Chapter 8

Road

8.1. Introduction

Uttar Pradesh has an extensive road network, but it is of sub-standard capacity and its quality is not adequate due to poor maintenance. Although the maintenance expenditure requirement was estimated to be approximately Rs. 2040 crores in the last five years, only about 60 per cent of this sum was allocated and spent on maintenance of roads (Appendix A-8.1.1). This has led to progressive deterioration of the road network. There is an urgent need to increase focus on rehabilitation and maintenance of roads in the state.

The problems in this sector relate to the weak institutional framework, inadequate and erratic flow of funds, lack of clearly defined responsibilities, ineffective management structures, and lack of managerial abilities.

The rest of the chapter is organised as follows: Section 8.2 provides an overview of the roads sector. Section 8.3 discusses the institutional set-up of the sector in the state. The reform initiatives are talked about in Section 8.4. Section 8.5 brings out the strategy for the roads sector and the last Section 8.6 gives the conclusion.

8.2. An Overview of the Roads Sector

For the purpose of management and administration, roads in India are divided into National Highways (NH), State Highways (SH), Major District Roads (MDR), Other District Roads (ODR) and Village Roads (VR). In Uttar Pradesh,[1] the expansion of the road network in recent years has been mainly in other district roads, village roads and other departments' roads, reflecting growing urbanisation and an attempt

TABLE 8.1

Road Network in Uttar Pradesh

(in Kms.)

	*Target 2001**	*1985*	*1992*	*1997*	*1998*	*1999*	*2000*	*2001***	*2002***	*2003***
National Highways	5888	2754	2754	2862	3083	4019	4495	3811	4860	4931
State Highways	35300	7957	9782	9647	9444	8702	9486	9939	9609	9022
Major District Roads	59310	10132	8863	8874	8896	8809	9831	7198	7305	7301
ODR/Village Roads	254662	121790	78315	91696	96046	100135	102931	91095	94861	99385
Other Dept. Roads+			58568	78592	78592	78592	142767	93035	94616	94616
Total	**355660**	**142633**	**158282**	**191671**	**196061**	**200257**	**269510**	**205078**	**211251**	**215255**

Source: PWD, Uttar Pradesh.

Note: *Lucknow Plan, ** After the formation of Uttaranchal.

+Other Dept. include Zilla Parishad, Village Panchayat, Municipal Roads, Forest, Irrigation Dept., MES, Sugar Cane, Railway Roads.

1. Before the National Highway Development Programme started in 1999, there was no significant move to upgrade state highways to national highways. Since 1999, many state highways have been classified as national highways across the country. Uttar Pradesh has received a fair share of reclassification of SH to NH.

to provide connectivity to villages. In some categories, part of the expansion is on account of reclassification of roads. For example, the NH length remained nearly constant at 2754 kms between 1985 and 1992 (Table 8.1), since then it has increased as certain SH sections have been declared as NH since 1996.1 (Table 8.2).

A large part of NH (21%) is classified as High Density Corridors, i.e. with traffic of more than 30000 passenger car units (pcu) per day as compared to nearby states (Table 8.2).

TABLE 8.2

National Highways

	National Highways				*% High Density Corridors***
	1990-91	*1995-96*	*1996-97*	*2002-03**	
Madhya Pradesh	2976	2976	2976	4664	13.9
Punjab	968	988	1198	1553	29.0
Rajasthan	2840	2846	2846	4597	12.9
Haryana	655	656	656	1361	21.1
Uttar Pradesh	**2754**	**2862**	**2883**	**4931**	**20.8**
All India	**33650**	**34508**	**34849**	**58125**	

Source: MORTH

Note: **— Corridors having more than 30000 pcu/day.

* From NHAI website as of 1.11.2003.

TABLE 8.3

National Highways and NHDP Projects

Programme	*Section*	*NH*	*Length (Km)*	*Status (NHDP Projects)*
GQ	Delhi-Agra	2	199	Four laned by May 2000
	Agra–Varanasi+	2	632	Civil construction is in progress
	Sikandara – Bhognipur	2A	25	Civil construction is in progress
NS-EW	Lucknow-Kanpur-Jhansi Section	25	270	Civil construction is in progress
	Agra +	3	26	Civil construction is in progress
	Varanasi-Mangwan Section	7	128	Civil construction is in progress
Other NHs	Moradabad Bypass	24	18	Completed
	Ghaziabad-Hapur and Hapur Bypass	24	33	Civil construction is in progress
	Agra-Jaipur Route	11	51	
	Delhi-Bareilly Lucknow	24	431	
	Bakshi-ka-Talab Chenhat	24A	17	
	Jhansi-Lakhandon Section	26	128	
	Allahabad-Margwan Section	27	43	
	Lucknow-Gorakhpur Route	28	311	
	Gorakhpur-Varanasi	29	196	
	Lucknow-Varanasi	56	285	
	Chenhat (NH28)–Km 16 NH56	56A	13	
	Km 15 (NH56)–Km 6 (NH25)	56B	19	
	Delhi-Meerut-Roorkee Route	58	165	
	Chutmalam-Dehradun Link	72A	30	
	Roorkee-Saharanpur Link	73	59	
	Rewa-Renukoot Link	74	147	
	Kanpur-Sagar Route	86	180	
	Rampur-Pantnagar Route	87	32	
	Gaziabad-Kanpur	91	405	
	Bhongaon-Etawah	92	75	
	Agra-Moradabad	93	220	
	Faizabad-Allahabad	96	160	
	Gaziapur-Saiyedraja	97	45	

Source: NHAI website *www.nhai.org* as of 1.11.2003.

Note: GQ–Golden Quadrilateral; NS-EW–North-South and East-West Corridor.

Conditions of roads in Uttar Pradesh have been persistently poor.[2] Capacity of SH and MDR has been abysmally low. Only 40 per cent of SH and four per cent of MDR are two-laned (Appendix A-8.1.2). More than one-third of the roads in Uttar Pradesh are unsurfaced and almost half of the unsurfaced roads are non-motorable (Appendix A-8.1.4). About 36 per cent SHs are below standard single-lane roads (Appendix A-8.1.5).

8.2.1. Development under the NHDP Programme and National Highways

Work to convert NH2 from Delhi to Varanasi (as part of the Golden Quadrilateral) and NH25 from Lucknow to Lalitpur (as part of NS-EW corridor) into four-laned highways under the aegis of NHAI is being carried out. Table 8.3 gives the summary of NHAI projects and their status in the state. Other than these, Uttar Pradesh has NH7, NH11, NH24, NH26, NH27, NH28, NH29, NH56, NH58, NH72, NH73, NH74, NH86, NH87, NH91, NH92, NH93, NH96 and NH97. In the recent past a large part of these highways has

2. The PWD admits that, on an average 40 per cent of the roads are under 'repair' at any point of time. This category also includes those roads which are half-finished and have been disbanded for want of funds (*Times of India* - February 24, 2001).

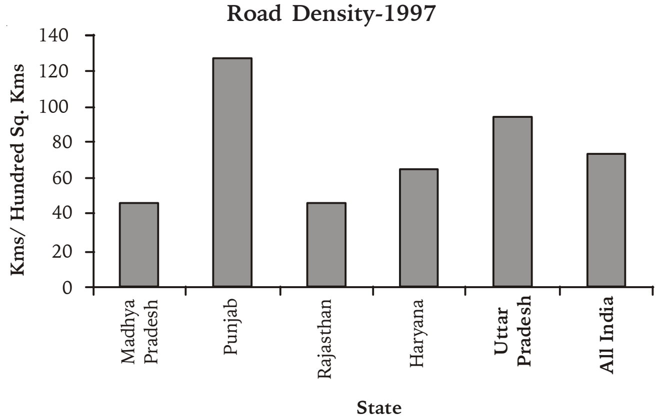
been carpeted and toll is collected on behalf of NHAI on these stretches.

8.2.2 Comparison with Neighbouring States

The state has better road density (road length per unit area) than all its neighbours except Punjab, but, Uttar Pradesh's road intensity (road length per capita) is the lowest in the region (Figures 8.1 and 8.2). This indicates that areas in the state are more accessible, although roads are more congested. Compared to the all-India average in 1997, Uttar Pradesh's road density and intensity are lower by 15 and 50 per cent respectively. If only surfaced and motorable unsurfaced roads are taken into account, Uttar Pradesh's road intensity worsens further.

FIGURE 8.1

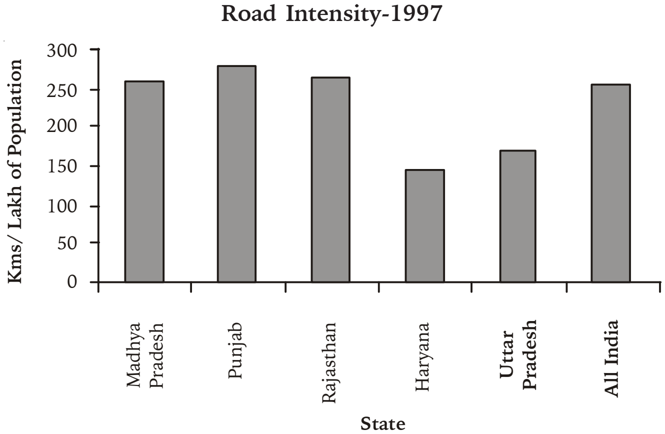
Road Density-1997



Source: MORTH, 1998-99.

FIGURE 8.2

Road Intensity-1997



Source: MORTH, 1998-99.

Almost one-fifth of the roads in Uttar Pradesh are non-motorable i.e. connectivity to many villages is of limited use (Table 8.4). Road network statistics are a grim reminder of how far behind the network is from the set target[3,4] (Table 8.1).

TABLE 8.4

Roads by Type of Surface–1997

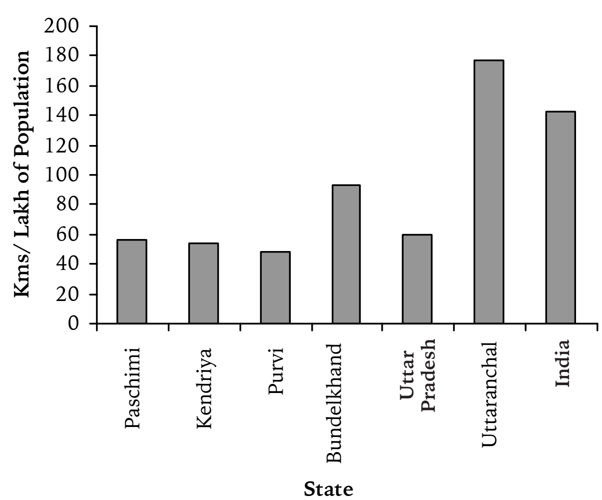
	Surfaced (%)			*Unsurfaced (%)*		
	WBM	*BT*	*CC*	*Motorable*	*Non-Motorable*	*Total Length in Kms*
Madhya Pradesh	31.0	25.7	0.0	40.7	2.6	146225
Punjab	0.0	100.0	0.0	0.0	0.0	46121
Rajasthan	8.5	55.8	0.7	22.8	12.2	109513
Haryana	0.0	94.7	0.0	2.0	3.3	23442
Uttar Pradesh	**12.0**	**52.4**	**0.0**	**17.6**	**18.0**	**155414**
All India	**22.7**	**36.6**	**0.1**	**15.8**	**24.8**	**1917335**

Source: MORTH, 1998-99.

Note: WBM–Water Bound Macadam, BT–Black Top, CC–Cement Concrete.

FIGURE 8.3

Road Intensity (Kms/Lakh Persons)

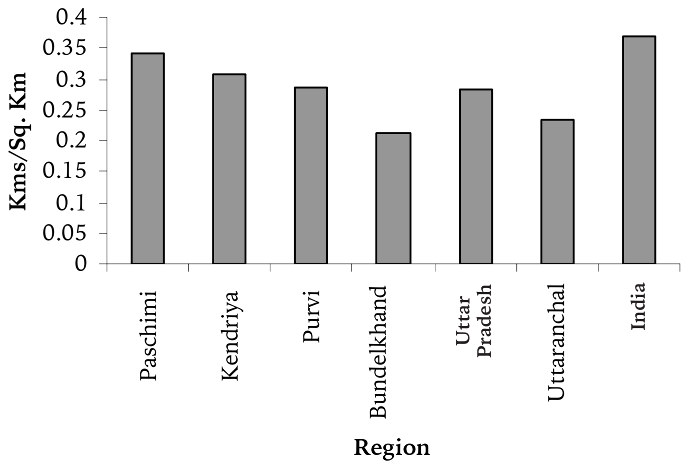


Source: *Monthly Review of Uttar Pradesh Economy*, (various issues) CMIE, Mumbai.

3. "I am myself perplexed. None of the officials know how many roads are lying half-finished and for how many years," former PWD minister Om Prakash Singh (*Times of India*, February 24, 2001).
4. During the Ninth Plan period Rs. 8609 crore was to be spent for the construction of roads in the state. In the first four years of the Plan actual expenditure was 30 per cent. So by March 2002 the shortfall in this important sector would be as high as Rs. 4841 crore (*The Pioneer*-May 8, 2001).

FIGURE 8.4

Road Density (Kms/Sq. Km)



Source: Monthly Review of Uttar Pradesh Economy, (various issues)CMIE, Mumbai.

8.2.3. Regional Variation within the State

Comparative road statistics of different regions of Uttar Pradesh show a fairly balanced road network within the State. In terms of road density and road intensity all regions are equally well provided for. It may be noted that the high road intensity in Bundelkhand simply reflects the low population density in the region.

8.2.4. Rural Roads

The state has been able to establish rural connectivity to all villages in line with the target set (Table 8.1). The farm-to-market roads that are used mostly by non-motorised transport generally continue to have low daily traffic. In contrast, the highway-to-market roads have seen rising traffic. The challenge is to provide all weather roads and maintain the roads built under different social programmes. Rural roads are being constructed under the Pradhan Mantri Gram Sadak Yojana, Ambedkar Gram Yojana, Farm to Market Roads (funded by the World Bank) and RIDF Scheme.

8.3. Institutional Set-up

Responsibility for the development and maintenance of roads except NHs rests with the state government. The NHs in the state are developed, maintained and managed under an agency system. The execution of works and day-to-day management is looked after by the state PWD. The network of SHs, MDRs and ODRs is developed, maintained and managed by the state PWD. The responsibility to develop and to maintain the urban road network—roads within an urban area—lies with the respective municipality.

Rural Roads

Rural roads have been classified into two categories: ODRs and VRs. Rural roads are planned under several rural development programmes of the state and the Centre, the prominent ones being Minimum Needs Programme, National Rural Employment Programme, Rural Landless Employment Generation Programme and Jawahar Rozgar Yojana. The responsibility of rural roads is with PWD and the Department of Minor Irrigation and Rural Engineering Services (RES). The RES is the executive arm of the Ministry which develops and maintains rural roads.

For the rural roads the Central government announced the Prime Minister Gram Sadak Yogana (PMGSY). The Programme is being implemented by states through an executing agency having established competence in executing time-bound programme in each state. At the district level, the programme will have to be planned, coordinated, and implemented by the executing agency through a Programme Implementation Unit (PIU). The PIU prepares project proposals giving all technical details as per the guidelines. The package is first cleared by the District Council and then by the Ministry of Rural Development (MORD) of the Central government. Funds are released by MORD through the State Ministry of Rural Development to PIUs for implementation of the Programme. In Uttar Pradesh, the executing agency is the PWD (40 districts) and Department of Rural Engineering Services (30 districts).

8.3.1. Financing of Roads

The Central government provides funds for NH construction and maintenance. Since 2000-01, a certain amount of funds are allocated from the Central Road Funds for the development and maintenance of state roads and Central government approved specific state road projects. For the state roads, funds come from the state government's budget. For a small part of state roads, which are developed as strategic roads in border areas, funds are provided by the Central government. The State Road Fund established in 1998 is envisaged to be an important source of funds for the upgradation and maintenance of state roads.

Rural Roads

Before implementation of PMGSY, the basic needs approach was followed where rural infrastructure is built under various agricultural development projects and overall development programmes. Sometimes rural roads are built to provide seasonal employment to agricultural labourers. Since 1994-95, funds are available from National Agricultural Bank and Rural Development (NABARD) to construct rural roads. NABARD's Rural Infrastructure Development Fund (RIDF) provides loan assistance to rural infrastructure projects, to state governments and state owned corporations on a case-by-case basis. State governments guarantee majority of NABARD loans.

Since December 2000, funds for rural roads have been made available from the Central Road Fund under the Pradhan Mantri Gram Sadak Yogana (PMGSY).[5] The objective of the scheme is to provide road connectivity through all-weather roads to all rural habitations with a population of more than 500 by the year 2007. Fifty per cent of the cess on high speed diesel collected by the Central government is allocated to this scheme. Under the Ambedkar Gram Vikas Yojana, some money is allocated to roads. In addition to this, it is envisaged that funds will also come from State Plan allocations and RIDF (NABARD).[6]

The state is expected to receive a substantial sum of money under the PMGSY programme and the DASP/SODIC Project to build all-weather connecting roads.[7] The problem with PMGSY is that there is no money for maintenance, hence assets of sub-standard quality wil be built and fall into disuse quickly.[8]

8.4. Reform Initiatives

The state government has taken number of initiatives including announcement of the Uttar Pradesh Road Development Policy (1998) and Guidelines for BOT Policy (1998), establishment of the State Road Fund (1998) and Uttar Pradesh State Highway Authority (2004). In addition, a policy paper on Civil Service Reform (March, 2000) has been brought out, which *inter alia* provides a blueprint for the institutional reorganisation of the PWD. It is envisaged that the new initiatives will help the state government to raise funds from users, attract investors for road network expansion and improve operation and maintenance of roads.

8.4.1. Uttar Pradesh Road Development Policy

The main objective of the policy is to supplement government resources with private funds. The stated objectives of the policy are as follows:

- To keep roads free of potholes and patches.
- To maintain and modernise NHs, SHs, MDRs, ODRs and village roads in the state.
- To develop urban roads.
- To construct bridges, rail overhead/under bridges and flyovers in the state.
- To promote participation of the private sector in road development process.
- To ensure financial discipline, delivery and dovetailing in the road construction work.
- To conserve environment.

The objectives of the policy are the responsibilities of the state PWD and, hence, the policy document restates the PWD's responsibilities. However, certain features that are not part of PWD's responsibilities are:

- Ring roads to be developed on a priority basis where urban local bodies are willing to contribute 25 per cent of the cost of the project.
- Annual increase of 15 per cent in budgetary resources for the sector.
- Centralisation of administration of all roads in the state.

Appraisal of the Policy

It is not a well-articulated policy; and reads more like a statement of intent than one that hopes to achieve an output oriented goal. Almost all aspects of the sector are included in the document, but in an incoherent manner. The document is almost like a

5. Uttar Pradesh was allocated Rs. 315 crores in the 2000-2001 Budget under the Pradhan Mantri Gram Sadak Yojana for 5113 projects which were completed FY 2002-03. This money was used to award Rehabilitation and Maintenance contracts of rural roads. In FY 2001-02 and 2002-03, Rs. 464 crore and Rs. 800 crore are allocated, but only 1085 projects worth Rs. 365 crore are completed.
6. It has been reported that the state received Rs. 300 crore from the NABARD and Rs. 400 crore from the PM's Gram Sadak Yojana for laying new roads in FY 2001-02. (*Times of India*, July 16, 2001)
7. Expected sum in FY 2003-04 is Rs. 674 crore and Rs. 175 crore under the PMGSY and DASP/SODIC project respectively.
8. Despite the Civil Services Reforms, the Rural Engineering Services (RES) department will construct link roads under the PMGSY in 184 villages in 14 districts of the state. A sum of Rs. 57.81 crore will be spent on the construction of these link roads with a total length of about 373.105 km. Department of Minor Irrigation and Rural Engineering Services is the nodal agency in the state. The link roads which are likely to be constructed are in Baghpat (7), Etah (21), Lalitpur (2), Mahoba (4), Badaun (15), Pilibhit (9), Barabanki (7), Faizabad (16), Gonda (17), Basti (11), Kushinagar (20), Ballia (27), Bhadohi(21) and Etawah (7). The Regional Executive Engineer is responsible to ensure the quality of the road. RES is the executing agency for 30 districts as of November 2004.

status report of roads in the state. The rehabilitation of various categories of roads is a tall order. There is no mention of a comprehensive strategy to achieve this goal. Further, the document includes NH renewal which is not the responsibility of the state government.

The policy recommends a 15 per cent increase in budgetary resources every year, which is difficult to achieve. Centralisation of the management of maintenance of all state roads with PWD may simplify co-ordination but to assign sole responsibility to PWD is a retrograde policy measure, as link roads to remote areas require co-operation from local residents.

Under this policy, construction of roads will also be the sole responsibility of PWD and Rural Engineering Services Department. Further, the PWD specifications will be adopted for projects under public-private partnership for construction work. This is a shortsighted measure because it reduces private sector participation to the construction of the road only.

In brief, the Uttar Pradesh Road Development Policy has strengthened the *status quo* and annexed funds available with other agencies for road development such as Mandi Parishad.[9] Project roads used to be well maintained and now these roads are likely to be maintained in the same way as other village roads.

Enhancements Required in the Policy

The Road Policy lacks a clear framework within which the road network is to be developed and maintained to provide good road services to users. The policy should have provided: (a) clear separation of provisioning of road services and construction of roads, (b) private sector participation in design, building and construction of roads, (c) participation of users in allocation and supervision of funds, and (d) establishing performance indicators for the maintenance of roads.

Illustrations of Road Policy at the Centre and Other States

The Central government as well as some of the states (e.g. Madhya Pradesh, Andhra Pradesh and Kerala) are attempting to provide such a framework. The Central government has separated the policymaking function from its executing arm. Whereas policymaking rests with the Ministry of Road Transport and Highways, NH development and maintenance is carried out by NHAI. The NHAI has constituted a Road Users' Advisory Committee to guide it in its operations and be more responsive to user demands. A number of states have adopted an arms length relationship from road network construction and are concentrating on providing road services to users within available funds. They are giving BOT contracts to the private sector to build and maintain roads over the concession period. They are changing the institutional framework and becoming more customer focussed.

8.4.2. Guidelines for BOT Policy

Like many other states, Uttar Pradesh too has enunciated Build, Operate and Transfer (BOT) policy through a PWD circular which is normally referred to as 'Guidelines for BOT Policy'. Its salient features are:

- The BOT policy will be decided by PWD.
- The policy will be implemented by the Uttar Pradesh Bridge Corporation.
- All projects under this policy have to be toll based and toll will be indexed to Wholesale Price Index (WPI).
- Private sector could participate in new highway construction, rehabilitation of roads, construction of bypasses and rail-over-bridge and rail-under-bridge, expressways and maintenance of highways.
- Private developers have to obtain the required permission from other state government departments to build the facility.
- Maximum concession period will be 20 years.

Assessment

Unlike Gujarat's BOT law, the guidelines do not make for a well thought-out policy. This seems to be a document prepared to provide a basis for setting up special purpose vehicles (SPVs) for a couple of projects.[10] In other states such as Gujarat, Madhya Pradesh and Andhra Pradesh, the BOT policy clearly defines how risks are going to be shared by a private developer with the state government and enumerates incentives provided to private sector participants. The

9. Between 1999 and 2000, Other Department Roads increased from 78592 kms to 142767 kms (Table 8.1).

10. These guidelines were followed for the Delhi–NOIDA Toll Bridge and now the state government has floated the Taj Express Development Authority to build US$ 350 million six lane Taj Expressway linking Delhi to Agra.

BOT policy has been legislated in Gujarat to remove legal and political risks from BOT contracts.

8.4.3. The State Road Fund

The State Road Fund (SRF) was established in 1998, earmarking part of the sales tax on petrol and diesel. For this purpose sales tax on petrol was raised from 14 to 20 per cent and on diesel from 16 to 20 per cent *ad valorem* and the additional sales tax was assigned to the fund. A committee with overwhelming government representation (12 out of 14) has been constituted to advise on the management of the fund. The rules and regulations governing the use of the fund have been approved by the Accountant General. The salient features of this fund are as follows:

- The road fund is to be used mainly for maintenance and rehabilitation of all primary state roads and is not to be used for payment of salaries to the PWD staff and gang labourers.
- Revenue collected under this fund would be transferred by oil companies to the consolidated fund of the GoUP which will then allocate the collection to the PWD with a lag of one year.

Quintessential Functions of a Road Fund

In order for the fund to pay for all road services, it should be a separate legal agency established under an Act of the state government with supporting regulations. All funds coming to the road sector should pass through the fund and it should meet 100 per cent of maintenance requirements. It should be managed by a public-private executive board which can lay down criteria for allocation of funds and award of contracts. The board managing the fund should be empowered to adjust the user charges with government consent and money collected from users should go to the fund directly rather than through the consolidated fund of the government.

A road fund organised as an independent legal agency can enforce transparency in award of contracts, negotiate contracts, scrutinise disbursement of funds and commission financial and technical audit reports of expenditure. The availability of funds reduces risk of late payment to private contractors and, thus, reduces financial cost. An independent road fund managed by a board can ensure that the users get the road service for which they are being directly or indirectly charged.

Evaluation of the SRF

The existing road fund is an accounting mechanism managed by the PWD Department without any legal backing. Important sources of funds for the road sector are the Central Road Fund, the PMGSY, the Rural Infrastructure Development Fund, etc. but the source of revenue for the state road fund is fuel cess alone. To amend the cess, the government has to only amend the Government Order, making the fund another instrument to raise revenue. The government treasury credits certain taxes under a single heading in the budget statement. Such funds are often referred to as "First Generation Road Funds." These funds face typical problems like: (a) they get raided regularly and revenues are diverted for other purposes (e.g., to pay salaries, purchase vehicles, etc.); (b) funds typically remain well below sustainable maintenance requirements; and (c) funds are managed ineffectively and this encourages leakage.

In the official documents (1998 vintage), it was estimated that the state would collect Rs. 200 crore/year from the increase in sales tax on petrol and diesel. In 1998-99, Uttar Pradesh consumed 463000 tonnes of motor gasoline and 4433000 tonnes of HSD. The government received Rs. 200 crore, 270 crore and 300 crore in FY 1998-99, 1999-00 and 2000-01 from the increase in sales tax on petrol and diesel but it transferred Rs. 100 crore per year only in FY 1999-00 and 2000-01. Moreover, despite the Government Order establishing the fund stipulating that the first call on the fund is maintenance, funds were channeled to widen state highways.

8.4.4. Uttar Pradesh State Highway Authority

The government of Uttar Pradesh has constituted a Uttar Pradesh State Highway Authority for development, maintenance and management of state highways on the pattern of NHAI. The authority shall make efforts to attract private sector participation for maintenance and upgradation of state highways and the money spent shall be recovered from toll collections. The authority may be provided 'capital contribution' from the State Budget, if toll collections are not sufficient.[11]

11. According to the Central Road Fund Act, 2000, the allocation in the Central Government cess on HSD for development of state roads is 27 per cent. The state government should approach the Central government with the state highway development projects to release part of this money.

8.4.5. Policy Paper on Civil Service Reforms in Uttar Pradesh

In order to avail a reform linked World Bank loan in 2000, the government of Uttar Pradesh prepared a Medium-Term Fiscal Framework and published policy papers on "Reforms in Governance", "Civil Service Reforms" and "Public Enterprise Reform and Privatisation". The Civil Service Reforms envisaged redifinition of their functional goals, better human resource management and improved work methods. Under sector-specific civil services reforms, PWD, being one of the largest employers in the state, was to be reorganised and rightsized to improve financial performance.

The restructuring of PWD envisaged in the policy paper is path breaking. If it is implemented in spirit, the PWD, currently organised to execute small work contracts, will be transformed into an organisation supervising performance-based contracts. The department, instead of being an organisation responsible for constructing roads, buildings, etc. will focus on buying road services on behalf of consumers.

Civil Service Reforms Follow-Up

The State Government appointed Tata Consultancy Services (TCS) in 2000 to suggest reorganisation of the PWD. The report envisages institutional development over a three to four year period in line with the consultants' recommendations. The use of independent civil engineering consultants for construction supervision is designed to introduce a good practice in modern contract management in the PWD and is consistent with PWD's medium-term strategy of outsourcing some of the functions that are traditionally monopolised by it.

8.5. Strategy for the Road Sector

8.5.1. Assessment of Funds Required

The root cause of willful neglect of state roads is that the network is built through the contract system for which funds are allocated through the State Budget. Over Rs. 1000 crore is 'spent' every year for construction of roads. But how much is actually spent for the purpose is anybody's guess. "It is no longer a secret that in the name of laying of new roads crores of rupees go into the pockets of politicians, officials and contractors—the unholy trinity which works in unison", (*Times of India*, 2001). There are many instances when the construction of roads and bridges has been recorded which does not serve its primary purpose or have not been constructed at all, (CAG, 1999). Further, insufficient funds were allocated for the maintenance of the network and whatever funds were allocated were diverted to the 'expansion' of network.

During the past five years expenditure on maintenance has been in the range of 55-77 per cent of the 10th Finance Commission recommendations (Appendix A-8.1.1). The lower than required expenditure on maintenance is reflected in the deterioration of road condition. Hence, rehabilitation of state highways and major district roads will require annual expenditure of approximately Rs. 1,075 crore/ year over the next five years. This illustrative calculation is based on the assumption that 20 per cent of SHs and 10 per cent of MDRs, *zilla parishad* roads, urban roads, municipal roads and project roads can be rehabilitated in one year. Rehabilitation cost, including widening of some roads for SH, is assumed to be one crore rupees per km and for other roads it is 0.15 crore rupees per km. These estimates are in line with the PWD estimates.[12] Note that rehabilitation is over and above regular maintenance of the roads. Overall, the road sector will need approximately Rs. 2,100 crores every year to carry out rehabilitation and maintenance of the road network. This is roughly of the same order of magnitude as the revenue collected from road users as well as other road related taxes (Appendix A-8.1.6). The major problems with current road financing in the state can be identified and summarised as follows:

1. **Inadequate funds:** The allocation in the government budget, which includes revenue collected from the road sector, has been woefully inadequate to meet even the requirements of the maintenance. Generally, road use revenue goes to meet other government expenditure. Only a part of current revenues of the government from the road sector is currently linked to the road use (section 8.3.3). But this revenue is not used to maintain roads as the Road Fund is not managed professionally. This has led to the deterioration of roads, leading to high vehicle operating costs.
2. **Poor institutional and legal arrangements for road financing:** The revenue from the road sector

12. In August 2001, Uttar Pradesh Government invited bids for the rehabilitation of the rural road projects in Varanasi district: Improvement/construction of rural roads of 12. 73 kms in Harua and Chairaigaon block at a cost of Rs. 1.59 crore; improvement/construction of rural roads of 14.6 kms in Chairaigaon block at a cost of Rs. 1.65 crore.

is primarily allocated through the state budget for road development and maintenance. In the past, the government's attempt to cut expenditure has led to reduction in budget allocation for road maintenance, as it is a low priority activity with few observable benefits.

The roads department, at present, is faced with a flawed incentive system, which leads to undue emphasis on 'force account work', ineffective use of plant and equipment, and lack of labour-saving work methods. Furthermore, SH and MDRs are built and maintained by the PWD whereas ODRs and VRs are built by the Rural Engineering Services Department which comes under the Ministry of Minor Irrigation and Rural Engineering Services. Managers simply do not have the funds or the incentives to use resources efficiently, nor are they penalised for poor performance.

8.5.2. Moving Ahead: Commercial Orientation to the Road Sector

Solving these problems requires fundamental changes in the way the government manages and finances the road network. The state needs to give a greater commercial orientation to the road sector i.e. manage the road network like any other business enterprise. While fuel taxes and need for funds to maintain the road network match, most fuel taxes go to general budgetary support. Overall fiscal reform, such as power sector reform, will also help to lessen the need to use fuel taxes for general budgetary expenditure. Nevertheless, the state government must move away from construction and maintenance of roads to purchasing road services.[13]

Minimum Modifications Required to Improve the SRF

The important link in commercialisation of road sector is to have an adequate and stable flow of funds.[14] Experience of many states suggests that budget allocations for road maintenance rarely exceed 30 per cent of requirements, and it is simply not feasible for governments to increase these allocations under present fiscal conditions. The tax on fuel, as charged by Uttar Pradesh state, is the best surrogate for user charges for roads. The government needs to provide legislative backing to ring fence this fund. Further, the following stipulations should be taken into consideration to make the road fund successful. First, to improve transparency the tax revenue should be deposited directly into the road fund without having to pass through the consolidated fund of the state. Second, an independent statutory board should be established to manage the fund which should include road user representatives.[15] Third, independent auditors should audit the fund, and the works financed through the road fund should be subjected to a full financial and technical audit.

Transforming the SRF into an Institution

At present, roads are a public monopoly and their ownership is likely to remain in government hands in the foreseeable future. Commercial orientation of the sector necessitates the following four steps. First, provide legislative backing to the road fund to ensure a secure and stable source of funds. Second, involve road users in management of roads through the road board. All funds from different sources for the road sector should pass through the fund. Third, develop and adopt contracts which define responsibilities of the concessionaire; and fourth, establish a clear organisational structure within the government defining responsibility and accountability including independent financial and technical audit for different roads.

Rural Roads

Rural roads are not self-financing, they have to be subsidised for maintenance as well as construction. The best practice to build quality assets is to split the rural roads into two parts. Highway-to-market roads should be handled globally, i.e. by a state government agency and financed within the family of state road network. The Uttar Pradesh government has already taken steps in this direction and an enabling act has been initiated. Performance-based maintenance contracts should be awarded to ensure that these roads are well maintained.[16]

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13. The PWD is in agreement with the analysis of the road sector and it has suggested that all the issues raised in the report can be addressed if the government announces two comprehensive polices dealing with state roads, namely, Uttar Pradesh State Road Policy (inclusive of construction, management, rehabilitation, BOT, funding, etc.) and Uttar Pradesh State Rural Road Policy (inclusive of construction, management and funding, etc.). These polices could provide commercial orientation to the road sector in the state.

14. In 1999-00 and 2000-01, the government allocated only Rs. 100 crore to the State Road Fund, though our estimation suggests that the government collected over Rs. 770 crore between 1998-99 and 2000-01.

15. The fund was managed by PWD earlier. This creates a conflict of interest, because, both, sanctioning and supervising authority is with PWD and same officers. We have been informed that an independent board with road user representatives has been constituted (November 2004).

16. A performance specified road maintenance contract reduces maintenance cost by 50-70 per cent compared to a force contract or a unit price contract, (Dr. Gunter Zietlow, 1999).

The farm-to-village roads are best managed by village councils. Higher-level road agencies may provide technical advice but should leave most of the work to be done by the local communities on a self-help basis. Financial support from the government needs to be limited to meeting the costs of bought-out material. Though funds may come through the Ministry of Minor Irrigation and RES, they should be channelled through the State Road Fund and supervised by the State Road Management Board.

8.5.3. Road Management Board

The best way to involve road users at the state level is by involving them in a Road Management Board. A statutory independent road board needs to be empowered to manage the road fund. The Road Board should work in a transparent manner in (a) use of funds and (b) award of contracts. The Board must have members representing organisations like the chamber of commerce, farmer's organisations, the road transport industry and the construction industry. For the board to be effective, it must have an independent Chairman. The board should ensure that:

- Benefits from private participation include both, increased investment and improved efficiency.
- The focus should be on complete road services (construction, operation and maintenance) rather than on only construction of roads.
- Tolls may be levied wherever feasible.
- Combining estate and road development increases project complexity and reduces its bankability and, hence, must be avoided.

An important challenge which the board shall face will be with respect to village roads. Innovative methods based on mutual benefits with involvement of *panchayats* and local government are required to derive maximum benefits from public and private investment and improved efficiency.

8.5.4. Concession Structure

Appropriate concession structure should be in place to mitigate risks. Maintenance costs can be reduced without compromising on quality when maintenance works are contracted out. The Ministry of Surface Transport already has a Model Concession Agreement for projects less than Rs. 100 crore, which should be adopted for renovating/constructing new roads and the bidding should be transparent.

At national level also, BOT projects and NHAI funded projects are essentially to leverage available funds to improve financial and operational efficiency through private sector participation and to mitigate those risks which private sector cannot shoulder. The two stage bidding process (Pre-qualification stage and Commercial bids from pre-qualified bidders) is to ensure overall efficiency over the project lifecycle compared to minimum government expenditure at the point of award of contract.

8.5.5. Organisational Structure

The organisational structure to construct and maintain roads other than village roads has been centralised under PWD. The responsibility of village roads is under a separate ministry. The government needs to streamline the administrative responsibilities to ensure that all funds for the road sector pass through the State Road Fund and are supervised by the State Road Management Board.

All the four building blocks, namely, a secure and stable source of fund, strong user representation, good concession structure with transparent bidding and a clear organisational structure handling SH, MDR and rural roads, represent the core of the strategy to give commercial orientation to the road sector. They are interdependent and should be implemented together. Without all four, the reforms may only achieve part of their objective. It is not possible to solve the financing problem without the strong support of road users. And support of road users will not be forthcoming if efficient use of resources is not ensured. Managerial accountability is essential to ensure efficient use of resources.

8.5.6. Implementation of the Strategy

A pertinent question is how this strategy should be implemented? To leverage funds available with the road fund, the government needs to move away from construction to buying of road services on behalf of road users. To do this the government needs to place all the roads in three categories depending on traffic. First, bypasses and other roads which are meant to relieve congestion; such roads can be tolled, though government may have to provide some funds as capital grant or equity as provided in Andhra Pradesh and Madhya Pradesh. Second, where traffic is more than 20000 pcu/day on SH and MDRs that have only two lanes, the government needs to involve private developers in expanding two-lane to four-lane using composite contracts where construction and maintenance are consolidated into one multi-year contract such as an EPC and maintenance contract or a BOT contract. Other two-lane and single lane roads should be improved using rehabilitation and performance specified maintenance (R&M) contracts. Third, for other non-high density corridors i.e. having traffic less than 1,000 pcu/day but which provide market access, R&M contracts should be awarded. Already some states are experimenting with performance based contract system to move towards buying road services rather than constructing roads. Andhra Pradesh and Madhya Pradesh governments have already started giving new road contracts which include some of the elements of performance specified maintenance contracts (Box 8.1).

BOX 8.1

New Road Contracts in Madhya Pradesh and Andhra Pradesh

Madhya Pradesh BOT policy is based on upfront capital subsidy from the government and the right to collect toll charges over the concession period. The State's BOT policy is also a composite contract where construction/ rehabilitation and maintenance are consolidated into one multi-year contract over the concession period. The toll charges are prescribed in the concession agreement. Concessionaires bid for capital subsidy which would make the project viable. Seven road projects of 983 kms are under implementation and construction work is in progress.

Government of Andhra Pradesh has issued policy framework for private sector participation in roads sector to encourage development and maintenance of state roads on BOT basis. Generally, a concession is granted for 30 years. Government is to provide land and meet up to 30 per cent of the project cost. The developer is permitted to develop wayside facilities to generate revenue during the concession period and is also permitted to change land use along the project corridors. Though the private developer may levy tolls on the developed road, his main revenue stream is expected to be from the government grant and development of wayside facilities.

Government of Andhra Pradesh has awarded four performance based road maintenance contracts of 300 kms each in four different districts to local contractors. Each contract package has three elements. First, to carry on regular maintenance each contractor will be given an agreed sum periodically. Second, unit price for periodic rehabilitation of the road has been fixed. Third, unit price to provide breakdown services is agreed upon to maximise road availability. Each contract is for two years and based on performance the contract can be renewed for another one year.

8.6. Conclusion

The road network needs to be divided into two categories depending on traffic density. The limited number of stretches and structures that have density high enough to be feasible for tolling should be identified and developed on a toll basis. For other stretches, the government should proceed with awarding projects based on composite EPC and maintenance contracts in order to ensure cost-effectiveness, proper construction quality and maintenance. The government needs to move away from road construction to buying road services at competitive prices with assured delivery. It should spend money on capacity development leaving engineering, construction, operation and maintenance to private sector.

Recently, the state government established a road fund. The fund has two important shortcomings: first, it is non-transparent and second, it is poorly managed. The fund needs to have statutory backing and it should have an independent road board with strong user representation.

All funds assigned to the road sector including budgetary allocations should be channelled through the State Road Fund to rehabilitate and develop state road network and rural roads. Once road users are involved in the management of roads through the road board, they generally press for the introduction of sound business practices to ensure that their constituents get value for money. They expect clear management objectives, competitive terms and conditions, commercial costing systems and effective management information systems.

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APPENDIX A-8.1 **Road Statistics**

APPENDIX A-8.1.1

Non-Plan Road Maintenance Allocation/Expenditure *versus* Requirements

(in Rs. Crores)

	Tenth Finance Commission Recommendation	*Actual Allocation*	*Actual Expenditure*	*Annual % Increase in Expenditure*	*Actual Expenditure as % of Commission's Recommendation*
1995-96	238	162	184	—	77.3
1996-97	323	200	121	15.2	65.6
1997-98	408	220	226	6.7	55.4
1998-99	493	250	273	20.8	55.4
1999-00	578	320.43*	314.99*	15.4	54.5
2000-01	604.78	293.85*	286.46*	(-)9.1	47.4
2001-02	606.98	297.38*	267.59*	(-)6.6	44.1
2002-03	648.59	389.29*	373.27*	39.5	57.6
2003-04	752.58	353.73*	353.73*	(-)5.3	47.0

Source: PWD.

Note: * Includes the state road fund also.

APPENDIX A-8.1.2

Road Capacity of State Highways and Major District Roads

	State Highways	*Major District Roads*
Single Lane	3526 Kms (39%)	5803 Kms (80%)
Intermediate Lane	1820 Kms (20%)	1199 Kms (16%)
Two Lanes	3565 Kms (40%)	289 Kms (4%)
More than two Lanes	111 Kms (1%)	10 Kms (0.14%)

Source: PWD.

APPENDIX A-8.1.3

Road Density in Uttar Pradesh

	1984-85	*1991-92*	*1994-95*	*1996-97*	*1997-98*	*1999-00*	*2002-03***
Road Length	142633	158282	191671	196061	200257	269510	215255
Road Density							
Per 1,00,000 Persons	119.5	112.6	124.0	123.7	123.1	168.5	129.6
Per 100 Sq. Km Area	48.5	53.8	62.5	65.1	66.6	91.5	89.3

Source: PWD.

Note: ** Excluding Uttaranchal.

APPENDIX A-8.1.4

Road Length by Type of Surface in Uttar Pradesh as on March 30, 2003**

	Surfaced			*Un-surfaced*		
	WBM	*BT*	*CC*	*Motorable*	*Non-Motorable*	*Total*
SH	20	9002	0	—	—	9022
Other PWD Roads	5481	91990	0	6469	2746	106686
Zilla Parishad Roads	2444	1117	0	7076	84	10721
Urban Roads	18022	23037	63	9671	0	50793
Municipal Roads	17738	20876	0	9400	—	48014
Project Roads	136	8066	15	9266	49818	67301
Village *Panchayat* Roads	585	5268	0	8290	17850	31993
Total	**44426**	**159356**	**78**	**50172**	**70498**	**324530**
% of Total	13.7	49.1	0.0	15.5	21.7	

Source: PWD.

Note: WBM–Water Bound macadam, BT–Black Top, CC–Cement Concrete.

** The data for roads other than PWD is for 31-03-99 which includes figures for Uttaranchal State also.

APPENDIX A-8.1.5

Surface Length by Width in Uttar Pradesh as on March 30, 2003**

	BSSL	*SSL*	*SDL*	*SML*	*Total*
SH	3526	1820	3565	111	9022
Other PWD Roads	102142	3215	1150	179	106686
Zilla Parishad Roads	10721	—	—	—	10721
Urban Roads*	—	—	—	—	50793
Municipal Roads*	—	—	—	—	48014
Project Roads*	—	—	—	—	67301
Village *Panchayat* Roads	—	—	—	—	31993
Total	**116389**	**5035**	**4715**	**290**	**324530**
%of total	35.9	1.6	1.5	0.1	

Source: PWD.

Note: BSSL–Below Standard Single Lane, SSL–Standard Single Lane; SDL–Standard Double Lane, SML–Standard Multi Lane.

* Lane-wise details are not available.

** The data for roads other than PWD is for 31-03-99, which includes figures for Uttaranchal State also.

APPENDIX A-8.1.6

Collections in Uttar Pradesh through Petrol and Diesel Tax (Rs. Crore)

	1995-1996	*1996-1997*	*1997-1998*	*1998-1999*	*1999-2000*
Sales Tax on Diesel and Petrol	558.5	666.8	818.2	1,008.8	1359.3

Source: Finance Ministry, Uttar Pradesh Government.