2808030 🖳 : edmondsg@ilo.org

4. Consultants

Name/Position	Organization	Address
Steve Furst Senior Associate Institutional Capability Strengthening of the Viet Nam Road Administration–Ministry of Transport, Viet Nam	Booz, Allen and Hamilton	✉ :8283 Greensboro Drive, McLean, Virginia 22102-3838, USA ☎: (+84-4) 5370987 (Hanoi); F- 5370899 🖳 : furst_steve@bah.com
David Lupton		✉ : P.O. Box 875, Wellington, New Zealand ☎ : (+64-21) 421848 🖳 : david@lupton.org
Derek Sherman Director	The Louis Berger Group, Inc.	✉ : 10th Flr. Q House Convent, Suite 10 B, 38 Convent Road. Silom, Bangkok 10600, Thailand ☎ : (+66-2) 2353551; F-236-1353 🖳 : derekmsherman@hotmail.com
Don SmithTechnical Director	WSP International	✉ : First Point, Buckingham Gate, Gatwick Airport, West Sussex RH 60NT, United Kingdom ☎: (+44) 1293 602600; F-1293 602699 🖳 : Don.Smith@WSPGroup.com
Richard Tomkins Project Team Leader ADB Management Information Systems Project – MCTPC Lao PDR	Hyder Freeman, Fox	✉ : Room 28, MCTPC, Lane Xang Avenue, P.O. Box 6958 Vientiane, Lao PDR ☎ : (+856-21) 413362 🖳 : tomkins@laonet.com

5. ADB Officials

Division	Name	Position	E-mail
IWTC	Hans Carlsson	Senior Project Specialist	:: hcarlsson@adb.org
AWAR	Michael Dembinski		:: mdembinski@adb.org
IWTC	Tyrell Duncan	Transport Economist	:: tduncan@adb.org
PhCo	Günther Hecker	Chief	:: ghecker@adb.org
IWTC	Yoichi Ishikawa	Transport Specialist	:: yishikawa@adb.org
OPO	Sirpa Jarvenpaa		:: sjarvenpaa@adb.org
IWTC	Thomas F. Jones III	Senior Project Economist	:: tjones@adb.org
IWTC	Tadashi Kondo	Manager	:: tkondo@adb.org
IETC	Jin Koo Lee	Manager	:: jinkoolee@adb.org
IEOD	Charles Melhuish	Senior Transport Specialist	:: cmelhuish@adb.org
IWTC	Makoto Mizutani	Transport Specialist	:: mmizutani@adb.org
IEOD	Khaja Moinuddin	Deputy Director	:: kmoinuddin@adb.org
IWOD	Preben Nielsen	Deputy Director	:: pnielsen@adb.org
ITEC	Makoto Ojiro	Senior Project Economist	:: mojiro@adb.org
EDEV	Nigel Rayner	Asst. Chief Economist	:: nrayner@adb.org
	Myoung-Ho Shin	Vice-President, West Region	:: mhshin@adb.org
IETC	Sangpa Tamang	Senior Project Analyst	:: stamang@adb.org
IWTC	Shunso Tsukada	Senior Project Specialist	:: stsukada@adb.org
IWTC	Paul Vallely	Transport Specialist	:: pvallely@adb.org
IWTC	Sri Widowati	Project Engineer/Environment Specialist	:: swidowati@adb.org
IWTC	Teresa Mella	Assistant Project Analyst	:: tmella@adb.org

6. TA 5871: Road Funds Strategy Consultants

Name/Position	Organization	Address
Australia	Ronald R. Allan Road Funds Consultant	✉ : 10 Rustic St., P.O. Box 1168, Kenmore, Brisbane, Australia ☎ : (+61-7) 38784645; F-38784943 💻 : ron@ron.org
Philippines	Ma. Norma Olga R. Caday Economics Research Consultant	✉ : Unit 302, Aurora Bldg., 3540 Gen. Lucban St., Bangkal, Makati City ☎ : (+63-917) 537-6043 (mobile) 💻 : mnorcaday@yahoo.com

Appendix 4.
Annex C: Groupings for the Workshop Sessions

1. Working Sessions 1, 2, and 3

GROUP A

Country	Participant
Bhutan	Tshering Wangdi ‘B’Superintendent Engineer for Road Maintenance, Department of Roads
Fiji Islands	David KolitaganeEconomic Planning Officer (Infrastructure), Department of Treasury
Indonesia Planning Agency	Imron BulkinBureau Chief for Transportation, Post and Telecommunications, National Development
Kazakhstan	Chingiz SadvakassovLeading Economist/Specialist, Dept. of External State Borrowing, Ministry of Finance
Kyrgyz Republic	Ahmatbek KeldibekovDeputy Minister, Ministry of Finance
Philippines	Cynthia CastelUndersecretary, Department of Budget and Management
Tajikistan	Pulat K. IshmatovChief, Construction Department, Ministry of Transport
Uzbekistan	Abdusalom M. Alimov Manager, Project Implementation Unit, Uzavtoyul

GROUP B

Country	Participant
Bangladesh	A. M. Gias ChowdhuryAssistant Chief Engineer, Roads and Highways Department
Kazakhstan	Djalmukhanov ErjanLeading Economist/Specialist, Dept. of External State Borrowing, Ministry of Finance
Kyrgyz Republic	Kubanychbek A. MamaevFirst Deputy Minister, Ministry of Transportation and Communications
Lao PDR	Viengsavath SiphandoneActing Director-General, Department of Roads, MCTPC
Pakistan	Syed Najmul HasanMember, Operations Unit, National Highways Authority
Philippines	Ruben S. Reinoso, Jr.Director, Infrastructure Staff, National Economic and Development Authority
Tajikistan	Rano ZabirovaDeputy Chief, State Budget Department, Ministry of Finance
Uzbekistan	Mahmudjon S. AbdurahmanovDeputy Minister, Ministry of Finance

GROUP C

Country	Participant
Bangladesh	Syed Golam Kibria Joint Secretary, Finance Division, Ministry of Finance
Cambodia	Thirong Pen Deputy Director, Dept. of Investment and Cooperation, Ministry of Economy and Finance
People's Republic of China	Wen Zhang Deputy Division Chief, Foreign Capital Utilization Office, Planning Dept., Ministry of Communications
Fiji Islands	Cama Tuiloma Acting Deputy Secretary, Planning and Design, Public Works Department, Ministry of Works and Energy
India	Deepak Dasgupta Chairman, National Highways Authority of India
Lao PDR	Sayphet Aphayvanh Deputy Director of External Relations Dept., Ministry of Finance, & Deputy Chairman of RMF Board
Philippines	Jocelyn M. Isidro Assistant Director, Foreign-Assisted Projects Bureau, Department of Budget and Management

GROUP D

Country	Participant
Bangladesh	Abdul Malek Joint Secretary, Planning Commission
Indonesia	Hendrianto Notosoegondo Director General of Regional Infrastructure, Ministry of Settlements and Regional Infrastructure
Lao People's Democratic Republic	Sivixay Sayanavongphet Deputy Director-General, Office of International Cooperation, CIC
Papua New Guinea	Kain Wosae Senior Economic Policy Expert, Department of Treasury
Sri Lanka	S.L. Seneviratne Secretary, Ministry of Highways
Thailand	Sirasa Kanpittaya Senior Economist, Ministry of Finance
Viet Nam	Nguyen Thanh Phuong Deputy Head of Financing and Accounting Division, Viet Nam Viet Nam Road Administration, Ministry of Transport

GROUP E

Country	Participant
Bhutan	Lam Dorji Director of Budget, Ministry of Finance
Lao PDR	Sisomphanh Phinsipasom Deputy Director, Road Administration Division, Department of Roads, MCTPC
Mongolia	Gombo Lkhamjav Head of Division and Project Manager, Planning and Research Division, Department of Roads
Mongolia	Tserennadmid Tungalag Desk Officer, Dept. of Economic Cooperation, Mngt. & Coordination, Ministry of Finance & Economy
Nepal	Mahesh B. Karki Undersecretary, Ministry of Finance
Papua New Guinea	Isaac Lupari Secretary, Department of Transport and Civil Aviation
Philippines	Linda Templo Director, Planning Services, Department of Public Works and Highways

GROUP F

Country	Participant
Bangladesh	Md. Afsaruddin Deputy Secretary, Ministry of Communications
People's Republic of China	Dongxiang Li Deputy Director, IFI Division III, International Department, Ministry of Finance
Nepal	A.P. Khanal Director-General, Department of Roads
Pakistan	Nazar Mohammad Shaik Secretary, Department of Communications and Highways
Papua New Guinea	Alphonse Niggins Secretary, Department of Works and Implementation
Sri Lanka	K.N.J. Cooray Deputy Director, National Budget Department, Ministry of Finance and Planning
Thailand	Khun Likhit Khaodhiar Director-General, Department of Highways, Ministry of Transportation

2. Working Session 4

GROUP A

Country	Participant
Bangladesh	A. M. Gias Chowdhury Assistant Chief Engineer, Roads and Highways Department
Bhutan	Tshering Wangdi 'B' Superintendent Engineer for Road Maintenance, Deparment of Roads
Indonesia	Imron Bulkin Bureau Chief for Transportation, Post and Telecommunications, National Development Planning Agency
Kyrgyz Republic	Kubanychbek A. Mamaev First Deputy Minister, Ministry of Transportation and Communications
Lao PDR	Viengsavath Siphandone Acting Director-General, Department of Roads, MCTPC
Pakistan	Syed Najmul Hasan Member, Operations Unit, National Highways Authority
Tajikistan	Pulat K. Ishmatov Chief, Construction Department, Ministry of Transport
Uzbekistan	Abdusalom M. Alimov Manager, Project Implementation Unit, Uzavtoyul

GROUP B

Country	Participant
Bangladesh	Abdul Malek Joint Secretary, Planning Commission
Fiji Islands	David Kolitagane Economic Planning Officer (Infrastructure), Department of Treasury
Kazakhstan	Djalmukhanov Erjan Leading Economist/Specialist, Dept. of External State Borrowing, Ministry of Finance
Kyrgyz Republic	Ahmatbek Keldibekov Deputy Minister, Ministry of Finance
Philippines	Cynthia Castel Undersecretary, Department of Budget and Management
Tajikistan	Rano Zabirova Deputy Chief, State Budget Department, Ministry of Finance
Uzbekistan	Mahmudjon S. Abdurahmanov Deputy Minister, Ministry of Finance

GROUP C

Country	Participant
Bangladesh	Md. Afsaruddin Deputy Secretary, Ministry of Communications
People's Republic of China	Wen Zhang Deputy Division Chief, Foreign Capital Utilization Office, Planning Dept., Ministry of Communications
India	Deepak Dasgupta Chairman, National Highways Authority of India
Indonesia	Hendrianto Notosoegondo Director General of Regional Infrastructure, Ministry of Settlements and Regional Infrastructure
Papua New Guinea	Isaac Lupari Secretary, Department of Transport and Civil Aviation
Philippines	Linda Templo Director, Planning Services, Department of Public Works and Highways
Sri Lanka	S.L. Seneviratne Secretary, Ministry of Highways
Viet NamViet Nam Transport	Nguyen Thanh Phuong Deputy Head of Financing and Accounting Division, Viet NamViet Nam Road Administration, Ministry of

GROUP D

Country	Participant
Bangladesh	Syed Golam Kibria Joint Secretary, Finance Division, Ministry of Finance
Cambodia	Thirong Pen Deputy Director, Dept. of Investment and Cooperation, Ministry of Economy and Finance
Lao People's Democratic Republic	Sivixay Sayanavongphet Deputy Director-General, Office of International Cooperation, CIC
Mongolia	Tserennadmid Tungalag Desk Officer, Dept. of Economic Cooperation, Mngt. & Coordination, Ministry of Finance & Economy
Nepal	Mahesh B. Karki Undersecretary, Ministry of Finance
Papua New Guinea	Kain Wosae Senior Economic Policy Expert, Department of Treasury
Philippines	Jocelyn M. Isidro Assistant Director, Foreign-Assisted Projects Bureau, Department of Budget and Management
Thailand	Sirasa Kanpittaya Senior Economist, Ministry of Finance

GROUP E

Country	Participant
Fiji Islands	Cama Tuiloma Acting Deputy Secretary, Planning and Design, Public Works Dept., Ministry of Works and Energy
Lao People's Democatic Republic	Sisomphanh Phinsipasom Deputy Director, Road Administration Division, Department of Roads, MCTPC
Mongolia	Gombo Lkhamjav Head of Division and Project Manager, Planning and Research Division, Department of Roads
Nepal	A.P. Khanal Director-General, Department of Roads
Pakistan	Nazar Mohammad Shaik Secretary, Department of Communications and Highways
Papua New Guinea	Alphonse Niggins Secretary, Department of Works and Implementation
Thailand	Khun Likhit Khaodhiar Director-General, Department of Highways, Ministry of Transportation

GROUP F

Country	Participant
Bhutan	Lam Dorji Director of Budget, Ministry of Finance
People's Republic of China	Dongxiang Li Deputy Director, IFI Division III, International Department, Ministry of Finance
Kazakhstan	Chingiz Sadvakassov Leading Economist/Specialist, Dept. of External State Borrowing, Ministry of Finance
Lao PDR	Sayphet Aphayvanh Deputy Director of External Relations Dept., Ministry of Finance, & Deputy Chairman of RMF Board
Sri Lanka	K.N.J. Cooray Deputy Director, National Budget Department, Ministry of Finance and Planning

Appendix 4, Annex D: Workshop Sessions, Results, and Recommendations

1. Workshop Session 1: “First Preserve What You Have”: Is this ever wrong? Does your country have a problem of inadequate maintenance?

← DISAGREE AGREE →

Workshop Session Questions	Work Group	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	TOTAL
Session 1							
1. Not enough money is allocated .	A	-	1	-	5	2	8
to maintenance	B	-	2	-	4	2	8
	C	-	2	-	1	4	7
	D	-	-	-	5	2	7
	E	-	-	-	5	2	7
	F	-	2	1	4	-	7
	Total	0	7	1	24	12	44
2. Of the money allocated to roads,	A			5	2	1	8
not enough is spent on maintenance.	B			1	4	1	8
Too much is spent on improvements	C			2	4	-	7
and new roads and bridges.	D			-	4	3	7
	E			-	7	-	7
	F			-	1	2	7
	Total			8	22	7	44
3. Not all the money that is allocated	A	-	3	1	4	-	8
is actually released for spending.	B	-	5	-	3	-	8
Or it is released too late to be	C	-	2	1	4	-	7
spent that year.	D	-	-	-	5	2	7
	E	-	3	1	2	1	7
	F	-	3	-	4	-	7
	Total	0	16	3	22	3	44
4. Maintenance work is not done	A	2	-	3	2	1	8
effectively (costs too much,	B	-	1	2	5	-	8
poor quality).	C	-	-	1	4	2	7
	D	-	-	1	5	1	7
	E	-	2	-	4	1	7
	F	-	3	-	4	-	7
	Total	2	6	7	24	5	44

Workshop Session Questions	Work Group	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	TOTAL
5. Maintenance money is not allocated to the right things.	A	1	2	1	4	-	8
	B	-	3	1	4	-	8
	C	-	1	1	5	-	7
	D	-	-	7	-	-	7
	E	-	-	2	5	-	7
	F	-	3	-	5	-	8
	Total	1	9	12	23	0	45
6. No more roads should be built or improved until the existing roads are being properly maintained (first priority is to preserve what you have).	A	-	4	1	2	1	8
	B	-	1	3	4	-	8
	C	2	5	-	-	-	7
	D	-	7	-	-	-	7
	E	2	3	1	1	-	7
	F	1	7	-	-	-	8
	Total	5	27	5	7	1	45
Points Made:							
Group A							
1. It is more important to spend money on Road maintenance than for other sectors.		1	3		3	2	
2. Money for road maintenance should be derived only from user charges.			2		6		
3. Road funds should be totally separate And distinct from the national and local Budget.		1	2		3	2	
4. Road maintenance should be performed Only by the government.			2	1	4	1	
5. User fees should cover maintenance only And not improvement or new construction.		3	3	2	1		
Group B							
1. Ministry of Finance and Executing Agency should be accountable.					8		
2. Allocation of funds should be balanced or Split between development and Maintenance based on actual condition of Road network.				8			
Group C							
1. Roads should be maintained by road funds.				7			
2. ADB should assist in developing road Maintenance systems through innovative Mechanisms.		1		5	1		
Group D							
1. Lack of planning.			2		5		
2. Seasonal (wet season).					7		
3. Inefficiency.				7			
4. Law enforcement.					7		
5. Inadequate system of accountability.				7			
6. Conditions on procurement rules imposed by funding agencies.			1	4	2		
7. Political influences.			2		5		

Workshop Session Questions	Work Group	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	TOTAL
Group E							
1. New roads are not good enough quality and					7		
This leads to higher maintenance costs.							
2. A tiered management/government					7		
structure makes it difficult to allocate money							
to maintenance appropriately.							
3. One of the constraints is the			1		6		
capacity/capability of the construction							
industry to undertake road maintenance.							
4. The road administrators do not have the			1	1	5		
capacity to plan and design maintenance							
work in time for the budget process.							
5. Connectivity should have higher priority			1	1	5		
Than maintenance.							
6. We should be looking at alternative				1	4	2	
sources of revenue for road maintenance.							
Group F							
1. Construction of roads should be focused					8		
on efficient use of funds.							
2. Quality of roads is critically dependent on					8		
good governance/management.							

2. Workshop Session 2: Problems: What can you learn from others? What should be done?

← DISAGREE AGREE →

Workshop Session Questions	Work Group	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	TOTAL
1. My country is different. We cannot	A	5	3	-	-	-	8
learn much from the experience of	B	-	7	-	-	-	7
other countries.	C	1	5	-	1	-	7
	D	-	5	1	1	-	7
	E	-	4	2	1	-	7
	F	6	-	-	-	-	6
	TOTAL	12	24	3	3	0	42
2. In my country, the government	A	-	-	2	5	1	8
agencies/ministries/politicians agree	B	-	1	3	3	-	7
that a road maintenance fund is	C	-	2	-	4	1	7
a good idea.	D	-	-	3	4	-	7
	E	-	1	3	2	1	7
	F	-	-	1	5	-	6
	TOTAL	0	4	12	23	3	42
3. In my country, technical assistance	A	-	-	3	4	1	8
(TA) projects aimed at improving	B	-	-	3	4	-	7
road maintenance have been	C	-	-	3	4	-	7
a big help.	D	-	1	-	6	-	7
	E	-	-	1	5	1	7
	F	-	-	-	6	-	6
	TOTAL	0	1	10	29	2	42

Workshop Session Questions — Work Group	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	TOTAL
Points Made:						
Group A						
1. A culture of maintenance is required.				8		
2. A good maintenance management system is required: institutional capacity, equipment, human resources.				8		
3. Road users recognize link between fees they pay and the condition of the roads.		1	7			
4. National roads should be owned and managed by national government, local roads by local government.		3	4	1		
5. Local contracting industry should have better access to TA for road maintenance, construction, etc.				8		
6. Maintenance contracting terms under funding agencies should be supportive of the local contracting industries.				8		
Group B						
1. External support to road maintenance in general (TA/project) has been beneficial.		2	5			
2. Local consultants should be part of core Team to ensure ownership, sustainability.			7			
Group C						
1. In order to secure political commitment, there should be legislation.				1	6	
2. Road funds should be marketed to the people.				2	5	
3. Road fund board should (i) be transparent, (ii) involve private/public/road users, and (iii) be held accountable for fund use and road quality.				3	4	
4. Road fund should be applied to higher classes of roads.			2	5		
5. Levy should take into account axle load/ damage to roads.			1	6		
6. Levy should be based on fuel consumption.		1		6		
7. Levy on type/luxury (vehicle), engine size, registration, road/bridge tolls.				1	6	
8. Government support to make up shortfall in funding will be reduced as fund matures.			3	1	3	
9. Private sector- – private ownership transfer/ concession toll on road users				3	4	
Group D						
1. Political will/commitment from government						
2. Information and participation						
3. Good governance/transparency						

Workshop Session Questions	Work Group	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	TOTAL
Group E							
1. In the experience of Sub-Saharan Africa, there were a number of changes – the most important was the extra money.					7		
2. Funding agencies do not like trust funds.				5	2		
3. Funds must be transparent.					7		
4. Some countries are not ready economically for a road fund—direct funding from government is still required.					7		
5. Cost sharing and coordination with local government is required.				1	4	2	
6. An independent board is the important factor.				2	4	1	
7. The road fund board should consider all road expenditure, not just maintenance.			2	3	1	1	
Group F							
1. Provision of adequate allocations							
2. Sound inspections/quality controls and supervision systems							
3. Axle load control							
4. Political will							
5. Planned maintenance							
6. Appropriate training of technical personnel							
7. Involvement of road users in monitoring of maintenance funds							
8. Building of private sector capability							
9. Better coordination with relevant agencies							

3. Workshop Session 3: "Best Practice"–An Independent Road Maintenance Fund as a Path to Proper Road Maintenance

		← DISAGREE			AGREE →		
Workshop Session Questions	Work Group	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	TOTAL
Session 3							
1. In principle, would you agree to putting maintenance and new works in the same "pot" and prioritizing on the basis of economic return?	A	-	2	-	5	-	7
	B	-	2	-	4	-	6
	C	4	3	-	-	-	7
	D	-	7	-	-	-	7
	E	-	1	-	6	-	7
	F	-	5	1	1	-	7
	Total	4	20	1	16	0	41
2. An RMF controlled by an independent board is one of the best ways of promoting proper road maintenance.	A	-	-	-	6	1	7
	B	-	1	-	5	-	6
	C	-	-	3	4	-	7
	D	-	4	2	1	-	7
	E	-	-	1	3	3	7
	F	-	3	-	4	-	7
	Total	0	8	6	23	4	41

Workshop Session Questions	Work Group	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	TOTAL
3. It should be the finance ministry	A	-	1	-	6	-	7
that promotes the RMF.	B	-	1	-	4	1	6
	C	-	-	2	5	-	7
	D	-	5	-	2	-	7
	E	1	2	-	3	1	7
	F	-	1	-	6	-	7
	Total	1	10	2	26	2	41
4. The majority of RMF board members	A	-	4	1	2	-	7
should be persons representing	B	-	3	-	3	-	6
road user interests.	C	-	-	3	4	-	7
	D	-	-	-	7	-	7
	E	-	-	2	3	2	7
	F	-	5	-	2	-	7
	Total	0	12	6	21	2	41
5. The RMF chairman should be chosen	A	2	4	-	1	-	7
from the members representing	B	-	4	-	2	-	6
road user interests.	C	-	2	1	4	-	7
	D	-	1	4	2	-	7
	E	-	2	-	5	-	7
	F	-	5	-	2	-	7
	Total	2	18	5	16	0	41
6. The road tariff should fully fund the	A	-	3	-	3	1	7
RMF (in order to protect the RMF's	B	-	1	-	5	-	6
independence).	C	-	2	1	4	-	7
	D	-	5	-	2	-	7
	E	-	-	-	3	4	7
	F	-	-	-	7	-	7
	Total	0	11	1	24	5	41
Points Made:							
Group D							
1. To establish road fund, cooperation of							
government agencies required.							
2. Educate people and public.							
3. Build up capacity.							
4. More TA and assistance by aid providers.							
5. Priority : (i) main roads, (ii) secondary							
roads, (iii) minor roads.							
Group E							
1. Decisions on an RMF must be made in				1	3	2	
the context of the entire road sector (including							
roads maintained by local authorities).							
2. Political will is essential—the idea has to					4	2	
be sold to stakeholders.							
3. There must be clear separation between					5	1	
the fund board and the road agency.							
4. There should be a road authority with					6		
implementing maintenance as one of its							
functions.							
5. Support from funding agencies is required					3	3	
for a balanced program for both maintenance							
and construction on local priorities and							
social and economic return.							

Workshop Session Questions	Work Group	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	TOTAL
6. Funding agencies should be flexible in order to contribute to the government priorities with minimal, affordable conditions.					2	4	
Group F 1. RMF should work provided the following comforts are provided: (i) Assured revenues—free from any raids or economy cuts; (ii) Vested by law with sufficient autonomy for ensuring effective maintenance; (iii) Government and users are adequately represented; and (iv) Inspection, supervision, and quality control systems.							
2. RMF should principally cover main roads and lend support to secondary and minor roads depending on availability of funds. 3. International agencies can assist road maintenance by (i) Providing seed money for setting up RMF until it becomes self-sustaining; and (ii) Provide for maintenance alongside assistance for new road projects							

4. Workshop Session 4: Self-Reliance in the Process of Change: How can road sector transformation be achieved? What else needs to be done?

		← DISAGREE			AGREE →		
Workshop Session Questions	Work Group	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	TOTAL
1. Finance Ministry should drive the	A	-	6	-	1	-	7
initiative to improve the economic	B	-	1	1	5	-	7
performance of the road sector.	C	-	4	1	3	-	8
	D	-	2	-	5	-	7
	E	-	1	-	4	-	5
	F	-	-	1	3	-	4
	Total	0	14	3	21	0	38
	Donors & Consultants	-	9	4	4	-	17
2. National self-reliance is essential	A	-	-	-	6	1	7
for sustainability of improved	B	-	-	-	7	-	7
economic performance of	C	-	-	1	7	-	8
the road sector.	D	-	-	-	4	3	7
	E	-	-	-	6	-	6
	F	-	-	-	4	-	4
	Total	0	0	1	34	4	39
	Donors & Consultants	-	-	-	13	4	17

Workshop Session Questions	Work Group	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	TOTAL
3. A transformation board should be created at the start to oversee the process of transformation.	A	-	3	1	3	-	7
	B	-	-	-	7	-	7
	C	2	4	2	-	-	8
	D	-	4	1	2	-	7
	E	1	2	-	3	-	6
	F	-	2	1	1	-	4
	Total	3	15	5	16	0	39
	Donors & Consultants	-	-	-	11	4	15
4. National "intellectual independence" should be developed in all aspects of road sector decision making.	A	-	-	-	7	-	7
	B	-	1	-	6	-	7
	C	-	-	8	-	-	8
	D	-	-	-	5	2	7
	E	-	-	-	6	-	6
	F	-	-	4	-	-	4
	Total	0	1	12	24	2	39
	Donors & Consultants	-	1	1	11	2	15
5. It is essential to make road sector information easily available to all stakeholders.	A	-	-	-	7	-	7
	B	-	-	-	7	-	7
	C	-	-	1	7	-	8
	D	-	-	-	4	3	7
	E	-	-	-	1	5	6
	F	-	-	-	3	1	4
	Total	0	0	1	29	9	39
	Donors & Consultants	-	-	-	2	13	15
6. Arrangements are needed for "rapid response" consultancies making short-term inputs "on demand."	A	-	-	-	7	-	7
	B	-	-	-	7	-	7
	C	-	-	8	-	-	8
	D	-	-	-	7	-	7
	E	1	-	-	5	-	6
	F	-	-	-	4	-	4
	Total	1	0	8	30	0	39
	Donors & Consultants	-	-	3	9	3	15
7. Arrangements are needed to improve international exchange of knowledge between road stakeholders (road users, government, others).	A	-	-	-	7	-	7
	B	-	-	-	6	1	7
	C	-	-	-	8	-	8
	D	-	-	-	6	1	7
	E	-	-	-	5	1	6
	F	-	-	-	4	-	4
	Total	0	0	0	36	3	39
	Donors & Consultants	-	-	-	11	5	16
8. Lending agency requirements (e.g., special administrative procedures) adversely distort local decision-making processes.	A	-	-	-	7	-	7
	B	-	-	5	2	-	7
	C	-	2	6	-	-	8
	D	-	-	2	5	-	7
	E	-	-	-	6	-	6
	F	-	1	2	1	-	4
	Total	0	3	15	21	0	39
	Donors & Consultants	-	4	3	7	2	16

Workshop Session Questions	Work Group	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	TOTAL
9. In the long term, lending agencies should trust local decision-making processes (that have been subject to independent audit).	A	-	-	-	7	-	7
	B	-	-	-	7	-	7
	C	2	-	-	1	5	8
	D	-	-	-	7	-	7
	E	-	-	1	5	-	6
	F	-	-	-	4	-	4
	TOTAL	2	0	1	31	5	39
	Donors & Consultants	-	1	1	10	4	16
Points Made:							
Group A							
1. Political will.							
2. Support of road users in general through participatory initiatives.							
3. Legal coverage for effective implementation.							
4. Institutional reforms in concerned agency.							
Group C							
1. Arrangements should be made to consult all stakeholders in driving the reform in the road sector.					8		
2. In an effort to undertake reform in the road sector, lending agencies should help to develop local capacity to sustain the reform.					8		
Group D							
1. Review and improvement of procurement guidelines and procedures is needed (funding agencies and recipients).					7		
2. Joint initiative should come from ministry of finance and concerned departments.					7		

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