ROADS BOARD NEPAL: A SUSTAINABLE APPROACH TO ROAD MAINTENANCE MANAGEMENT

Dipak Nath Chalise*

ABSTRACT

Roads should be viewed as important national assets. Like any other asset, roads must be regularly maintained to keep them serviceable. However, it has been difficult to meet road maintenance needs in Nepal through government budget allocations. As roads provide a vital service, they can be maintained by adopting a business oriented approach. Charging users for services provided is an important first step in this process. In line with this concept, the Government of Nepal has established a new maintenance regime through the establishment of a roads fund and the Roads Board Nepal. The following article discusses the management and operational aspects of the Board and experiences gained from its first two years of operation.

Keywords: Roads Board Nepal, Roads Fund, Road maintenance financing in Nepal.

INTRODUCTION

The national road system

Roads are the principal mode of transport in Nepal, with no other mode playing a significant role in Nepal’s transport sector. Over the years, there has been considerable expansion of the road network from a meagre 376 km in 1950 to 16,835 km in 2002 (Nepal 2002). New road developments are taking place at a rate of about 700 km per year, of which about 100 km are strategic roads and the rest are local roads. Figure 1 shows road network expansion in Nepal between 1950 and 2002.

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The country’s road network is divided into two broad categories. These are as follows:

(a) The Strategic Road Network (SRN) consists of 4,830 km, 67 per cent of which is blacktop, 17 per cent gravel and 16 per cent earthen roads. It is made up of two types of roads: 15 national highways occupying 62 per cent of the network and 51 feeder roads occupying 38 per cent of the network. SRN is managed by the Department of Roads. Further details on pavement type and by type of road are provided in table 1;

(b) The Local Road Network (LRN) has a length of 23,922 km with 21,724 km of rural roads and 2,198 km of urban roads. In contrast to SRN, it has 7.0 per cent black top, 24.1 per cent gravelled and 68.9 per cent earthen roads (Nepal 2004). However, some questions remain as to the veracity of data regarding the actual length of motorable rural roads. The responsibility for LRN rests with local government bodies, but technical backstopping is provided by the Department of Local Infrastructure Development and Agricultural Roads (DoLIDAR). Table 2 provides further details on pavement type and road length by type of road.
Nepal has a very low road density compared with the other South Asian countries. Out of the 75 districts in the country, 12 districts still have no road access. Rural areas in 15 districts are yet to be connected to their district headquarters. The major challenge lies in providing an appropriate level of road infrastructure and transport services to these remote and scattered settlements to support developmental activities. The ultimate goal should be to reduce the level of poverty. To improve the level of accessibility, each year about 700 km of new roads and 300 km each of engineered and non-engineered village roads are being added to the country’s road network (Deoja 2005).

### Road accessibility

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### Road development strategies

Past road development strategies focused on the movement of goods and passengers within the country. During the 1970s, priorities shifted towards developing the north-south feeder roads. After 1990, road development objectives were defined in terms of maintaining economic growth, supporting poverty alleviation and reducing regional imbalances.

A major shift in policy aimed at addressing road maintenance problems was taken up in the early 1990s. Road user financing of road maintenance was

<table>
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<tr>
<th>Type of road</th>
<th>Total length (km)</th>
<th>Pavement type (percentage)</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Black top</td>
</tr>
<tr>
<td>Strategic road network</td>
<td>4 861</td>
<td>66.6</td>
</tr>
<tr>
<td>National highways</td>
<td>3 029</td>
<td>77.9</td>
</tr>
<tr>
<td>Feeder roads</td>
<td>1 832</td>
<td>48.0</td>
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<th>Type of road</th>
<th>Total length (km)</th>
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<tr>
<td></td>
<td></td>
<td>Black top</td>
</tr>
<tr>
<td>Urban roads</td>
<td>2 198</td>
<td>43.7</td>
</tr>
<tr>
<td>District roads</td>
<td>9 775</td>
<td>6.0</td>
</tr>
<tr>
<td>Village roads</td>
<td>11 949</td>
<td>1.1</td>
</tr>
<tr>
<td>Total length (km)</td>
<td>23 922</td>
<td>1 670</td>
</tr>
<tr>
<td>Percentage of total</td>
<td>100.0</td>
<td>7.0</td>
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developed through a trial toll system on a road section under the authority provided by the Public Road Improvement Toll Fund Act, 1995. The acceptance of user charges for road services from the eighth plan onwards is considered to be a major step in the right direction. The establishment of a roads board and a dedicated fund for road maintenance in 2002 was a continuation of this policy.

**Network condition and traffic**

In the 1980s, roads were built without giving much attention to their future maintenance needs. Consequently, road assets were being lost at a rate of 5 km per year for every 100 km of roads built. Donor-supported higher standard roads were subject to the same rate of decline. Between 1988 and 1992, the length of roads in “poor condition” almost doubled. In addition, the general condition of the major road network was deteriorating rapidly, with about 180 km of good road being lost every year. This dismal situation however, started to improve after 1992 owing to the implementation of many road maintenance projects funded by donor support from Swiss Agency for Development and Cooperation, IDA and DFID. Table 3 provides strategic road surface conditions for different years. Table 3 shows that, after 2001, the situation began to worsen, with a return to deteriorating road conditions.

<table>
<thead>
<tr>
<th>Year</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
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<tbody>
<tr>
<td>1992</td>
<td>NA</td>
<td>NA</td>
<td>52</td>
</tr>
<tr>
<td>1999</td>
<td>31</td>
<td>57</td>
<td>12</td>
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<tr>
<td>2001</td>
<td>43</td>
<td>48</td>
<td>9</td>
</tr>
<tr>
<td>2003</td>
<td>15</td>
<td>63</td>
<td>22</td>
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*Note:* NA = Not available.

The highway information management system established in DoR conducts regular manual traffic counts at specified locations on SRN. Based on the available data, a recent study has forecasted the national average annual traffic growth rate of 5.5 per cent for the period 2003-2007 and 6 per cent for 2007-2017. The percentage of the network with traffic volume of more than 250 vehicles per day is envisaged to increase from 55 per cent in 2001 to 64 per cent in 2012.
**Maintenance of road network**

A policy shift in the maintenance of road assets was initiated with the realization that the transport system could only be sustained in the long run with strong commitment to preserving the existing infrastructure. Allocation of resources for maintenance will have to be based on the availability of resources and network priority. To ease pressure on the national budget, the investment on road maintenance will be recouped from user charges.

The negative impacts of inadequate investment on road maintenance came to light in 1988 when a study by SDC showed that Nepal was losing between 1 to 2 billion Nepalese rupees annually due to lack of proper road maintenance (SDC 1988). Past road maintenance activities were largely ad hoc in nature responding only to pressing maintenance problems. Actors involved in the road sector have focused more on new development than on the maintenance of existing assets. This has ultimately harmed road users as they have had to bear higher vehicle operating cost. In the long run, failure to maintain roads also ensures the need for expensive rehabilitation and reconstruction. Despite developing a planned road maintenance management system comprised of routine, recurrent, periodic, and emergency maintenance, its implementation proved to be difficult. Matching resource allocations to maintenance needs proved especially difficult (see figure 2).

![Figure 2. Comparison between demand and supply of maintenance budget by year](image-url)
Facing this situation, it was necessary to develop an alternate approach in an effort to address a wide range of road maintenance issues. It became clear that:

- Road maintenance budget needs were growing faster than GDP;
- Budget allocations for maintenance were much too small to meet maintenance needs;
- There was lack of institutional mechanisms to ensure adequate provision and utilization of resources for road maintenance;
- The project approach could not ensure sustainable maintenance, as maintenance should be a continuous process supported by a stable flow of funds;
- Reform in the road maintenance regime was essential;
- Proven models applied elsewhere in other countries should be tried.

I. ROAD MAINTENANCE

A. The purpose

The main objective of road maintenance is to ensure the serviceability of the road network and minimize the cost of road transportation, which is comprised of:

(a) Agency cost:
   (i) Capital cost of construction;
   (ii) Maintenance of the facilities over their design life;

(b) Road user costs.

Many elements are factored into road user costs. Among these, vehicle operating cost (VOC) is the largest over the total life cycle of a road facility. VOC is defined as the price the user has to pay to move the vehicle per unit of distance. The prime concern is to control the variables that significantly contribute to VOC such as surface condition, roughness, speed and load. Better roads mean lower operation costs. The effect of VOC parameters can be assessed in economic analysis of road maintenance projects by using tools such as HDM IV.
There are both direct and indirect benefits from well maintained roads. Direct benefits are realized in the form of savings in VOC and travel time, reductions in the number of accidents and improvement in travel comfort. The major indirect benefits include improved access to social and economic opportunities and increased land value.

**B. Road assets and their management**

Huge amounts of resources must be allocated to build and maintain roads. However, they are often treated as a free infrastructure service. This may be appropriate when it is necessary to provide access for social and strategic reasons. However, in order to recover construction costs and fund maintenance, they should be managed in a businesslike manner. A model for investment developed by Robinson et al. (1998) clearly shows that a relatively small amount of money spent on regular and periodic maintenance can save money by greatly reducing the need for expensive premature rehabilitation.

The restoration value of the existing road assets in Nepal is about NRs 100 billion. These valuable assets must be preserved and upgraded over time. This becomes particularly clear after considering their net benefit to the national economy. Fortunately, users are willing to pay a small charge in exchange for more efficient and safer road transport services. The better service can be delivered to the public by implementing a new road maintenance regime based on the fee-for-service concept. This would help to ensure the establishment of a system that recognizes the needs for road maintenance to be carried out on a continuing basis and provides a stable flow of funding for the purpose. It is estimated that Nepal requires about NRs 200,000 per km per year to keep its roads in serviceable and good condition through planned maintenance.

**C. The concept of road maintenance funds**

The concept of a dedicated road maintenance fund emerged as a means to raise the continuous flow of resources required to meet the perpetual needs of road maintenance. The concept is based on a funding arrangement through a fee-for-service model. Initially, many countries started with earmarking certain funds for road maintenance. These funds were administered by a separate funding agency. However, this arrangement suffered from many shortcomings and met with mixed results. These shortcomings include excessive government control, vagaries of the treasury, failure to institutionalize the distinct roles of the funding and road maintenance agencies and little or no representation of road users on the funding agency's board.
After retooling the dedicated road maintenance concept to address the aforementioned problems, the World Bank launched a Road Management Initiative (RMI) in 1988. RMI encouraged the development of second generation road funds in Africa, emphasizing their transparency and accountability. Second generation road funds involve segregation of (a) funding/controlling responsibilities from that of implementation and (b) “road user charges” from “general taxation revenues”. Both the task of determining the level of road user charges and the allocation of revenues to implementing agencies are carried out by a user represented roads board (Heggie 1995).

RMI defines four sets of key principles for road funds, which are as follows:

- Involve road users in the management of roads;
- Secure enough money for road maintenance year after year;
- Ensure that all parities know what they are responsible for;
- Establish a system for managing road programmes with clear accountability.

Second generation road funds are autonomous agencies controlling the funding of road maintenance. These funds, now established in many countries, have the authority to raise revenues to finance their operation and control funding allocations. They are run by a professionally efficient management team and adhere to a market approach. The main purpose for the development of such a model was to create a businesslike environment for road maintenance management.

The key elements in the new maintenance regime include setting revenue collection and expenditure targets; securing the transfer of funds from the collection agents; approving the work programmes and maintenance budgets of the implementing agencies and allocating funds to them; monitoring maintenance works; and utilizing disbursed funds. In most cases, roads fund boards serve as the financer of maintenance services rather than a provider of services. The actual implementation of maintenance works is generally the responsibility of the road agencies to which funds are allocated.

D. Learning from international experiences

Road fund boards have operated in different countries for many years. Japan Road Council (1952), Transit New Zealand (1954), the Board of the Finnish National Road Administration (FINNRA 1990), the United Kingdom
Highway Agency Advisory Board (1994) and the South African Roads Board (1935) are some of the most notable boards. More recent experiences from the United Republic of Tanzania, Mozambique, Ghana, Zambia and many other countries from Africa and Latin America clearly show that progressive reform has been initiated in the road sector and consolidated over time through necessary changes in legal and regulatory regimes and management practices. In most of these countries, a second generation roads fund board is now in operation. The key characteristics of these new generation funds include a separate and small road fund organization with clear operational rules, oversight by a broad-based board with strong participation from user groups and the private sector and the agency’s role as purchaser, not provider, of maintenance services.

To further reform measures, agencies implementing the actual works are also now being established as autonomous bodies with stakeholders represented on their management boards. TANROADS in the United Republic of Tanzania and Administração Nacional de Estradas in Mozambique are examples of such autonomous organizations. The South African National Road Agency, Ltd., is a much more advanced and mature organization. It is a fully commercial company with equity from the Government and the private sector.

Concerns have been raised about the possibility that additional road user charges or other kinds of levies imposed for financing road maintenance could have a negative impact on the consumer price index. However, studies show that this effect could be minimal and easily offset by efficiency gains from improvement of services provided by the road sector. For example, a study in Zambia showed that a levy to increase the price of gasoline by 2.0 per cent and diesel by 2.2 per cent would raise the VOC of cars, light trucks and articulated trucks by 0.5, 0.5 and 0.9 per cent, respectively. The resulting increase in the consumer price index for rural households and urban households with low to high incomes would be 0.06, 0.08 and 0.12 per cent respectively.

Comparative data on fuel levy for road maintenance and related items in some African countries and Nepal are provided in tables 4 through 6.
### Table 4. Fuel levy (US cents/litre)

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<tbody>
<tr>
<td>Ethiopia</td>
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<td>–</td>
<td>–</td>
<td>3.5</td>
<td>3.5</td>
<td>4.6</td>
<td>5.8</td>
<td>–</td>
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<tr>
<td>Ghana</td>
<td>–</td>
<td>–</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>–</td>
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<tr>
<td>Malawi</td>
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<td>–</td>
<td>4.0</td>
<td>4.0</td>
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<td>Nepal: Potrol</td>
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<td>–</td>
<td>1.4</td>
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<td>Diesel</td>
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<td>0.7</td>
<td>0.7</td>
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<tr>
<td>Zambia</td>
<td>1.8</td>
<td>4.4</td>
<td>4.3</td>
<td>3.8</td>
<td>3.5</td>
<td>3.0</td>
<td>6.7</td>
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### Table 5. Road maintenance expenditure

<table>
<thead>
<tr>
<th>Country</th>
<th>Total road maintenance expenditure (US$ million)</th>
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<tbody>
<tr>
<td></td>
<td>1994</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>10.0</td>
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<tr>
<td>Ghana</td>
<td>14.8</td>
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<tr>
<td>Malawi</td>
<td>2.7</td>
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<tr>
<td>Nepal</td>
<td>–</td>
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<tr>
<td>Zambia</td>
<td>3.0</td>
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</tbody>
</table>

### Table 6. Available resources and expenditure

<table>
<thead>
<tr>
<th>Available resources for road maintenance as percentage of need</th>
<th>Expenditure as percentage of available resources</th>
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</thead>
<tbody>
<tr>
<td>Ethiopia</td>
<td>70</td>
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<tr>
<td>Ghana</td>
<td>90</td>
</tr>
<tr>
<td>Malawi</td>
<td>50</td>
</tr>
<tr>
<td>Nepal</td>
<td>20</td>
</tr>
<tr>
<td>Zambia</td>
<td>30</td>
</tr>
</tbody>
</table>
II. ROADS BOARD NEPAL

A. Genesis

The Government of Nepal and the World Bank were instrumental in establishing the Roads Board Nepal (RBN). A road maintenance management and finance reform committee prepared the draft for the Roads Board Act, which was enacted by the Parliament in 2002. RBN was established under this Act to provide adequate funding for sustainable road maintenance in the kingdom. It was designed to be self-reliant in organizing and managing its responsibilities.

RBN is funded through road toll, fuel levy and vehicle registration fees. RBN collects, manages and allocates funds for road maintenance to road agencies and is held accountable for the use of public money. The Department of Roads is the designated road agency for the maintenance of the strategic road network. The maintenance of urban, district, and local roads is undertaken through the Department of Local Infrastructure Development and Agricultural Roads (DoLIDAR). It coordinates with the district development committees and municipalities which are recognized as the road agencies for the local road network.

The Board ensures the participation of stakeholders in decision-making. It promotes a sense of ownership and responsibility from the public and private sectors. It is hoped that RBN will achieve results similar to those achieved by road boards in other developing countries.

B. The Roads Board

RBN's objectives are clearly defined in the Roads Board Act. They are phrased as follows:

“The Roads Board has been hereby established to carry out routine, recurrent, periodic, and emergency repair and maintenance works of the road and to make an arrangement for imposition on and collection of tolls from the motor vehicles plying on the road.”

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The Board is designed as an autonomous corporate body having perpetual succession. However, when necessary the Government may give direction to the Board. The Board is obligated to follow such government direction. The main functions, duties and powers of the Board are:

- To cause to carry out repair and maintenance of roads
- To collect tolls and charges for the use of roads and to recover penalties under the Act
- To make recommendations to the Government on matters concerning the fixation of road tolls, fuel levies under the Roads Boards Act and fines for motor vehicles that do not comply with established standard
- To formulate integrated annual plans for repair and maintenance of roads
- To provide funds to road agencies for the repair and maintenance of roads
- To disburse toll revenue at the prescribed rate for the repair and maintenance of roads from which tolls were collected
- To cause to reconstruct, rehabilitate and upgrade roads as prescribed
- To prepare an action plan for minimizing repair and maintenance expenses of roads
- To ensure effective repair and maintenance works of roads
- To approve the annual budget and programme of the Board

An executive committee carries out the functions of the Board. The committee is comprised of 13 members with the secretary of the Ministry of Physical Planning and Works as its Chairperson. Apart from the chairperson, there are four other representatives from the Government. The remaining eight members are from the private sector, professional bodies and other stakeholder groups. The Executive Director of RBN acts as the secretary of the committee.

The executive committee meets at least once in three months. The majority opinion prevails at the meeting of the committee. In case of a statement, the chairperson exercises the deciding vote. The secretary of the committee authenticates the decision of the committee. The chairperson and members of the committee receive prescribed allowances for attending meetings.
The Roads Board Act defines road-related agencies as agencies that include a local body and carry out repair and maintenance works. Road agencies submit an annual programme, with prescribed details on repair and maintenance of roads, to the Board. The Board reviews the annual programmes obtained from the agencies and formulates an integrated annual programme for repair and maintenance of roads. It then informs the Ministry of Physical Planning and works about the annual programme. The Board provides fund to the road agencies for maintenance works included in the integrated annual programme after its approval. It also specifies repair and maintenance standards and checks to ensure that agencies have conformed to these standards. If a road agency fails to meet the specified standards, the Board as an ultimate measure has the authority to withhold further disbursement to the defaulting agency.

At any time, the Board may require road agencies to furnish details of repair and maintenance activities and the expenditures for such works. On completion of repair and maintenance works, agencies prepare reports using the prescribed format and submit them to the Board. If the Board asks for any assistance in the course of its business, the concerned agency is obligated to render the necessary assistance to the Board.

The Board’s activities, accounts and matters concerning financial administration have to be transparent. It is mandated that the purchase, sale or procurement of contracts by the Board be through competitive public bidding. The Board prepares an annual report of activities and submits it to the Ministry within three months from the date on which the fiscal year ends and publishes the annual report in any national newspaper for information to the general public. Any person wishing to obtain the statement of income and expenditure, balance sheet or annual report of the Board may obtain copies after paying charges prescribed by the Board.

The Executive Committee has the authority to prepare necessary manuals and frame rules and by-laws. Such rules and by-laws come into effect after approval of the Government and may involve the following matters:

- Appointment, remuneration, facilities and condition of service of the Executive Director and employees of the Board;
- Use and operation of the proceeds of the fund;
- Release of funds for road repair and maintenance activities, and related financial procedures;
Establishment of the modality to be followed in carrying out the Board's activities, accounts and fiscal administration, and road repair, maintenance and other activities;

Other related matters.

C. RBN secretariat

RBN has a small secretariat with 17 staff headed by the Executive Director. The other staff members include five engineers, three management and finance experts, one office secretary, three assistants for administration and accounts, one computer operator-cum-receptionist and three support staff.

The Executive Director is selected by the Executive Committee from among several qualified candidates with requisite academic qualifications and job-related experience. The Executive Director is the administrative chief and is responsible for carrying out the day-to-day business of the Board. The term of office is for four years and may be extended for another term. The functions, duties, and powers of the Executive Director are as follows:

- Implementing the decisions and directions of the Committee
- Preparing short- and long-term plans, annual programs, and budget of the Board
- Implementing plans and programmes approved by the Committee
- Appointing employees required by the Board
- Submitting proposals for consideration and approval of the Committee
- Carrying out such other functions as may be prescribed

D. Roads fund resources

The Roads Board Act grants RBN authority over the following resources:

- Such levies on motor vehicles as may be prescribed by the Government by a notification published in the Nepal Gazette for using the roads mentioned in the notification
- Levies on fuel used by motor vehicles
Vehicle licensing fees

Tolls on motor vehicles registered outside of Nepal, collected upon entering the country

At present, three road sections are subject to tolls. In order to initiate the collection of tolls on additional roads, the new toll must be processed, approved and published in the government Gazette. The toll notification specifies road sections and tolls for different categories of vehicles, light, heavy and two/three wheelers. Fuel levies are currently collected at the rate of NRs 1.0 per litre for petrol and NRs 0.50 per litre for diesel fuel. The Government has yet to allow collection of transit fees from vehicles registered abroad entering Nepal, although the process for collection is under development. The Board has begun to develop methods for collecting other resources, such as fees for vehicle registration renewal.

In addition, RBN may also receive funds from the following sources:

- Grants from the Government
- Grants or loans from foreign Governments or international organizations
- Amounts obtained from other sources

The Board must have the prior approval of the Government, however, before accepting grants or loans from foreign Governments or international organizations. All expenditures made on behalf of the Board have to be borne from the fund. Revenue collected for RBN is deposited in a commercial bank specified by the Executive Committee.

**Roads fund expense items**

Roads fund resources can be utilized for the following purposes:

- Administrative and operational expenses of the Board (maximum 4 per cent of the total revenue in each fiscal year)
- Repair and maintenance of strategic roads
- Repair and maintenance of district and urban roads on a cost-sharing basis as determined by the Board

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2 The current exchange rate is NRs 72 to 1 US$. 
• Sharing the amount borne by the Government for donor-financed road repair and maintenance projects
• Road safety improvement projects as determined by the Board
• Enforcement of prescribed standards with respect to payload capacity and axle load of motor vehicles
• Research in repair and maintenance of roads

Any funds remaining after allocation for the above purposes may be used to upgrade existing roads or to carry out minor road related activities that the Board may prescribe based on the recommendations of RAs. However, this amount should not exceed 15 per cent of estimated revenue. If there is no immediate plan to spend the remaining funds, with prior government approval, the Board may invest in debentures or securities issued by the Government or Nepal Rastra Bank. The account of the Board is maintained in accordance with the laws in force and is audited by Office of the Auditor-General.

E. Procedures for fund allocation

RBN prepares comprehensive integrated annual plans (IAP) based on annual road maintenance programmes submitted by the RAs. RBN ensures optimum utilization of resources through a prioritization framework. As demand always supersedes supply, RBN follows a defined priority matrix. Priority is given to regular maintenance of good condition roads versus rehabilitation of poor condition roads. Road works are prioritized in descending order as follows: routine maintenance, recurrent maintenance, periodic maintenance, rehabilitation, reconstruction and upgrading. Priority is also based on the type of road designated for maintenance or rehabilitation. Higher priority is given to roads from the strategic road network (SRN) than to roads from the local road network (LRN). These priorities are specified in the Roads Board Directive. RBN scrutinizes the annual road maintenance programmes submitted by the RAs for compliance with the Roads Board Directive and review works from previous fiscal years. Additional, the roads board examines human resource deployment, the capacity of the concerned agency, and the work standard from previous years.

Priority is also linked with traffic flow, terrain type and pavement conditions. The need for emergency maintenance is addressed through a predetermined reserve fund. A road deteriorated below maintainable condition is not given priority for regular maintenance until it is brought to maintainable condition by rehabilitation or reconstruction. RBN makes the final
decisions on allocations. It has the authority to monitor, control and check, evaluate and withhold the release of funds to non-performing road agencies.

The fund flow system is yet to be institutionalized as provisioned in the Roads Board Act and other relevant rules. The toll charges levied at three road sections are directly collected by RBN. Toll collection is outsourced to the private sector through contractual arrangements. The rule regarding fund flow requires collection of fuel levies from importers at the border by customs. These funds are then transferred to the RBN account. Similarly, vehicle registration fees collected by the transport management office is meant to be directly transferred to the RBN bank account. However, these rules have yet to be implemented. So far, such funds first go from the collecting agency to the treasury. Funds are released to RBN by the treasury via the Ministry of Physical Planning and Works. This arrangement does not maximize efficiency and attempts to streamline the system have been initiated by the RBN secretariat.

With regard to implementation, procedures in force in the concerned road agency are applicable until such time as RBN issues its own directives. RBN can guide the RAs for procurement of works by setting norms and standards. However, it has yet to do so and does not play any key role in procurement. This leaves procurement to the concerned RA. Although local agencies are encouraged to carry out works through competitive open-bid contracts, the Roads Board directive allows them to carry out works worth up to NRs 2.5 million through users committees. The Roads Board directive sets out clear procedures for conducting works through such committees to ensure accountability and transparency.

The total expected revenue from fuel levies and other user charges in the first year of RBN operation was NRs 1 billion. Because of the outbreak of conflicts in Nepal, economic activity declined and the actual revenue collected was far short of the expected amount. Furthermore, RBN has yet to receive the full proceeds from fuel levies and vehicle registration fees from the Ministry of Finance. Initiatives have been made to secure the transfer of these funds. These types of problems were anticipated and are expected to disappear as operational procedures are streamlined.

F. Current activities

RBN is in the process of approving its third year Integrated Annual Plan. Most of the pertinent rules and regulations of RBN have now been approved. Toll collection contracts are being managed, although this process has been complicated by road closures, limited liability actions and disputes.
Information dissemination workshops and training for stakeholders have been organized. The relationship with the RAs has been encouraging so far. Networking with national and international organizations working with similar facilities has also been established.

The World Bank has recently initiated a review of RBN’s work. It is expected to analyse the shortcomings listed in this article and to suggest improvements. The secretariat is working on preparing financial plans for three revenue collection scenarios, minimum, optimal and desirable and to make suggestions to the Government about the toll and fuel levies for each scenario.

Allocations for the integrated annual plan for the financial years 2003-04 and 2004-05 and proposed allocations for 2005-06 are provided in tables 7 to 9.

Budget allocations were made for periodic maintenance of strategic roads under 11 divisional road offices through the Department of Roads (DOR) after receiving assurances that DOR has adequate funds for routine and recurrent maintenance from other government and donor-supported projects. A special decision of the Board has allowed rehabilitation and upgrading of some important local roads for the current fiscal year.

Table 7. Integrated annual plan and progress in fiscal year 2003-2004

<table>
<thead>
<tr>
<th>Revenue Sources</th>
<th>Amount (NRs million)</th>
<th>Expenses (NRs million)</th>
<th>Progress (percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funds transferred from previous year</td>
<td>51.5</td>
<td>Administrative</td>
<td>4.8</td>
</tr>
<tr>
<td>Funds from Ministry of Finance</td>
<td>220.0</td>
<td>Refund of deposits</td>
<td>1.1</td>
</tr>
<tr>
<td>Toll collection</td>
<td>42.1</td>
<td>Maintenance of SRN</td>
<td>152.0</td>
</tr>
<tr>
<td>Other incomes</td>
<td>1.3</td>
<td>Maintenance of LRN 12 Districts</td>
<td>37.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Maintenance of LRN 22 Municipalities</td>
<td>99.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reserve for emergency and adjustment of projected revenue</td>
<td>20.4</td>
</tr>
<tr>
<td>Total</td>
<td>314.9</td>
<td>Total</td>
<td>314.9</td>
</tr>
</tbody>
</table>
Table 8. Integrated annual plan and progress in fiscal year 2004-2005

<table>
<thead>
<tr>
<th>Sources</th>
<th>Amount (NRs million)</th>
<th>Activities</th>
<th>Budget/IAP (NRs million)</th>
<th>Expenditure</th>
<th>Progress (percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fund from Ministry of Finance</td>
<td>345.7</td>
<td>Administration</td>
<td>13.6</td>
<td>8.2</td>
<td>60.3</td>
</tr>
<tr>
<td>Toll collection</td>
<td>55.0 (Projected)</td>
<td>Maintenance of SRN</td>
<td>262.5</td>
<td>178.7</td>
<td>68.1</td>
</tr>
<tr>
<td>Other incomes:</td>
<td></td>
<td>Maintenance of LRN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank interest and miscellaneous</td>
<td></td>
<td>32 Districts</td>
<td>61.9</td>
<td>25.2</td>
<td>40.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 Municipalities</td>
<td>41.8</td>
<td>7.3</td>
<td>17.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reserve for emergency and adjustment of projected revenue</td>
<td>23.0</td>
<td>9.1</td>
<td>39.6</td>
</tr>
<tr>
<td>Total</td>
<td>402.8</td>
<td>Total</td>
<td>402.8</td>
<td>228.5</td>
<td>56.7</td>
</tr>
</tbody>
</table>

Table 9. Proposed integrated annual plan for fiscal year 2005-06

<table>
<thead>
<tr>
<th>Serial No.</th>
<th>Revenue Sources</th>
<th>Amount (NRs million)</th>
<th>Expenses Sources</th>
<th>Activities</th>
<th>Budget/IAP (NRs million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fund from MoF</td>
<td>316.8</td>
<td>Administration</td>
<td>13.2</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Toll collection</td>
<td>55.0 (Projected)</td>
<td>SRN ~ 5 000 km</td>
<td>270.0</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Other Incomes:</td>
<td>2.5 (Projected)</td>
<td>LRN 33 Districts</td>
<td>67.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bank interest &amp; miscellaneous</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Savings from earlier works</td>
<td>26.1</td>
<td>LRN 33 Municipalities</td>
<td>49.8</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>400.4</td>
<td>Total</td>
<td>400.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The district development committee has to provide a minimum of 20 per cent counterpart fund and carry out the works. Similarly, municipalities are to provide a minimum of 30 per cent counterpart fund. The figures in tables 7 to 9 represent only a portion of RBN funding.

It was possible for RBN funds, once disbursed to the RAs, to be carried over from one fiscal year to the next. For this reason, RBN allowed some works
to span more than one fiscal year. This created disincentives for the timely completion of road works, complicating the completion of IAP. In an attempt to address this issue, the practice of carrying funds over to subsequent fiscal years has been disallowed by RBN.

In 2004-05, the allocation to DOR has been exclusively for routine and recurrent minor works for the SRN and recurrent major works for road divisions with toll roads. This is in compliance with the rule stipulating that at least two thirds of tolls collected from a road have to be utilized for maintaining that road. In the case of local roads, most of the allocations were made for recurrent and periodic maintenance of priority roads under the jurisdiction of concerned local agencies.

For the current financial year, the RBN secretariat was able to identify the candidate roads according to the Roads Board Directive. The Directive requires that traffic levels on earthen roads average 15 vehicles per day and gravel roads average 40 vehicles per day to be eligible for funds. However, local agencies do not always agree with these criteria, as their priorities often do not meet traffic requirements.

Please note here that figures in tables 7 to 9 may not match with the corresponding figures in figure 2, as the figures in the tables include resources from sources other than RBN fund.

G. Challenges faced by the Board

Resource constraints are the main challenge faced by the Board. RBN funds only satisfy about 20 per cent of the total maintenance funding needs for SRN including periodic maintenance and rehabilitation. Less than 10 per cent of LRN needs can be met with RBN resources. However, there is also a serious concern regarding the utilization capacity of road agencies. Neither the Board nor the road users are satisfied with the performance of the road agencies, due mainly to their capacity constraints.

The estimated annual funding requirements for road maintenance are as follows:

- NRs 1 billion for 5,000 km of SRN
- NRs 330 million for 2,200 km of municipal roads
- NRs 541.8 million for 9,775 km of district and 11,949 km of village roads
The total need comes to about NRs 1.872 billion per year, which is equivalent to 1.8 per cent of the current road asset value. This is well within the range suggested by international organizations. If the Government remains committed to managing its road assets, mobilization of these funds should not be a major problem.

In order to increase resources for road management, the advantages of managing roads from a commercial point of view has to be clearly understood at the policymaking level and the benefits of sustainable maintenance should be clear to road users. Government’s commitment to implementing a commercial approach to road maintenance has to be strongly expressed. Without strong political support, it would be difficult to address many of the current multifaceted management problems faced by the Board.

There are several problems stemming from ambiguities in the legal provisions that govern the Board. The demarcation of authority between different levels and entities is not always clear. This causes friction in board operations. Control by the National Treasury and Ministry of Finance has not always been in line with the spirit of establishing a dedicated roads maintenance fund. It is also expected that many of the problems experienced in the initial years will gradually disappear as the operational procedures and the fundamental purpose of establishing the Board becomes clearer to all concerned.

A common problem faced by the Board is the conflict between the purpose for which local authorities request RBN funds and the purpose for which RBN was established. Often, local authorities request funds for rehabilitation of roads in non-maintainable condition, whereas the RBN priority of funding is for regular maintenance of roads in maintainable condition. Resolution of this problem is not easy as the local agencies have significant political influence.

The modality of fund transfer to and from RBN must be streamlined. Many key people at the administrative and political decision-making levels are not adequately informed regarding the need for and suitability of the roads fund approach to sustainable road maintenance. This may be solved by exposing them to success stories from other developing countries.

Contradiction between the objectives of routine, recurrent, periodic and emergency maintenance and the inclusion of rehabilitation, reconstruction and upgrading in other sections of the Roads Board Act are creating problems at the operational level. Ambiguous phrasing of various clauses in the RBA has often
caused confusion regarding the Board’s authority. A good example of this is confusion regarding the authority to raise tolls from selected roads through outsourcing.

Further, the absence of a corporate culture in the workplace, the present work style and non-competitive salaries and benefits for the RBN secretariat when compared with the private sector, harm staff morale and have a negative impact on the efficiency of the Board. Given the work load, the current staff strength is also not sufficient.

H. Future activities

RBN plans to undertake a number of activities in the future to improve its operational efficiency and the overall performance of the road sector through the provision of better road infrastructure services. The way forward is to develop directives, guidelines and manuals for technical standards, implementation modalities, fund flow mechanisms, and a reliable database. The road maintenance implementation practice by RAs must improve. This is essential for user satisfaction and to win their support for additional road user charges.

A comprehensive model for monitoring and evaluation is being developed by RBN. At the same time, a financial and a medium-term technical plan for road maintenance have to be formulated. Feedback from implementing agencies needs to be considered for improvement of operational procedures. Capacity-building activities for RBN and implementing road agencies also need to be considered. Institutional arrangements with the road agencies also need improvement. In order to win the support of road users, a wider consultation with public and other stakeholders is necessary. This should also help to raise public awareness about the purpose and functioning of RBN. Necessary changes in legislation, operational procedures and management practices have to be made. These should be modelled after good practices in other countries. Lastly, a corporate culture has to be established in the work place and better compensation packages should be offered to the RBN secretariat staff to improve morale.

CONCLUSION

Planned maintenance is essential to minimizing the life cycle cost of roads. A reform process to address this issue has been initiated in Nepal through the establishment of a dedicated roads fund and an agency for its
management. However, further steps must be taken to advance the reform agenda. International experiences could be of immense value for this purpose.

A number of challenges must be addressed in order to achieve sustainable management of Nepal’s road network. Among the most important issues are institutional problems concerning management and utilization of the fund and capacity constraints in road agencies. Regular maintenance can deliver more efficient road service to the people. However, this requires sustainable flow of funds which can only be ensured through institutionalization of the fee-for-service concept. Securing support from policymakers, road agencies, the donor community and road users would be of paramount importance for this purpose.

With policy support, better planning, better implementation, and updated monitoring activities, road maintenance management could be much improved by RBN. These improvements will allow road users to benefit from safer, faster, less costly and more comfortable travel. Personal and government savings could be utilized for other social and economic activities, which ultimately would contribute to improving the general living conditions of the people.

REFERENCES


Department of Local Infrastructure Development and Agricultural Roads (DoLIDAR), 2004. Inventory of Rural Road Networks, His Majesty’s Government, Nepal.


