



## AFGHANISTAN ROAD MAINTENANCE NOTE

### EXECUTIVE SUMMARY

#### 1. The Challenge: To meet Road Maintenance Requirements

Road may be a most significant public asset in Afghanistan, but their benefits can be sustained only if a well-planned program of maintenance immediately follows road improvements.

Road maintenance is categorized into **routine**, **periodic** and **emergency** maintenance. Maintenance options can be either **outsourcing** to private sector or carried out using **force account** (in-house units), but a recent increasing worldwide tendency is to shift maintenance works to the private sector, as contractors have proved more cost effective and efficient than in-house units, particularly in the developing world.

When outsourcing maintenance works, there are many variations in the types of contract, but in recent worldwide practice these are largely categorized into **“traditional” input-based measurement** contract and **performance-based** contract.

#### 2. The Proposal: For Implementation and Funding Arrangements

The current critical issues for Afghan road maintenance are summarized as; (i) high construction cost, (ii) lack of capacity in both private and public sectors, and (iii) incapable financing. The on-going requirements and constraints in Afghanistan necessitates “hybrid approach” to satisfy urgent needs, yet moving toward desired goal of private sector oriented efficient road maintenance. The approach should consist of: (a) trying to build longer lasting roads, (b) maintaining limited force account maintenance workforce for the next 5-7 years, and (c) supporting private sector (local contracting industry) development for sustainable maintenance during the next 3-7 years.

As an immediate necessity, **Jabal os Salaj – Khenjan Section with Salang Pass (82.7km) should be outsourced for urgent maintenance needs** as a most critical road section. As a proposal for (c), **a Post-Emergency Road Maintenance Project with a possible IDA finance** could be discussed to develop efficient and cost effective road maintenance and to promote employment generation for local contracting market.

For funding road maintenance needs, **road user charges** should be a source of revenue to be utilized for road maintenance, but it may take time for its establishment. As a more direct funding measure, **toll collection** and/or **annual road access charge** could be the immediate solutions for sustainable funding.

#### 3. The Way Forward: Recommendations for Action Plan

To meet the urgent requirement for road maintenance, the immediate actions are recommended for the following: (1) the government should set up clear policy about its approach and arrangement for road maintenance based on a mid-term maintenance plan, (2) maintenance contract for Jabal os Salaj – Khenjan Section should be framed immediately, (3) toll collection or annual road access charge arrangement should be established to contribute to immediate funding needs, (4) preparation for proposed post-emergency maintenance project can be initiated if the government agrees, (5) fuel surcharge and vehicle registration tax collection should be established at an earliest opportunity since the systematic road user charge collection is absolutely necessary to secure maintenance funding as one of the most important government revenue sources.



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### 1. *The Challenge: To Meet Road Maintenance Requirements*

#### (1) Road Network Status in Afghanistan

The main road network in Afghanistan comprises 3,227 km of Regional Highways (international corridors), 4,906 km of National Highways, and 8,959 km of Provincial Roads. The remaining rural road network consists of village access roads of about 17,000 km.

As of the end of 2004, road rehabilitation programs funded by development partners has provided about US\$1.35 billion for regional/national highways and other roads. This program should bring the major part of regional highway network up to a reasonably good condition by 2011, while the rehabilitation of the remaining road networks must also be ongoing in parallel.

As the rehabilitation of the regional highway network is completed by 2011-12, the annual maintenance requirement will be about **US\$72 million** for the main (Regional + National) road network<sup>1</sup>. The most urgent issue is how to maintain the regional/national highways being rehabilitated with these funding.

#### (2) Road Maintenance: Consequences of Neglect

Road may be a most significant public asset in many countries, and Afghanistan is no exception. Not preserving these valuable assets presents a significant loss to the country. The on-going road improvements bring immediate and drastic benefits to road users, but these benefits can be sustained only if a well-planned program of maintenance immediately follows the road improvements.

The postponement of road maintenance brings serious problems. If road repairs are carried out as soon as defects are detected, the work, and hence the cost required is usually relatively modest. If minor defects are neglected, it may lead to complete failure of a road section requiring full reconstruction, the costs of which can be as three times expensive, on average, as the avoided maintenance costs.

The function of maintenance is to preserve the asset, not to upgrade it, and it must be done on a regular basis. For management and operational convenience, road maintenance is categorized into routine, periodic and urgent/emergency maintenance.

**Routine Maintenance** comprises small scale or simple works carried out on a regular basis, aims to ensure the daily passability and safety of existing roads in the short-run and to prevent premature deterioration of the roads. The frequency of works may vary but it is typically as often as once or more per week/month. Typical activities include roadside verge clearing, grass cutting, cleaning silted ditches and culverts, patching and pothole repair. For gravel road it may include re-grading every 6 months or so.

**Periodic Maintenance** covers activities undertaken on a section of road at regular and relatively long intervals to preserve structural integrity of the roads. As these operations are normally large scale and need special equipment and skilled resources, they cost more money than routine maintenance. Examples are resealing and overlay

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<sup>1</sup> Sheladia Associates; Master Plan for Road Improvement Project; ADB TA No. 4371-AFG; First Interim Report, May 2005



works undertaken in response to measured deterioration in road conditions. For paved road this means repaving in about 5 to 8 years; for a gravel road this means re-gravelling about every 3 years or so.

**Urgent/Emergency Maintenance** is undertaken for repairs that cannot be foreseen but requires immediate attention. Examples include collapsed culverts or landslides that block a road, which are often caused by abnormal weather conditions.

### (3) Maintenance Strategy: Force Account vs. Outsourcing

The possibility for implementing maintenance programs lies with a road owner, who should be competent in maintenance program management, have a good monitoring system in place and establish clear and transparent procedures for procurement. Maintenance options can be either outsourced to private organizations or in some cases carried out using force account (in-house units and equipment).

When force account is present, the road agencies may claim that is cheaper. However, the fundamental problem in force account road maintenance is the absolute lack of incentives for in-house units to properly maintain the asset. In recent years, it is an increasing worldwide tendency to shift maintenance works to the private sector, as contractors have proved more cost effective and efficient than in-house units, particularly in the developing world.

In some **Asian countries** (Indonesia/Bangladesh, for example) the road agencies take a mixed approach: routine maintenance performed by force account, the rest carried out by contracting. These countries are also gradually adopting more contracting, in search of better performance against inefficient in-house capability.

In **Africa**, road agencies are more quickly moving toward phasing out of force account and outsourcing of all the maintenance works. A good example can be seen in Lesotho, where the road agency had completely phased out the force account by 1997, and then it has been relying on local small-scale contractors in carrying out maintenance of rural roads. This practice has turned out to be cost effective and efficient, and has positively impacted on poverty alleviation through the generation of employment opportunities for 4,000 workers. During that period, the Contractor Training Program (currently under local financing) has trained 65 small-scale labor-based works contractors in both road maintenance and rehabilitation.<sup>2</sup>

In **Latin America**, the need for experienced contractors has not been an issue. Particularly for maintenance, the learning curve has been very fast and a system that combines micro-enterprises for routine maintenance and contractors for periodic maintenance was established in a short period of time. The equipment tools in the hands of the force account crews – and the crews themselves – can be recognized to become contractors, with some training and supervision.

### (4) Options for Sustainable Road Maintenance: Types of Maintenance Contract

When outsourcing maintenance works, there are many variations in the types of contract. However, in the recent worldwide practices it can be largely categorized into two typical types of contracts: “Traditional” Measurement Contract, and Performance-based Contract.

**“Traditional” Measurement Contract** is based on a schedule of unit prices and estimates of quantities. The works to be performed are specified in the contract, and

<sup>2</sup> Subhash C. Seth; Africa Transport Technical Note: SSATP Note 36, Training of Small Scale Contractors for Rural Road Maintenance in Lesotho, The World Bank, March 2004



payments are based on the “input” - executed measured works. This is suitable for routine/periodic maintenance as well as rehabilitation or other construction works. This modality generally brings improvement over force account maintenance practices. For maintenance contracts, a problem lies that the contractor has the wrong incentive, which is to try to carry out the maximum amount of works, in order to maximize its turnover and profits.

**Performance-based Contract** is managed based on the minimum conditions of road, bridges and traffic assets that the contractor manages to comply with the performance standards defined in the contract. The contractor is paid on a monthly period and payment is based on the outcomes of the contractor’s performance, not on the “input” - the amount of works executed. The nature of this type of contract allocates responsibility for work selection, design, and delivery solely to the contractor. Hence, the choice and application of technology and the pursuit of innovation in materials, processes and management are up to the contractor. If the performance standards are not achieved/maintained, deductions are made from the contract payment. It needs a certain level of knowledge at the employer side for established transparent checking and auditing procedures for wide and expanded applications.

## 2. *The Proposal: For Implementation and Funding Arrangements*

### (1) **Road Maintenance Requirements and Issues in Afghanistan**

As emergency rehabilitations of primary highways are being completed, the post-rehabilitation maintenance is becoming a major issue in the Afghan road sector. The current critical issues for road maintenance in Afghanistan are summarized as follows:

**High Construction Cost:** A lesson learned from the recent development works in the Afghan road sector is the high construction costs caused by the security situation and necessity of involving international contractors in most of the projects due to the lack of capable local road contractors. This is a cause of reluctance for the government to actively move toward private sector oriented maintenance operations.

**Lack of Capacity (both Private & Public):** The country at present does not have a well-developed contracting industry. This means that there is a need for the Ministry of Public Works (MPW) to maintain certain level of force account capacity for the time being to perform at least routine and emergency road maintenance to supplement the capacity of the private contractor. However, the lack of manpower/equipment/financial capability of MPW clearly shows a necessity of private sector involvement quickly. Maintenance management needs to address how to (i) conduct annual network-level surveys, (ii) perform network-level strategic and program analyses for prioritization, and (iii) develop annual and multi-year rolling maintenance plans.

**Incapable Financing:** Cost recovery and financing of road maintenance is currently the most critical issue in the Afghan road sector. When it is difficult to maintain sustainable maintenance funding from the government’s ordinary revenue fund, main possible methods for road maintenance financing are direct toll collection, some form of access charges, or road user charges (surcharge on fuel and vehicles) application. In the Afghanistan context, it has been widely recommended that toll revenues be used to finance routine maintenance for roads with completed rehabilitation for the short-term and urgent measures, and it be financed by comprehensive road user charges in the medium-term, whether it will be earmarked or not.<sup>3</sup>

<sup>3</sup> For more detailed discussion on Road Sector Financing, reference should be made to: Policy Paper 2.4: Financing of the Road Sector, Transport Sector Review, Final Report; MOT/MPW/MOCAT/ARDS; Jan. 2004



## (2) Road Maintenance Strategy: Hybrid Approach

Considering the on-going requirements and constraints for road maintenance, a straightforward measure, either fully sustaining force account or fully outsourcing to private sector immediately, is a difficult option. It is therefore necessary that parallel measures for “hybrid approach” are required to satisfy urgent needs, thus move toward the desired development goal, which is, highly private sector oriented efficient road maintenance system. These measures are:

- (a) Trying to build longer lasting roads (higher initial strength), while donor funds support development more easily, so that maintenance burden will be lessened,
- (b) Maintaining limited force account maintenance workforce with necessary equipment to maintain the primary roads which cannot be covered under (c) and (d) for the next 5-7 years,
- (c) Supporting private sector (local contracting industry) development as soon as possible for more economical and sustainable maintenance during the next 3-7 years.

**Force account:** The World Bank financed Emergency Transport Rehabilitation Project (ETRP) has been partly supporting measure (b) by supplying winter maintenance equipment for the Salang Pass in its original credit, and by financing US\$2.0 maintenance equipment for northern regions (Kunduz and additionally Mazar-i-Sharif) in its supplemental grant (the specifications are currently under discussion). Other development partners have also partly supported maintenance equipment provisions. The MPW needs to make full use of such equipment for the immediate force account routine and emergency maintenance requirement.

However, the force account arrangement should be transitional while the capacity of domestic private contractors is developed. Thus, it is important that the government's policy contain explicit objective of gradually phasing out force account work in 5 to 7 years. There is a need to ensure that Afghanistan does not make the mistakes that other countries have made with force account. It should therefore be ensured that:

- There will be no permanent laborers employed - all labor should be made on a daily basis, so that there is no question of payment if funding falls,
- Labor is based, as far as possible, on piece rate rather than time rate
- Use will be made of individual contractors, the so-called the lengthworker approach<sup>4</sup>, for basic activities such as ditch/culvert cleaning, vegetation control, etc.

For a smooth transition to the private sector at a later stage, the permanently employed staff should be minimal so as to minimize resistance to moving to the private sector.

**Urgent outsourcing:** However, there are urgent necessities in some critical road sections. The most critical road section is **Jabal os Saraj – Khenjan Section (82.7 km)** including the **Salang Pass** with a major tunnel at a 3,400 m altitude at the highest point. The 2004-05 winter was the first winter after the Salang Tunnel rehabilitation was completed, but the winter maintenance (snow removal and deicing) was not fully efficient by the MPW force account, even partly supported by the rehabilitation contractors of adjacent sections. The 2005-06 winter will be the first

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<sup>4</sup> A lengthworker is one person who is contracted to carry out routine maintenance of a 1-2 km road section. He usually lives alongside the allocated length of road and is often supplied with tools and regularly provided with materials.



winter that all the contractors in Kabul – Doshi rehabilitation works will be gone, and it definitely requires a special arrangement with maintenance contracts especially for the Salang Pass winter maintenance. It is strongly suggested that the maintenance of this Jabal os Salaj – Khenjan Section be outsourced before the 2005-06 winter season.

***Private sector development:*** In order to support the most critical task of developing local maintenance contractors and gradually shifting maintenance works from force account to outsourcing to these local contractors, it is proposed to create a **Post-emergency Road Maintenance Project with a possible IDA finance**. The project would aim to achieve efficient and cost effective road maintenance and positive impact on poverty reduction by promoting employment generation for local contracting market. The project could include, but not limited to:

- (a) Support for preparing a medium-term (5-10 years) Road Maintenance Master Plan (RMMP), based on the results of the on-going Road Improvement Master Plan funded by the ADB<sup>1</sup>, for technical, schedule and sustainable financial plans for Afghan Regional & National Road Network,
- (b) Finance road maintenance works for selected national road rehabilitation sections for 3-5 year transition period toward local financing based on the RMMP,
- (c) Support for creating an Afghan Contractor Training Program (ACTP) for capacity building for local contracting industry including:
  - Providing training for bid/contract documentation and management,
  - Providing on-the-job training for labor-based works methods,
  - Providing financial support by revolving fund or access to credit facilities,
  - Providing favorable measures and contract support for new micro-enterprises
- (d) Establish simplified procedures for inviting bids, issuing contracts and making payments,
- (e) Support for creating a sustainable road inventory system in the MPW,
- (f) Strengthen road maintenance planning and management capacity for MPW, including creation of dedicated Road Asset Management Directorate and setting up of a road asset management system, if necessary.
- (g) Strengthen ACTP management capacity for MPW including evaluation of contractors' performance,
- (h) Support for MPW to allow contractors easy access to MPW-owned equipment for hire/leasing arrangement.

The maintenance works contracts can be traditional measurement contract, area maintenance contract, or performance-based contract. However, it is necessary to begin with simple traditional measurement contracts, which can be gradually transferred to performance-based contracts as the contractors gain experience and the employer becomes mature.

### **(3) Funding Options and Strategy**

The Government will have to address the issue of how to ensure adequate funding for road maintenance in near future, no matter what temporary financial arrangement can be done with development partners. This is because road maintenance is a recurrent cost, and without funding daily recurrent needs, the country can never be financially sustainable.



**Road User Charges:** Most countries finance road maintenance by way of appropriations from the government's central revenue fund. It is widely recognized that Road User Charges are a source of revenue to be utilized for road maintenance. Road users normally pay various taxes on vehicle and fuel. Since these Road User Charges are directly related to vehicle usage, there is an argument to earmark these road user charges for road maintenance, in some cases new construction, to ensure sustainable finance for maintenance of all the levels of road infrastructure.

The current situation in Afghanistan is that road users pay no specific taxes on vehicles or fuel. The immediate possibility of fuel surcharge seems very limited, as there is no petroleum company to systematically import fuel. Fuel is individually imported from neighboring countries, and the government does not have full control of imports. A proposal for fuel surcharge was submitted to the cabinet some time back, which was rejected.

Given that fuel has to cross the border and most things that cross the border are subject to customs control and duties, and in view of the government's weak financial situation, taxing on fuel for general revenue purposes, let alone road maintenance, is a critical issue.

**Toll Financing:** As a more direct and immediate possible funding measure for road maintenance, toll collection is widely discussed. A working group in the Transport Sector Consultative Group (CG-TS) is discussing possible options for toll financing for road maintenance. While it is difficult to expect secure road maintenance funding from the government's central revenue fund, toll financing for individual or comprehensive road network seems to be an immediate solution for sustainable funding.

While more comprehensive toll collection for road maintenance funding is an important option, it is necessary to initiate toll collection for urgent individual maintenance needs immediately. It is recommended that toll collection for funding maintenance needs for sections such as Jabal os Saraj – Khenjan or Kabul Kandahar be immediately implemented as a project basis.

**Annual Road Access Charge:** Another direct and immediate possible funding measure would be an annual road access charge, which is a license fee, against which a sticker is normally displayed on every vehicle. Such annual charges could be different for heavy and light vehicles, and they could be sold at gas station or border crossings. This can be a first step in a cost recovery scheme which can raise the part of maintenance costs that are not distance related.

### **3. The Way Forward: Recommendations for Action Plan**

To meet the immediate requirement for road maintenance discussed above, the following immediate actions are recommended.

#### **(1) Needs for Government's Decision and Policy Announcement**

There should be a clear government decision and policy announcement about its planned approach and implementing arrangement for road maintenance based on a medium-term road maintenance plan. Then different development partners may offer to fund a slice of the program. The World Bank can offer, if the government so desires, to take a lead in working with the government to develop such a plan, and support the government's role in coordinating with other partners. Once the government reviews the proposal and agrees, the World Bank can help develop a donor coordination to agree on a sector approach to maintenance of national highways.



## (2) Preparation for Maintenance Contract for Jabal os Saraj – Khenjan Section

While it may take time to agree on a national policy on road maintenance, the proposed maintenance contract for Jabal os Saraj – Khenjan Section should be framed immediately so that it may go forward while other things are under discussion.

To meet the requirement of deploying a maintenance contractor for Jabal os Saraj – Khenjan Section before the 2005-06 winter, it is recommended that the preparation be initiated immediately. The preparation of bidding document could be performed by the supervision consultant for the on-going Kabul – Doshi rehabilitation contracts on a sole-source basis, and could be funded by the on-going ETRP project.

There are several alternatives for contracting method. One option could be to use a management contract with a consulting firm/NGO as has been used in part of ETRP. Another option could be a performance-based contract. In this case, however, setting a performance standard and using an international contractor and consultant would be required.

## (3) Enhancement of Toll Collection and/or Annual Road Access Charge Arrangement for More Comprehensive Maintenance Funding

The on-going CG-TS discussions on toll collection arrangement should be formalized for more comprehensive maintenance funding for short-term needs. These discussions can include possibility of annual road access charge, toll collection arrangements such as toll levels, applicable routes and areas, financial viability, collection methods, and others. It should be envisaged as an alternative funding vehicle until the Ministry of Finance (MOF) establishes sustainable road user charge collection.

## (4) Preparation for Proposed Post-emergency Road Maintenance Project with a Possible IDA Finance

If the proposed Post-emergency Road Maintenance Project can be agreed with the MPW and MOF, the preparation between the World Bank and the Government can be initiated for aiming to deliver the project by the end of the ETRP implementation.

## (5) Establishment of Fuel Surcharge and Vehicle Registration Tax Collection

There is a continuing argument to support an earmarked Road Fund. There are many issues for creating an earmarked Road Fund, but even though it is not possible to directly earmark the road user charges for road maintenance, the systematic collection of road user charges is absolutely necessary to secure one of the most important government revenue sources, which eventually contribute to the secured funding for road maintenance.

For example, assuming average annual mileage and fuel consumption, the whole vehicle fleet would consume about 796 million liters of fuel per year. At the current price of US\$0.35 per liter, a 30-35% fuel surcharge (about US\$0.1 per liter) would be sufficient to collect the US\$79.6 million. The income from vehicle registration fees is estimated about US\$3.4 million, which totals **US\$84 million** for the estimated total revenue from fuel surcharge and vehicle registration fees<sup>1</sup>. This is more than required amount to maintain the regional/national road network (US\$72 million). It is therefore critical to establish tax collection system for fuel surcharge and vehicle registration tax under an initiative of the Ministry of Finance.