

**REPORT AND RECOMMENDATION
OF THE
PRESIDENT
TO THE
BOARD OF DIRECTORS
ON A
PROPOSED LOAN
AND TECHNICAL ASSISTANCE GRANT
TO
INDIA
FOR THE
RURAL ROADS SECTOR I PROJECT**

October 2003

CURRENCY EQUIVALENTS

(as of 20 October 2003)

Currency Unit	–	Indian rupee/s (Re/Rs)
Re1.00	=	\$0.022
\$1.00	=	Rs45.34

ABBREVIATIONS

ADB	–	Asian Development Bank
CEO	–	chief executive officer
CG	–	Chhattisgarh
CGDPRD	–	Chhattisgarh Department of Panchayat and Rural Development
CGRRDA	–	Chhattisgarh Rural Roads Development Agency
CSP	–	Country Strategy and Program
DFID	–	Department for International Development (UK)
EA	–	executing agency
EIRR	–	economic internal rate of return
EMP	–	environmental management plan
GDP	–	gross domestic product
IA	–	implementing agency
ICB	–	international competitive bidding
IEE	–	initial environmental examination
IPDP	–	indigenous people's development plan
IPDF	–	indigenous people's development framework
LAF	–	land acquisition framework
LAP	–	land acquisition plan
LCB	–	local competitive bidding
LIBOR	–	London interbank offered rate
MDR	–	major district road
MORD	–	Ministry of Rural Development
MP	–	Madhya Pradesh
MPPRDD	–	Madhya Pradesh Panchayat and Rural Development Department
MPRRDA	–	Madhya Pradesh Rural Roads Development Authority
MTR	–	midterm review
NGO	–	nongovernment organization
NRRDA	–	National Rural Roads Development Agency
PIC	–	project implementation consultant
PIU	–	project implementation unit
PMC	–	project management consultant
PMGSY	–	Pradhan Mantri Gram Sadak Yojana (Prime Minister's Rural Roads Program)
SC	–	scheduled caste
SOE	–	statement of expenditure
SRTU	–	state road transport undertaking
ST	–	scheduled tribe
TA	–	technical assistance

NOTES

- (i) The fiscal year (FY) of the Government ends on 31 March.
- (ii) In this report, "\$" refers to US dollars.

This report was prepared by a team consisting of T. Duncan (team leader), A. Akanda, V. S. Rekha, S. Widowati, S. Handayani, D. Utami, P. Dutt, H. Iwasaki, and A. Motwani.

CONTENTS

	Page
LOAN AND PROJECT SUMMARY	iii
MAPS	vii
I. THE PROPOSAL	1
II. RATIONALE: SECTOR PERFORMANCE, PROBLEMS, AND OPPORTUNITIES	1
A. Performance Indicators and Analysis	1
B. Analysis of Key Problems and Opportunities	5
III. THE PROPOSED PROJECT	7
A. Objective	7
B. Components and Outputs	7
C. Special Features	10
D. Cost Estimates	11
E. Financing Plan	11
F. Implementation Arrangements	12
IV. TECHNICAL ASSISTANCE	16
V. PROJECT BENEFITS, IMPACTS, AND RISKS	17
A. Policy and Institutional Improvements	17
B. Economic Analysis	17
C. Social Impact	18
D. Environmental Impact	21
E. Project Risks	21
VI. ASSURANCES	22
A. Specific Assurances	22
B. Condition for Loan Disbursement	25
VI. RECOMMENDATION	25
APPENDIXES	
1. Subsector Analysis	26
2. Habitations Eligible for Road Connectivity Works under PMGSY	30
3. External Assistance to the Road Sector	31
4. Policy Matrix	33
5. Project Framework	36
6. Technical Description and Estimated Cost of Sample Subprojects	39
7. Selection Criteria and Approval Process for Subprojects	41
8. Cost Estimate and Financing Plan	43
9. Implementation Arrangements	44
10. Implementation Schedule	45
11. Summary Economic and Distribution Analyses	46
12. Summary Analysis of Socioeconomic and Poverty Impact	51

SUPPLEMENTARY APPENDIXES (available on request)

- A. Rural Roads Sector Investment Plan
- B. Rural Road Safety Subcomponent
- C. Outline Terms of Reference for Monitoring of Socio-Economic Impacts
- D. Indicative Contract Packages for Sample Subprojects
- E. Outline Terms of Reference for Project Implementation Consulting Services
- F. Outline Terms of Reference for Project Management Consulting Services
- G. Outline Terms of Reference for Monitoring of Implementation of Land Acquisition Plans
- H. Outline Terms of Reference or Project Preparatory Technical Assistance for Rural Roads Sector II Project
- I. Economic Analysis and Distribution Analysis
- J. Analysis of Socio-Economic and Poverty Impact
- K. Summary Land Acquisition Plan
- L. Summary Land Acquisition Framework
- M. Framework for Indigenous Peoples Development Plan
- N. Summary Initial Environmental Examination

LOAN AND PROJECT SUMMARY

Borrower	India
Classification	Poverty: Poverty intervention; Thematic: Economic growth
Environment Assessment	<p>Category B</p> <p>An initial environmental examination (IEE) was undertaken for sample road connectivity subprojects, and the summary IEE is in Supplementary Appendix N.</p>
Project Description	The Project will provide all-weather roads to previously unserved rural habitations in Chhattisgarh and Madhya Pradesh, and establish systems and capacity for ensuring the sustainability and safety of the rural roads networks in these states.
Rationale	Lack of road connectivity is among the main underlying causes of poverty and deprivation in India, and is an impediment to realizing the economic growth potential in rural areas. Past neglect of the road network has meant that much of the rural population live in areas that are cut off from the economic and social mainstream. About three quarters of people in Chhattisgarh and Madhya Pradesh live in rural areas, and the majority of rural habitations do not have an all-weather road connection. The poverty head count rates in these states are among the highest in India.
Objective	<p>The Project aims to reduce poverty and deprivation, and support economic growth by providing enhanced access to markets, employment opportunities, and social services, including health and education. The objective will be achieved by (i) providing rural habitations in Chhattisgarh and Madhya Pradesh with all-weather road connections; and (ii) improving the efficiency and sustainability of rural roads by providing support for capacity building, research and development; developing financing and implementation arrangements for maintaining rural roads throughout their economic life; and improving safety on rural roads.</p> <p>Using the sector lending modality of the Asian Development Bank (ADB), the Project will finance the construction of about 11,000 kilometers (km) of rural roads — about 5,500 km in Chhattisgarh and 5,500 km in Madhya Pradesh. A sample of about 1,000 km of subprojects has been prepared in detail. The Government will prepare additional subprojects during project implementation in accordance with agreed upon selection and approval procedures.</p>

Support for road asset management will establish decentralized systems and capacity for maintaining the rural roads network in Chhattisgarh and Madhya Pradesh, secure the necessary financing for maintenance, and assist the state governments to enter into contractual commitments to road maintenance initially covering at least the first 10 years of operations. Road safety audit will be introduced and community-based approaches to road safety will be developed to accompany project investments in road connectivity.

Cost Estimates

The total cost of the Project is estimated at \$571 million equivalent comprising foreign exchange of \$269.1 million, and local currency of \$301.9 million equivalent.

Financing Plan

(\$ million)				
Source	Foreign Exchange	Local Currency	Total Cost	%
ADB	229.4	170.6	400.0	70
Government	39.7	131.3	171.0	30
Total	269.1	301.9	571.0	100

ADB = Asian Development Bank.

Loan Amount and Terms

A loan of \$400 million from ADB's ordinary capital resources will be provided under ADB's LIBOR-based lending facility. The loan will have a 25-year term including a grace period of 5 years, an interest rate determined in accordance with ADB's LIBOR-based lending facility, a front-end fee of 0.5%, a commitment charge of 0.75% per annum, and such other terms and conditions as set forth in the draft Loan and Project Agreements.

Allocation and Relending Terms

The Government will provide the Loan proceeds in local currency to MORD and the state governments of CG and MP on a grant basis. The Government will bear the foreign exchange risk on the Loan.

Period of Utilization

Until 30 June 2008

Estimated Project Completion Date

31 December 2007

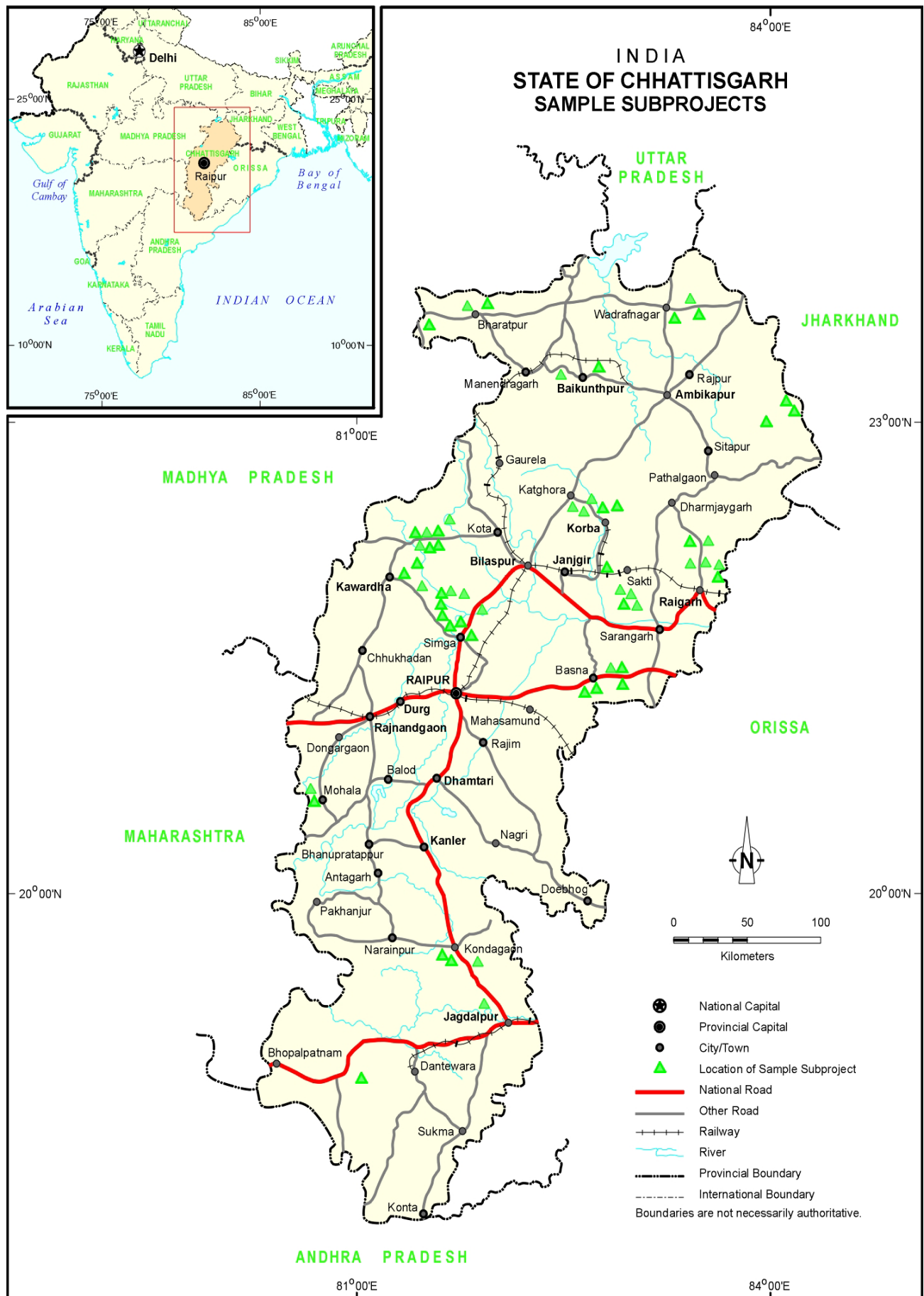
Executing Agencies

MORD, state government of Chhattisgarh, and state government of Madhya Pradesh

Implementation Arrangements

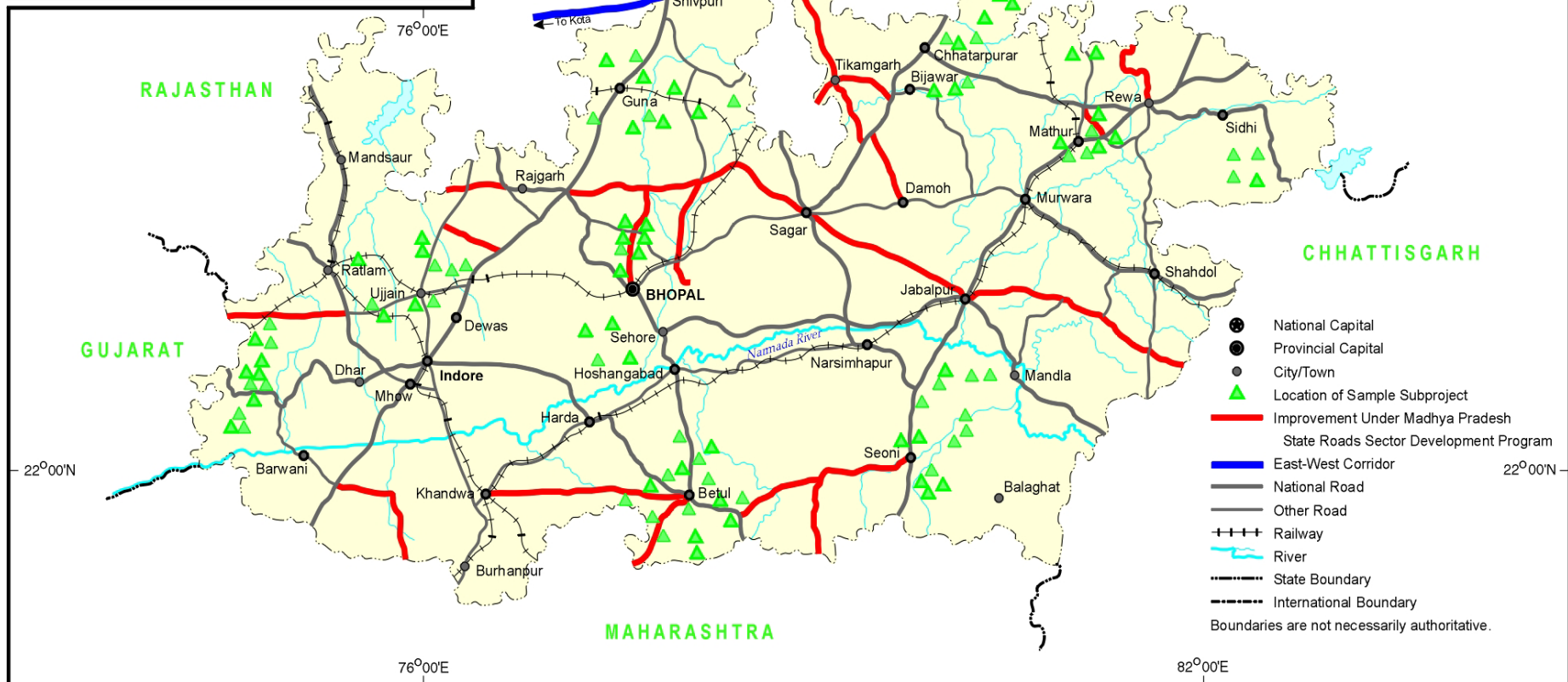
Implementing agencies at the state level will be the Madhya Pradesh Rural Roads Development Authority and the Chhattisgarh Rural Roads Development Agency, each under the leadership of a chief executive officer, supported by suitably qualified staff and consulting services.

Procurement	All civil works contract packages will be procured in accordance with ADB's <i>Guidelines for Procurement</i> following international and local competitive bidding procedures acceptable to ADB.
Consulting Services	International and domestic consultants will support project implementation. The consultants will be engaged using ADB's quality- and cost-based selection procedures and according to ADB's <i>Guidelines on the Use of Consultants</i> and other arrangements satisfactory to ADB for engaging domestic consultants.
Project Benefits and Beneficiaries	By improving rural roads connectivity and ensuring that improvements will be sustainable, the Project will address one of the main underlying causes of poverty and deprivation in Chhattisgarh and Madhya Pradesh. The Project is expected to have significant impacts on poverty reduction and socioeconomic development by facilitating (i) growth in agricultural incomes; (ii) growth in other sources of income and employment in the immediate influence areas of the road connectivity improvements; (iii) access to employment through labor mobility; (iv) reduced prices to consumers and users of services; (v) improved health and longevity through access to better health services; (vi) improved educational attainment due to access to schools, teachers, and educational supervisors; (vii) improvements in production through access to extension services; and (viii) greater opportunity for rural people to participate in the wider society. The quantified economic benefits consist of (i) vehicle operating cost savings, (ii) passenger time savings, and (iii) reduced spoilage of agricultural produce. The economic internal rate of return of the sample subprojects is 26.6%. The beneficiaries of the Project will include the bulk of the rural population of the two states: (i) direct users of road transport, including owners/operators of buses and trucks, passengers of the various vehicle categories, labor, and the Government; (ii) those benefiting indirectly because they live in the area of influence of the roads; and (iii) those benefiting indirectly through the wider impacts of higher economic growth in their districts and in the states as a whole.
Technical Assistance	In conjunction with the Project, technical assistance (TA) is proposed to assist in preparing the Rural Roads Sector II Project. The total cost of the TA is estimated at \$1.25 million equivalent. The Government of the United Kingdom will finance \$1 million equivalent, on a grant basis, covering all the foreign exchange costs (\$327,800) and part of the local currency costs. A consulting firm will be engaged using ADB's quality- and cost-based selection procedures, and individual consultants will be engaged in accordance with ADB's <i>Guidelines on the Use of Consultants</i> and other arrangements satisfactory to ADB for engaging domestic consultants. The Executing Agency for the TA will be MORD.





INDIA STATE OF MADHYA PRADESH SAMPLE SUBPROJECTS



I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed loan to India for the Rural Roads Sector I Project. The report also describes proposed technical assistance (TA) for preparing the Rural Roads Sector II Project, and if the Board approves the proposed loan, I, acting under the authority delegated to me by the Board, will approve the TA.

II. RATIONALE: SECTOR PERFORMANCE, PROBLEMS, AND OPPORTUNITIES

A. Performance Indicators and Analysis

1. The Road Sector

2. India's highway network consists of about 58,112 kilometers (km) of national highways, about 64,200 km of state highways and major district roads (MDRs), and about 2.7 million km of rural roads. National highways provide the high-density links between states. They comprise only 1.7% of the network but carry about 40% of traffic. State highways link national highways with district headquarters, important towns, and minor ports; and MDRs run within districts, connecting areas of production with markets, and rural areas to district headquarters and to state highways and national highways. MDRs comprise about 19% of the network and carry about 40% of traffic. Rural roads link rural communities with the highway network, providing access to higher agricultural incomes, employment opportunities, and social services. Rural roads are considered a key element of rural development and poverty reduction. They represent about 80% of the network and carry about 20% of traffic. Analysis of the roads subsector is in Appendix 1.

3. The sustained underinvestment in road infrastructure in India has affected all levels of the road network.¹ At the same time, traffic on all modes has been growing at around 10% per year in the past decade. In the road sector, freight traffic increased at about 12% per year and passenger traffic at about 8%. The rapid growth in traffic has led to congestion, road deterioration and high costs of transport. As a result there is considerable suppressed demand. The potential contribution of efficient road transport to the economy will only be realized if the level of services and the capacity of the road infrastructure increase to meet the demand.

4. A task force on infrastructure, set up by the Prime Minister in 1998, identified the need to triple or quadruple the ongoing rate of investment in transport infrastructure, which had again fallen well below 1% of the gross domestic product (GDP). As a first step, the task force backed a 13,000 km National Highway Development Project for establishing an integrated national highway network. This involved upgrading to 4 or 6 lanes in heavily trafficked sections the links between the major metropolitan towns and two central transverse routes, one north-south and the other east-west. Executing the project was entrusted to the National Highways Authority of India for completion by 2010. Despite severe fiscal constraints, budgets for other transport infrastructure have also been raised substantially in the last few years, and many states have initiated major new efforts to upgrade trunk road infrastructure and increase the pace of rural road expansion.

5. Throughout the road sector, service quality and capacity have been further compromised due to lack of adequate maintenance of existing road assets. Maintenance has suffered from inadequate financing, lack of planning, and weaknesses in execution. As a result, deterioration of road infrastructure has led eventually to the need for reconstruction at a higher cost which places further strain on the available funds.

¹ Since the Sixth Five-Year Plan, 1980-1985, annual investment in roads varied between 0.6% and 1.5% of gross domestic product, with an average of 1.1%.

2. National Rural Roads Program

6. About 70% of India's population live in rural areas, and about 40% of rural habitations² are not connected to all-weather roads (330,000 out of 825,000 habitations). Many villages still rely on earth tracks that are unsuitable for motorized traffic and become impassable during rainy season. Even where all-weather connections have been provided in the past, the standard of rural roads is low, maintenance is poor, and many roads are in need of rehabilitation.

7. While the determinants of poverty vary between states, there is a strong link between lack of road connectivity and poverty in India. For example, the three states with the highest proportion of poor people in their populations (Bihar, Madhya Pradesh, and Orissa) are also among the most disadvantaged in terms of road connectivity.³ There is also a strong link between improvement in road connectivity and poverty reduction. Recent studies have indicated that public expenditure on rural roads in India has had a greater poverty reduction impact than expenditure on agricultural research, irrigation, power, education, health, soil and water conservation, and existing antipoverty programs. For every Rs1 million (about \$21,000 equivalent) spent on rural roads, 124 people were lifted out of poverty.⁴

8. To address the problem of lack of rural road connectivity, in 2000 the Government established a national rural roads program known as Pradhan Mantri Gram Sadak Yojana (Prime Minister's Rural Roads Program [PMGSY]). Its objective is to provide good all-weather road connections⁵ to all habitations with a population of 1,000 or more by the year 2003 and to all habitations with a population of 500 or more by 2007. In hilly or desert areas, or scheduled tribe (ST) areas as defined in Schedule V of the Constitution of India, the objective is to connect all habitations with a population of at least 250 by 2007. On this basis, PMGSY has identified more than 160,000 unconnected habitations requiring new road connectivity investments. Details of the eligible habitations are in Appendix 2.

9. PMGSY is funded by the central Government, with the Ministry of Rural Development (MORD) acting as overall coordinating ministry. State governments have responsibility for planning and implementing at the state level as well as for funding, planning, and executing maintenance. The estimated total cost of PMGSY from 2002 to 2007 is about Rs550 billion (about \$11 billion equivalent). About 32% is to be funded from a 50% share of the cess on high-speed diesel.⁶ The balance of 68% of funding remains to be identified. The Government has requested the Asian Development Bank (ADB) and other external agencies to finance part of the program.

² A habitation is a cluster of houses in a compact and contiguous area. A single village may have more than one habitation, each habitation being separated from any other.

³ According to Planning Commission estimates, in 1999-2000 the proportion of poor people in total state population was 42.6% in Bihar, 37.4% in Madhya Pradesh (MP), and 47.2% in Orissa, compared with a national average of 26%. Based on statistics in National Human Development Report 2001, the level of road connectivity for habitations with less than 1,000 persons in 1996-1997 was 40.7% in Bihar, 22.3% in MP, and 44% in Orissa, compared with a national average of 49.2%.

⁴ Fan, S., P. Hazell and S. Thorat. 2000. Government Spending, Growth and Poverty in Rural India, *American Journal of Agricultural Economics* 82 (4).

⁵ PMGSY defines an all-weather road as one that is negotiable in all weathers, and has adequate cross-drainage structures to effectively drain the roadbed.

⁶ The Central Road Fund Act, 2000 introduced an additional excise duty (cess) of Rs1.00 per liter on petrol and Rs1.00 on high-speed diesel, to be allocated as follows: (i) 50% of cess on high-speed diesel to the development of rural roads; and (ii) 50% of cess on high-speed diesel and 100% of cess on petrol to be assigned to maintenance of national highways, road bridges under/over railway lines and safety work at unmanned railway crossings, and development and maintenance of state roads.

10. At the national level, PMGSY is administered by MORD through the National Rural Roads Development Agency (NRRDA). At the state level, the government nominates a nodal department to execute the program. This is typically the rural development department or the public works department. This department is required to appoint project implementation units (PIUs) at the district level to be responsible for program implementation and to identify or establish a state-level autonomous agency with a distinct legal status to receive funds from MORD. All PMGSY road investments are executed by private contractors engaged through competitive tendering.

11. In consultation with the states, MORD has established PMGSY guidelines for the states in implementing PMGSY.⁷ They provide the following guiding principles and definitions for PMGSY: (i) improvements are limited to roads categorized as other district roads and village roads forming part of the core rural roads network of through routes and link routes;⁸ (ii) new all-weather connectivity has precedence over improvement of existing fair-weather connectivity, and upgrading fair-weather through routes has precedence over upgrading fair-weather link routes; and (iii) among eligible roads of similar type, precedence is given to those serving a larger population. The guidelines also establish (i) the technical specifications and geometric design standards for PMGSY roads to ensure that all roads built will be of sound design with adequate drainage, in accordance with Indian Road Congress standards; and (ii) a three-tier quality control system consisting of the PIU or executive engineer, independent quality monitoring at the state level, and independent quality monitoring at the national level.

12. The PMGSY guidelines also establish the approach to planning PMGSY at state, district, and block levels, including use of the Manual for Preparation of District Roads Plan. The manual explains the procedures for drawing up each district's plan for connecting all eligible habitations, with choice of routing for each eligible habitation to be determined by weighting socioeconomic and infrastructure variables so as to select the route that will maximize the socioeconomic benefits of the new connection. The preparation of plans requires extensive community consultation. Plans are first prepared at block level for approval by the intermediate panchayat.⁹ Block plans are consolidated into district plans for approval by the zilla panchayat.

13. In each of the fiscal years 2000/01 and 2001/02, MORD earmarked Rs25 billion (\$0.5 billion equivalent) for PMGSY. As of June 2002, Rs50 billion (\$1 billion equivalent) had been disbursed to participating states and road works were at various stages of implementation. By February 2003, 88% of the 13,070 road works in the 2000/01 allocation and 10% of the 10,932 road works in the 2001/02 allocation had been completed.

14. The PMGSY guidelines require states seeking PMGSY financing to identify suitable zilla or intermediate panchayat institutions for undertaking maintenance of the rural roads developed under PMGSY, and to hand over PMGSY roads to such institutions.¹⁰ The state government is also required to provide an undertaking to remit to these institutions the costs of the requisite maintenance through either budget allocations or alternative sources of funding. The guidelines

⁷ PMGSY Guidelines No. P-12025/8/2001-RC(Pt), Government of India, MORD, revised 15 January 2003.

⁸ The core network is that minimal network of roads needed to provide all eligible habitations access to basic social and economic services through at least a single all-weather road. Through routes are those that collect traffic from several link roads or a long chain of habitations and lead it to marketing centers either directly or through higher category roads. Link routes are roads connecting a single habitation or group of habitations to through routes or district roads leading to market centers.

⁹ A panchayat is a body of directly elected people responsible for development of activities in an area. There are three levels of panchayat, comprising gram panchayat at village level, intermediate panchayat at block level, and zilla panchayat at district level.

¹⁰ Following the 73rd Constitutional Amendment in 1992, state governments are to assign responsibility for maintenance of rural roads to panchayats and to remit necessary financial resources for this purpose.

indicate that establishing and implementing satisfactory mechanisms to provide funding and other assistance for maintaining PMGSY assets will be a key requirement for states to be considered for future assistance under the PMGSY.

3. Rural Roads Improvement in Chhattisgarh and Madhya Pradesh

15. The states of Chhattisgarh (CG) and Madhya Pradesh (MP), which are the focus of the proposed Project, are among the most needy in rural road connectivity. Recent estimates show that less than half of all habitations with more than 500 persons have an all-weather road connection. The total number of unconnected habitations identified for new connectivity investments under PMGSY is 15,608 in CG and 9,502 in MP (Appendix 2), together equivalent to 15% of the national total. It is estimated that to provide these habitations with new connectivity, more than 80,000 km of all-weather rural roads will have to be built in each state.

16. The state governments of CG and MP attach high priority to PMGSY. This has been reflected in their favorable performance during the first 2 years of PMGSY compared with other states. In the first annual PMGSY program in 2000/01, 113 road works valued at Rs920 million (\$20 million equivalent) were undertaken in CG and 413 works valued at Rs2.2 billion (\$47 million equivalent) in MP. Based on good implementation performance under the first annual program,¹¹ PMGSY activities in the two states were expanded in the second annual program in 2001/02 to cover 270 works for Rs1.85 billion (\$40 million equivalent) in CG and 890 works for Rs5.1 billion (\$110 million equivalent) in MP. Both states are making good progress in implementing the 2001/02 annual program, and are planning a similar volume of additional works in 2002/03. Both states have received good and improving ratings from national independent quality monitors up to December 2002. Of 297 works inspected in CG, 76% were rated good or very good, and only 4% were rated poor. Of 664 works inspected in MP, 88% were rated good or very good, and only 1% was rated poor. MP's overall quality rating was among the best for all states. Over the course of successive inspections, the ratings of both states have shown an improving trend.

17. Small-size private transport operators account for nearly all passenger and freight services on rural roads. Due to competition among such operators, it is expected that a substantial proportion of the vehicle operating cost savings due to rural roads improvements will be passed on from operators to users.

18. Road crashes in India conservatively account for 70,000 fatalities and approximately 400,000 serious injuries each year. The result is a financial burden estimated to be in excess of 2% of GDP, equal to \$9 billion yearly. The rate of fatalities per 10,000 registered vehicles in India has reached 16.3, one of the highest levels in the world. In CG and MP, where the level of vehicle ownership is relatively low compared with the population, the rates are 13.6 and 12.4 respectively. The PMGSY rural road connectivity program is expected to contribute to increased vehicle ownership and travel by villagers and to increased exposure and risk of road user injury. Road safety measures to mitigate these risks will have to be developed alongside PMGSY since there are no well-established road safety programs in CG and MP.

¹¹ By the end of 2002, the 2000/01 annual program showed completion of 53% of works and 81% of contract expenditure in Chhattisgarh, and 39% of works and 65% of expenditure in Madhya Pradesh.

B. Analysis of Key Problems and Opportunities

1. Challenges

19. While considerable progress has been made in the first 2 years of PMGSY, several important challenges need to be addressed to realize the full potential of improved rural roads connectivity in as efficient and sustainable a manner as possible. The main challenges are to (i) ensure the sustainability of investments by establishing a sound approach to maintenance of the PMGSY rural roads network, including securing the required levels of maintenance financing, building capacity, and systems at state and zilla panchayat level; and establishing sound approaches to executing maintenance; (ii) refine the subproject selection criteria to ensure network efficiency by developing the necessary through routes for link roads to connect with the state and national road network, and to take into account economic viability, remoteness, and extent of poverty; (iii) establish efficient implementation arrangements that avoid creating an overhang of unwanted public sector staff when PMGSY has been completed; and (iv) identify and introduce road safety measures to accompany PMGSY road investments so as to mitigate the risks of increased vehicle speeds leading to increased road accidents.

2. External Assistance

20. The road sector in India has received substantial external assistance in the past. Although ADB has not previously supported rural roads in India, it has provided loans amounting to about \$1.8 billion for highways from 1988 to 2002, including seven projects for national highways and one for state roads.¹² The World Bank has provided 16 loans amounting to about \$3.5 billion for upgrading national highways, improving state highways, constructing and rehabilitating rural roads, and one urban transport project. The Japan Bank for International Cooperation (JBIC) has provided five loans amounting to \$0.3 billion to upgrade national highways and construct a bridge. The Government of the United Kingdom has financed technical assistance supporting several ADB road projects, including engineering support and institutional strengthening as part of ADB's project for improving state roads in MP,¹³ and preparatory technical assistance for the proposed Project (para. 25). A summary of external assistance to the road sector is in Appendix 3.

21. ADB's support for the road sector has been developed in close collaboration with the Department for International Development (UK) (DFID), JBIC, and World Bank. ADB and the World Bank have adopted a Coordinated Assistance Strategy for the Road Sector, which was prepared jointly in March 2001 and updated in January 2002. They hold regular tripartite meetings with the Government to discuss progress and issues in the sector. ADB has also met regularly with the World Bank team preparing a proposed project to support PMGSY in the states of Himachal Pradesh, Jharkhand, Rajasthan, and Uttar Pradesh, and the two banks have shared their respective project preparatory studies. DFID has been considering providing future support to PMGSY, and ADB has met regularly with DFID for coordination and information sharing. JBIC and ADB are exploring possible cofinancing of road projects in India.

3. Lessons

22. Implementing ADB's first three national highways projects was delayed by operational and institutional shortcomings. The problems were addressed in the subsequent national highways projects, by (i) allowing advance procurement of civil works and recruitment of supervision

¹² ADB support for the road sector in India has included nine loans totaling \$1,823 million and 37 TAs totaling \$14.815 million.

¹³ ADB. 2002. *Report and Recommendation of the President to the Board of Directors on a proposed Loan to India for the Madhya Pradesh State Roads Sector Development Project*. Manila.

consultants; (ii) establishing and operationalizing PIUs before loan effectiveness; (iii) removing utilities and other encumbrances before construction starts; (iv) increasing the size of contract packages to attract experienced international contractors; and (v) raising the level of authority of the independent engineer under the contract to ensure efficient and quick decision making during execution. Taking into account improvements in performance, and recognizing the important contribution of highways to poverty reduction and growth, and the contributions that ADB has made to institutional and policy reform in the road sector, the Country Strategy and Program (CSP) for 2003-2006 includes 11 more loans for the road sector. For the first time, the CSP includes two projects for rural roads. The CSP envisages a programmatic approach to ADB support for highways, whereby accomplishment of institutional and policy reforms agreed upon in one project will trigger processing and approval of the next related project.

23. A recent ADB study examined the impact of rural roads on poverty reduction, from six case studies of completed rural roads in Indonesia, Philippines, and Sri Lanka.¹⁴ The study confirmed that, in all cases, the poor benefited substantially from improved access to services and information, and from improved access to livelihood opportunities. The extent to which the poor benefited from cheaper transport services depended on the level of competition among transport operators. The sustainability of impacts depended on adequate maintenance of the roads. Overall, the study confirmed that roads are a critical enabling factor for improving living conditions in rural areas, but found that the extent to which the poor benefit also depends on factors outside of the road subsector, such as the distribution of assets and the skills base of the poor. The study recommended that future rural roads projects should incorporate baseline surveys and benefit monitoring to improve understanding of the poverty reduction and socioeconomic impacts.

4. Asian Development Bank Sector Strategy

24. The theme of ADB's CSP is mainstreaming poverty reduction. In line with the Government's priorities for the Tenth Five-Year Plan 2002-2007, this is to be addressed primarily by supporting economic growth, including both high growth and equitable, pro-poor growth. Growth has been identified as the major channel through which poverty can be reduced in India. The CSP points to emerging consensus over the importance of infrastructure in poverty reduction, through both its indirect impact on growth leading to increased incomes and employment, and its direct contributions to incomes and employment and reducing human poverty by improving access to social services. The CSP also identifies the need for infrastructure projects to incorporate institutional reforms to improve sustainability, particularly by establishing sound approaches to maintenance. The proposed Project combines each of the main thrusts of the CSP. By connecting rural habitations to the state and national road networks, the final link between rural producers and their distant urban markets will be completed, leading to both high growth and growth that poor rural people will participate in and benefit from disproportionately. Rural roads improvements will also provide poor rural people with better access to social services. The Project incorporates improved approaches to maintenance of rural roads to ensure the investments are sustainable.

5. Policy Dialogue

25. In 2002 the Government requested ADB to provide a series of loans to assist in implementing PMGSY, beginning with the proposed Project in CG and MP. At that time ADB identified the need to provide reliable implementation arrangements for the proposed large investments in rural roads, and to incorporate provision for maintenance to ensure the

¹⁴ ADB. 2002. *Impact of Rural Roads on Poverty Reduction: A Case Study-Based Analysis*. Manila.

investments will be sustainable. To facilitate project preparation, ADB provided small-scale technical assistance (TA) financed by the Government of the United Kingdom for preparing a sample of about 1,000 km of roads. The TA covered (i) economic studies, (ii) engineering, (iii) institutional and policies studies, (iv) environmental analysis, and (v) social analysis.¹⁵

26. During project formulation, agreement was reached with MORD, the state government of Chhattisgarh and the state government of Madhya Pradesh to (i) improve the criteria for subproject selection to incorporate network planning considerations, economic return thresholds, and safeguard provisions; (ii) address the issue of prioritization between through routes and link routes in the PMGSY guidelines; (iii) establish a dedicated rural roads development agency to implement the proposed Project in CG; (iv) commit required levels of financing for maintenance, (v) establish reliable approaches to planning and executing maintenance, and enter into long-term maintenance contracts for all PMGSY roads; and (vi) incorporate road safety measures to accompany PMGSY road connectivity improvements. The policy matrix is in Appendix 4.

III. THE PROPOSED PROJECT

A. Objective

27. The Project aims to reduce poverty and deprivation, and support economic growth by providing enhanced access to markets, employment opportunities, and social services, including health and education. The objective will be attained by (i) providing rural habitations in CG and MP with all-weather road connections; (ii) improving the efficiency and sustainability of PMGSY by providing support for capacity building, research and development; developing financing and implementation arrangements for maintaining PMGSY roads throughout their economic life; and improving safety on rural roads in CG and MP. The Project framework is in Appendix 5.

B. Components and Outputs

28. The Project will finance the construction of about 11,000 km of rural roads: about 5,500 km in CG and 5,500 km in MP. Consulting services will be provided to support preparation and implementation of road construction subprojects, to establish sustainable asset management systems for the PMGSY rural roads networks in CG and MP, and build capacity and provide training. Consulting services will support the development of road safety audit under PMGSY and community-based approaches to road safety to accompany project road connectivity investments.

1. Road Connectivity Component

29. The Project will finance improvements of rural roads that are part of the Government's national rural roads program under PMGSY to provide all habitations of at least 500 persons with all-weather roads by 2007. It will support improvements in CG and MP, in accordance with the PMGSY core networks of these states. Details of the sector investment plan are in Supplementary Appendix A.

30. The road connectivity component will follow ADB's sector lending modality. This is considered justified since (i) under PMGSY the Union and state governments have prepared well-

¹⁵ ADB. 2002. *Technical Assistance for Economic Studies for the Rural Roads Sector Development*. Manila.
 —. 2002. *Technical Assistance for Engineering Studies for the Rural Roads Sector Development*. Manila.
 —. 2002. *Technical Assistance for Environmental Analysis for the Rural Roads Sector Development*. Manila.
 —. 2002. *Technical Assistance for Institutional and Policy Development Studies for the Rural Roads Sector Development*. Manila.
 —. 2002. *Technical Assistance for Social Analysis for the Rural Roads Sector Development*. Manila.

defined investment plans for upgrading rural roads throughout India, including in CG and MP; (ii) MORD, and the governments of CG and MP have sufficient institutional capacity to implement the investment plan; and (iii) the asset management and capacity building component of the Project will establish systems for planning, executing, and financing maintenance of the PMGSY rural roads networks in CG and MP on a sustainable basis.

31. In accordance with ADB's sector lending procedures the Government prepared a sample of road connectivity subprojects, which have been appraised by ADB and will serve as a model in preparing additional subprojects during project implementation. A total of 174 sample subprojects covering 1,046 km of all-weather roads were prepared in 14 districts of CG and 11 districts of MP. Studies examined the technical, economic, and financial feasibility of each sample subproject, and identified environmental and social impacts and mitigation measures required. A technical description of sample subprojects is in Appendix 6.

32. Additional subprojects will be prepared for approval during project implementation, in accordance with the selection criteria and approval procedures given in Appendix 7. Subprojects will be required to meet the eligibility criteria for inclusion under PMGSY, and will be grouped in area clusters comprising priority link roads together with the through roads required to connect to the state road network. The selection criteria establish requirements for subprojects in terms of (i) eligibility for road connectivity investment in accordance with PMGSY guidelines; (ii) preparedness and adherence to technical specifications; (iii) road safety audit of subproject designs; (iv) economic returns; and (v) compliance with ADB safeguard policies and guidelines on social impacts, land acquisition and resettlement, gender, indigenous peoples, and environmental aspects.

33. The road connectivity investments will be implemented in four annual batches. Expenditures in each batch will be shared equally by CG and MP. The first batch will consist of the roughly 1,000 km of sample subprojects that were prepared with TA assistance (para. 25). About 10,000 km of additional subprojects will be implemented in the second, third, and fourth batches, with about 3,300 km in each batch. The approval procedures require the implementing agencies (para. 50) to prepare the annual batches of additional subprojects well in time to provide ADB with completed checklists summarizing the eligibility, preparation status, and compliance with safeguards of each subproject. The loan-financed consulting services will assist in preparing the additional subprojects and in implementing all subprojects.

2. Asset Management and Capacity Building Component

34. The Project will assist the governments of CG and MP to establish the procedures, financing arrangements, and institutional capacity to ensure the sustainability over their useful economic lives of road assets created under PMGSY. Consulting services will assist state governments and zilla panchayats (footnote 9) in establishing road maintenance budgeting, planning and management systems; will develop standard performance-based contracts for road maintenance; and will support capacity building and provide on-the-job training. The assistance will enable the state governments and zilla panchayats to serve as strategic managers of their PMGSY rural roads networks, with detailed professional and technical studies and supervision, and all civil works outsourced to the private sector. The Project will also finance the procurement of vehicles and equipment needed for managing road maintenance at the district level.

35. On the basis of the policy dialogue during project preparation, the state governments have entered into commitments to provide the levels of annual financing required for sustainable maintenance, as reflected in the Loan covenants: (i) the government of CG will annually provide in its state budget financing to maintain the PMGSY rural roads network, from about Rs96 million

(\$2.1 million equivalent) in 2006/07 to about Rs956 million (\$20.6 million equivalent) in 2010/11; (ii) the government of MP will make annual budget allocations and also earmark its income from mandi cess, for financing the maintenance of all PMGSY roads, from about Rs80 million (\$1.7 million equivalent) in 2006/07 to about Rs1.02 billion (\$22.0 million equivalent) in 2012/13; (iii) both states will exercise the option under the PMGSY construction contracts to retain the contractor to maintain the roads built for the initial period of 5 years operations after completion of construction of each road (para. 96); and (iv) before the end of the initial 5-year maintenance periods, both states will assign responsibility for maintaining PMGSY roads to zilla panchayats and assign the state financing for PMGSY roads [(items (ii) and (iii)] to them; (v) drawing on the standard performance-based contracts developed under consulting services (para. 34), zilla panchayats in both states will enter into further maintenance contracts to start upon completion of the initial 5-year maintenance periods and to cover maintenance of all PMGSY roads for further periods of not less than 5 years (para. 99); and (vi) the increases in maintenance financing will be provided through additional budget appropriations or increases in mandi cess¹⁶ by the state governments, and will not be financed by reducing budgets for maintaining other roads. Consulting services will also assist the states to develop proposals for zilla panchayats to collect a community contribution for the cost of road maintenance. Within the limits of affordability to rural communities, this will introduce a user-pays approach to road maintenance, and in so doing strengthen communities' sense of ownership over the road assets created.

36. Additional support will be provided for PMGSY training and capacity building at national level through NRRDA. This will focus on improving management skills for PIU and zilla panchayat staff by developing systems for managing road maintenance, providing training by consultants and domestic training institutions, and providing for study visits in India and outside India.

37. In accordance with the programmatic approach for highway sector lending adopted in ADB's India CSP, the Project includes an assurance to address the critical overall issue of providing for road maintenance in the overall PMGSY program. This is intended to serve as a trigger for processing of the proposed Rural Roads Sector II Project, tentatively scheduled for 2005. By that time, to strengthen the overall sustainability of PMGSY, MORD will have progressed in its dialogue with the states participating in PMGSY with regard to making adequate plans and financing arrangements and commitments to properly maintain their PMGSY road network over its useful economic life (para. 102).

38. To mitigate the risk of road crashes and injury, the Project will support NRRDA in its ongoing work to develop road safety audit for PMGSY, and will help to introduce community road safety programs in CG and MP. As part of consulting services for the road connectivity component (para. 55), a road safety audit will be conducted for all road connectivity subprojects, and measures to mitigate accident hazards will be incorporated in the subproject designs. Government-financed consulting services will develop road safety audit procedures to eventually be specified by NRRDA for inclusion in the appropriate stages of the PMGSY road construction process, and develop a community-level approach to rural road safety in CG and MP, targeting road users living in the project road areas of influence, initially those closest to state and national highways. The community rural road safety program will begin with a start-up phase where campaign products will be developed before moving to an expanded implementation phase where village-level panchayats will conduct campaigns to reach program sustainability. Capacity building, research, and evaluation will be undertaken as the program develops to provide a model for other jurisdictions.

¹⁶ Mandi Cess, a tax on sales of produce through agricultural marketing boards, will be used in MP. Since agricultural producers will be among the main users of PMGSY roads and will benefit roughly in proportion to the volumes of produce they transport to market, this is considered an appropriate funding source.

39. Both road safety audit and community road safety are consistent with the national road safety policy and strategic road safety implementation directions for the states. The latter represents a new road safety initiative in India where a scientific and programmatic approach has not previously been evident. The rural road safety subcomponent is expected to contribute to strengthening road safety provisions within PMGSY (details are in Supplementary Appendix B).

C. Special Features

40. The Project will establish both the financial and contractual commitments necessary to ensure that assets created will be adequately maintained. In addition to establishing the capacity for planning and managing rural road maintenance under the Project, the two state governments have committed the estimated levels of financing required for proper maintenance of their PMGSY road networks, and will enter into contractual commitments under the construction contracts and subsequent maintenance contracts to maintain these networks for at least 10 years.

41. The subproject selection criteria incorporate provisions for enhancing poverty reduction impact in very poor and remote areas. Due to previous isolation from the rest of the economy and low initial starting point for economic development, it is often difficult to reliably quantify the full economic benefits of improving roads in such areas. At the same time, they may be among the areas that need improved road connectivity most.¹⁷ To address their needs, up to 15% of expenditures on each annual batch of road connectivity subprojects in each state will be allocated to such areas on the basis of a weighting of socioeconomic indicators of economic potential, incidence of poverty, and difficulty of access.

42. The Project offers a unique opportunity to document the impacts of rural roads on poverty reduction and human development in India since (i) it will construct a large number of rural roads; (ii) each road subproject will generally be completed and opened to traffic in about a year, so that during the project implementation period it will be possible to examine impacts for the period immediately before improvement to 3-4 years after improvement; and (iii) existing PMGSY planning and monitoring procedures already provide a useful initial database for all roads, and PIUs have close contacts and cooperation with panchayat institutions and communities being assisted. The consulting services for the road connectivity component will include a monitoring study to document the socioeconomic impact of the component in CG and MP. This will be based on preparation of pre-improvement baseline data for project roads and control roads, annual updating of data, and periodic review and community consultations to track and verify the change process due to the improved road connectivity. This will include support for training and capacity building for state-level research institutions. Outline terms of reference are in Supplementary Appendix C.

43. Drawing upon the successful implementation arrangements identified in MP, during project formulation the CG government became the second state to establish a rural roads development agency to be responsible for implementing PMGSY in the state. The agency was established as a nonprofit organization under the Firms and Societies Act and has sufficient autonomy to be able to concentrate on ensuring effective, efficient implementation of PMGSY. Its staff comprise a small group of professionals who will manage and oversee the implementation activities. Road construction and supervision will be outsourced to contractors and consultants. These arrangements are expected to enhance PMGSY implementation performance and avoid the problem of staff overhang when PMGSY is completed in CG.

¹⁷ In fact, PMGSY treats road connectivity as a universal basic need for all habitations of eligible size.

44. As an additional feature, the Project includes road safety measures targeted at mitigating the accident risks associated with project road connectivity improvements. The measures may be expected to be highly pro-poor since more than half of accident victims are pedestrians. It will also help establish a basis for wider application of road safety measures linked to specific road connectivity investments, including for PMGSY, other highways projects in India, and for ADB road sector lending in general.

D. Cost Estimates

45. The total cost of the Project is estimated at \$571 million equivalent inclusive of taxes, duties, and interest and other charges on the loan during construction (Table 1). The foreign exchange cost is estimated at \$269.1 million (47%). The local currency cost (including taxes and duties) is estimated at \$301.9 million equivalent (53%). Detailed cost estimates are in Appendix 8.

Table 1: Cost Estimates
(\$ million)

Item	Foreign Exchange	Local Currency	Total ^a
Road Connectivity Component ^b	225.8	297.3	523.1
Asset Management and Capacity Building Component ^c	3.6	4.6	8.2
Front End Fee	2.0		2.0
Interest During Construction	37.7		37.7
Total^d	269.1	301.9	571.0

^a In mid-2003 prices.

^b Including civil works, project implementation consultants, and independent monitoring of land acquisition. Financing of investment in road connectivity and implementation consulting services will be divided equally between Madhya Pradesh and Chhattisgarh.

^c Including project management consultant, road safety consultant, capacity building, and performance audit.

^d Including taxes and duties.

Source: Asian Development Bank estimates.

E. Financing Plan

46. The Government has requested a loan of \$400,000,000 from ADB's ordinary capital resources to help finance the Project. The loan will have a 25-year term including a grace period of 5 years, an interest rate determined in accordance with ADB's LIBOR-based lending facility, a commitment charge of 0.75% per annum, a front-end fee of 0.5%, and such other terms and conditions set forth in the draft Loan and Project Agreements. The Government has provided ADB with (i) the reasons for its decision to borrow under ADB's LIBOR-based lending facility on the basis of these terms and conditions, and (ii) an undertaking that these choices were its own independent decision and not made in reliance on any communication or advice from ADB.

47. The loan will finance the foreign exchange cost – excluding the front-end fee, interest and other charges on the Loan during construction¹⁸ – and \$170.6 million of the local currency cost. The Government will finance the foreign exchange costs comprising the front-end fee, interest and other charges on the loan during construction, and the local currency costs of \$131.3 million. The Government will provide the Loan proceeds in local currency to MORD and the state

¹⁸ Front-end fee, interest during construction, and commitment fees will be paid separately by the Government.

governments of CG and MP on a grant basis. The Government will bear the foreign exchange risk on the Loan.¹⁹ The financing plan for the Project is in Table 2.

48. Financing of the local currency cost is justified since the Project is important for addressing ADB's strategic objective of poverty reduction in India. PMGSY is one of the Government's main programs for poverty reduction, and the rural roads infrastructure it is developing will contribute significantly to a host of other poverty reduction activities, and increase the effectiveness of other ADB assistance to reduce poverty in India. Having determined the importance of rural roads for poverty reduction, the Government has initiated a very large program that it can only partially finance from fuel taxes and budgetary sources. Financing from ADB and other external sources is required to make good the severe deficit in rural connectivity within the present decade.

Table 2: Financing Plan
(\$ million)

Source	Foreign Exchange	Local Currency	Total	%
Asian Development Bank	229.4	170.6	400.0	70
Government ^a	39.7	131.3	171.0	30
Total	269.1	301.9	571.0	100

^a Including taxes and duties, front-end fee, interest during construction, and commitment fees.

F. Implementation Arrangements

1. Project Management

49. The Executing Agencies (EAs) for the Project will be MORD at the central level and the respective state governments at the state level. MORD will be responsible for overall supervision and execution of the Project, particularly the road connectivity component, and support for capacity building at the central level. The state governments, through their respective rural development departments, will be responsible for executing the Project at the state level.²⁰ The MORD joint secretary will chair a project coordination committee, to be set up by the Government within 6 months of loan effectiveness. The committee will monitor the use of loan funds and overall implementation performance. The committee members will comprise senior officials of MORD, the Department of Economic Affairs, NRRDA, and the governments of CG and MP. The respective state-level standing committees as set up under the PMGSY guidelines will assist in overseeing and monitoring timely completion of the Project. Both committees will meet quarterly. The implementation setup is shown in Appendix 9.

50. At the national level, PMGSY is administered by MORD through the National Rural Roads Development Agency (NRRDA). At state level, the implementing agencies (IAs) for the Project will be the Chhattisgarh Rural Roads Development Agency (CGRDA) and the Madhya Pradesh

¹⁹ As required under the PMGSY guidelines, the proceeds will be provided directly by MORD to the implementing agencies (para. 50) established by the governments of CG and MP for that purpose.

²⁰ This will be Chhattisgarh Rural Roads Development Agency for CG and Madhya Pradesh Rural Development Authority for MP.

Rural Roads Development Authority (MPRRDA).²¹ CGRRDA and MPRRDA will each be headed by a chief executive officer (CEO) who will be the state-level project director for overall coordination of implementation, including planning, management, consultant selection, and procurement. The CEO will be supported by experienced personnel at headquarters and in the PIUs established to support PMGSY implementation. In MP there are 27 PIUs, each covering 1–3 districts.²² In CG there are 16 PIUs, each covering one district.

51. To monitor project performance and use of funds at the state level, and to ensure coordination among the key agencies involved, the two state governments will each establish a state-level project implementation committee within 6 months of loan effectiveness. These committees will meet on a monthly basis, chaired by the CEO of the IA, with representation from the respective state rural development department,²³ PIUs, and consultants. As necessary, other state agencies, may be invited to this committee to assist in implementing the Project in areas such as forestry, land acquisition etc.

2. Implementation Period

52. The Project will be implemented over 5 years inclusive of preconstruction activities. The scheduled completion date for civil works is December 2007. The first batch of subprojects (the sample subprojects) will be ready for contract award in July 2004. The IAs will prepare detailed implementation schedules for the remaining three batches of subprojects to be agreed during the Inception Mission. The implementation schedule is in Appendix 10.

3. Procurement

53. Procurement to be financed from the ADB loan will be carried out in accordance with ADB's *Guidelines for Procurement*. Civil works contracts over \$3 million will be procured through international competitive bidding (ICB), and those estimated to cost \$3 million or less will be procured through local competitive bidding (LCB) procedures acceptable to ADB. LCB contract packages will be in the range of \$1 million–3 million, except that packages in the range of \$0.5 million–1 million will be permitted for up to 10% of estimated expenditures on each annual batch of road connectivity subprojects in each state.²⁴ Civil works will be procured among prequalified bidders. In the case of LCB, prequalification will be based on the single-stage, two-envelope system. Equipment will be procured by ICB for contracts for an estimated value of more than \$500,000, international shopping for contracts estimated at \$100,000–500,000, and direct purchase arrangement for contracts valued at less than \$100,000. Indicative contract packages for sample subprojects are in Supplementary Appendix D. Contract packages for additional subprojects will be decided during implementation, based on the approach used for the sample subprojects.

²¹ MPRRDA was established in 2000 as a nonprofit organization under the Firms and Societies Act for the purpose of implementing PMGSY. Its staff focus on planning and managing PMGSY. Design, supervision, and civil works are outsourced to private consultants and contractors. Outsourcing was adopted both to ensure the quality and value for money of works undertaken and to avoid creating a large establishment that would become underemployed once the main PMGSY activities are completed. In addition to statutory audit by the Auditor and Comptroller General, MPRRDA prepares commercial accounts and is audited by private sector auditors. CGRRDA was established in 2003 on a similar basis to MPRRDA.

²² There are 45 districts in MP. The number of PIUs reflects MP's large size and poor accessibility by road in rural areas.

²³ The Chhattisgarh Department of Panchayat and Rural Development and Madhya Pradesh Rural Development Department.

²⁴ This exception will address the possibility of needing smaller packages in some more remote areas.

54. To support timely contract approvals while ensuring sound practice and accountability, post facto approval procedures will be adopted for LCB civil works contracts.²⁵ For the first five contract packages under LCB in each state, the IA will submit the procurement documents and bid evaluation for ADB review and approval before awarding the contract. If ADB finds the procurement documents and bid evaluation for the first five contract packages satisfactory, the IA will proceed with procurement procedures and contract award for subsequent contract packages without prior ADB review and approval. In these cases the following post facto approval procedures will apply: (i) the IA will retain a record of all procurement documentation, including copies of the signed contract and the bid evaluation report, to be available for inspection; (ii) at the time of each contract award the IA will provide ADB with a certified summary sheet reporting on the main aspects of the bid evaluation and contract award; (iii) the procurement processes and contract awards will be audited annually as part of the performance audit (para. 61); and (iv) if any contract award is found to be unacceptable, ADB may refuse to finance the contract.

4. Consulting Services

55. International and domestic consulting services will assist the EAs and the IAs to implement the Project. Project implementation consultants (PICs) will assist the two IAs in (i) preparing additional subprojects; (ii) supervising civil works; (iii) implementing land acquisition plans and mitigating other social impacts as required; (iv) grievance redress for resolution of any disputes in respect of land acquisition or any other social impacts; and (v) implementing and monitoring environmental management plans (EMPs). Three PICs will be recruited in CG and three in MP, and each PIC will be responsible for implementing the four annual batches of the Project for an area covering about a third of the respective state. Each PIC is expected to cover about six PIUs in CG and about nine in MP. The PICs will be recruited from consulting firms based in India with substantial international experience. Outline terms of reference for the PICs are in Supplementary Appendix E. A project management consultant (PMC) will assist MORD through NRRDA in (i) overall project management and coordination at the national level; and (ii) developing and implementing support for capacity building and training for PMGSY and related agencies such as NRRDA at the national level and the IAs and panchayats at the state levels. The PMC will assist the two state EAs in (i) screening and processing additional subprojects for submission to ADB; (ii) procuring training services; (iii) project management and coordination at state levels, including overseeing compliance with safeguard policies (in relation to land acquisition/ resettlement, environment, gender, social impacts, HIV/AIDs,²⁶ child labor, etc.); (iv) establishing road maintenance budgeting, planning and management systems for use by zilla panchayats, developing standard performance based contracts for road maintenance, and providing capacity building support for zilla panchayats and on-the-job training to the PIU personnel and zilla panchayats; (v) project performance management and monitoring; and (vi) monitoring of socioeconomic impacts (para. 42). The PMC will be recruited from international firms in association with domestic experts. Outline terms of reference for the PMC are in Supplementary Appendix F. Government-financed road safety consulting services will assist MORD to incorporate road safety audit within PMGSY, and assist the two state governments to develop community-based road safety activities.

56. The state governments will recruit nongovernment organizations (NGOs) to conduct independent monitoring and verification of land acquisition and indigenous peoples aspects of the Project. Outline terms of reference are in Supplementary Appendix G. In addition consultants will be recruited to carry out performance audits annually (para. 61).

²⁵ Such procedures are consistent with PAI 3.04 para. 10.

²⁶ Human immunodeficiency virus/acquired immunodeficiency syndrome.

57. Loan-financed consultants will be engaged using ADB's quality- and cost-based selection procedures for recruiting firms under full technical proposals and ADB's procedures for recruiting individual consultants in accordance with ADB's *Guidelines on the Use of Consultants*, and other arrangements satisfactory to ADB for engaging domestic consultants. ADB endorsed advance action for recruiting consulting services on the understanding that such approval would not commit ADB to finance the Project.

5. Disbursement Arrangements

58. Loan disbursements will be in accordance with ADB's *Loan Disbursement Handbook, January 2001*, and *Interim Guidelines for Disbursement Operations, LIBOR-Based Loan Product, July 2002*. For ICB civil works, procurement of equipment and consulting services, loan funds will be disbursed using direct payment and reimbursement procedures. For LCB civil works, reimbursement procedures will be through the imprest account. MORD will operate an imprest account at the Reserve Bank of India with an initial advance of \$20 million. Thereafter the total imprest at any time will not exceed estimated expenditures for the next 6 months or 10% of the loan amount, whichever is lower. Each IA will operate a second generation imprest account in a bank acceptable to ADB in the state, with an initial advance of \$9 million. Thereafter the amount in each second generation imprest account at any time will not exceed estimated expenditures for the next 6 months or 5% of the loan amount, whichever is lower. MORD will be responsible for monitoring the two IAs' imprest accounts, including monthly reconciliation of accounts and preparation of withdrawal applications for liquidation/replenishment of the accounts. Statement of expenditure (SOE) procedures will be used for individual payments of less than \$100,000.

6. Accounting, Auditing, and Reporting

59. The EAs and IAs will maintain separate records and accounts adequate to identify the goods and services financed from the loan proceeds, the expenditures incurred for the Project and the subprojects, and use of local funds. These project accounts and related financial statements will be audited annually in accordance with sound auditing standards by independent private auditors acceptable to ADB. The Government will submit to ADB within 9 months after the end of each fiscal year consolidated annual audited reports and related financial statements of the Project, identifying separate accounts of subprojects as required for CG and MP. The audit of the imprest account and second generation imprest accounts and SOE will be carried out as part of the regular annual audit. The auditor's opinion of that part of the examination relating to the imprest accounts and SOE should be separately set out in the auditor's report.

60. Since the PMGSY guidelines require state governments to engage chartered accountants of standing to audit PMGSY accounts, wherever possible the same auditors that audit CGRRDA and MPRRDA will audit project and subproject accounts in each state subject to these auditors' acceptability to ADB.

61. For transparency in all procurement-related activities, and objective and independent assessment of such activities, all procurement activities will be subject to independent performance audits. Loan-financed consulting services recruited through ICB will conduct the performance audit annually. ADB will also conduct project procurement audits during implementation as part of its regular review process.

62. The IAs will submit to MORD, through the relevant state government, monthly progress reports of subproject implementation under the road connectivity component, in such form and detail as required. Likewise, the state governments will submit to MORD quarterly progress reports for the asset management and capacity building component and the road safety

subcomponent. Based on these reports, MORD, with assistance from NRRDA, will further submit to ADB consolidated overall project performance reports on a quarterly basis. The quarterly report will summarize the information in the detailed reports, including basic data, use of funds, achievement of immediate development objectives, compliance with covenants, implementation progress, and major issues and problems.

63. Within 3 months of physical completion of the Project, the Government will submit to ADB a project completion report with a detailed evaluation of the project design, costs, contractors' and consultants' performance, social and economic impact, economic rate of return, and other details for each state as may be requested by ADB.

7. Project Performance Monitoring and Evaluation

64. Within 6 months of loan effectiveness, MORD through the IAs will establish a capability for systematic project performance monitoring (PPM) and analysis throughout the life of the Project, integrated with their management information system. The PPM will be developed in accordance with ADB's *Project Performance Management System Handbook*. Initially, the PPM will develop and conduct a "quick and easy" rapid sample survey to establish a baseline for subsequent performance monitoring. Thereafter, surveys will be conducted annually. The scope of the survey, quantity and quality of data, and frequency for collection will be guided primarily by the project management's need for progressive rapid feedback on implementation status, as well as early warning of impending situations that might jeopardize attainment of the development objectives. The key indicators and assumptions outlined at the output and development objective (i.e., purpose and goal) levels in the project framework will form the core of the data required for rapid assessment. The monitoring data on traffic levels, and poverty and socioeconomic impacts will be based on the reports of the impact monitoring study to be carried out by the PMC (para. 42).

8. Project Review

65. In addition to regular reviews by ADB staff, there will be a detailed midterm review (MTR) of the Project. The MTR will identify any problems or weaknesses in implementation arrangements, and agree on any changes needed to achieve the project objectives. Based on the project schedule, the MTR will be carried out around June 2005. Two months before the MTR, the Government will submit to ADB a detailed progress report on project implementation. Terms of reference for the MTR will be included in the project administration memorandum to be prepared by ADB's inception mission for the Project.

IV. TECHNICAL ASSISTANCE

66. An accompanying project preparatory technical assistance (TA) will be provided for the Rural Roads Sector II Project. The TA will cover (i) preparation of further investment for improving rural roads under PMGSY, including a review of poverty reduction impacts of PMGSY; (ii) institutional strengthening and capacity building requirements; and (iii) formulation of associated support for road safety. The EA for the TA will be MORD. The total cost of the TA is estimated at \$1.25 million equivalent. The Government of the United Kingdom will finance \$1 million equivalent, on a grant basis, including all the foreign exchange costs (\$327,800) and part of the local currency costs. The proposed in-kind contribution of \$250,000 equivalent from the Government of India will cover the costs of office accommodation, transport, and counterpart staff. The outline terms of reference and cost estimates are in Supplementary Appendix H.

67. The TA will be carried out by a firm of international consultants in association with domestic consultants, together with individual international and domestic consultants. Their

expertise will cover road engineering, institutional strengthening, poverty analysis, transport economics, social analysis, land acquisition and resettlement, and environmental assessment. The consulting firm will be engaged using ADB's quality- and cost-based selection procedures. The individual consultants will be engaged in accordance with ADB's *Guidelines on the Use of Consultants* and other arrangements satisfactory to ADB for engaging domestic consultants.

V. PROJECT BENEFITS, IMPACTS, AND RISKS

A. Policy and Institutional Improvements

68. The proposed support for asset management and capacity building, including the commitment of required levels of maintenance financing and establishment of systems and capacity within zilla panchayats, will help ensure that created rural roads assets will be sustained over their useful economic lives. Since PMGSY is expected to eventually create new assets of \$11 billion, the asset management improvements under the Project in CG and MP and the programmatic approach of leveraging similar improvements throughout PMGSY, are expected to be significant to the overall success of PMGSY.

B. Economic Analysis

1. Economic Internal Rate of Return

69. The economic internal rate of return (EIRR) was calculated by comparing the with-project and without-project scenarios for about 800 km of subproject roads in 19 districts. Without the Project, transport costs to and from rural habitations will remain very high. With the Project, transport costs will be significantly reduced, leading to savings for existing traffic, rapid growth in generated traffic, and a shift in traffic composition toward more efficient, motorized modes. There will also be reduced spoilage of agricultural produce on the way to the market.

70. Classified traffic counts were provided by the governments of CG and MP and verified through field surveys and traffic surveys. Traffic on most subproject roads averaged around 100 vehicles per day: 40-50% motorized and 50-60% nonmotorized. For existing traffic, growth rates for freight were based on an analysis of gross domestic product and the income elasticity of transport demand. Passenger traffic growth rates were based on population growth rate, per capita income growth, and the income elasticity of transport demand. The traffic growth rates adopted varied between 4 and 9% per annum, depending on the vehicle type. Based on the average vehicle composition for the sample subproject roads, overall traffic growth rate was approximately 7% for 2003-2010 and 6.3% for 2010-2024. Estimates of generated traffic were based on the reduction in vehicle operating costs by vehicle type and the associated price elasticity of demand. Additional traffic induced by the expansion of local economic activity was conservatively estimated from analysis of before- and after-improvement surveys for completed PMGSY roads, after allowing for existing traffic and generated traffic.

71. The economic costs of the Project include the resource costs for construction, operation and maintenance, and the social costs of compensation for land acquisition. The economic benefits were quantified in terms of (i) vehicle operating cost savings, (ii) passenger time savings, and (iii) reduced spoilage of agricultural produce.

72. The estimated overall EIRR for the sample subprojects is 26.6%. The EIRRs for the 19 district clusters of sample subprojects ranged from 13.0% to 60.9%. Sensitivity analysis shows that the Project will be economically viable under adverse scenarios, including increased costs,

decreased benefits, and implementation delays. The economic analysis is summarized in Appendix 11. Further details are in Supplementary Appendix I.

C. Social Impact

1. Poverty and Socioeconomic Impacts

73. The 2001 census reported that CG had a population of 20.8 million, of whom 16.6 million or 80% lived in rural areas. MP's population was 81.2 million, with 60.9 million or 75% in rural areas. The combined population of the two states was equivalent to 10% of the national population. With a combined poverty head count rate of 37.4% in 1999-2000²⁷ MP and CG are among the poorest states in India.²⁸ Based on a range of poverty and human development indicators—including poverty rate, life expectancy, infant mortality—there is little doubt that people living in these two states suffer from levels of poverty, disadvantage, and deprivation that are well above the national average.²⁹

74. Rural inaccessibility is one of the major reasons for poverty and deprivation in the two states. Their large rural populations are widely dispersed, making road connectivity a particularly critical factor for people to avail themselves of economic opportunities and social services.³⁰ However, past neglect of the road network has been especially severe in these states. Studies conducted during the preparation of ADB's recently approved MP State Roads Sector Development Project (footnote 13) found that outdated institutional arrangements had led to most of the state road sector budget being spent on personnel costs instead of on maintaining and developing the roads. The 2001 National Human Development Report found that in 1996/97 only 22% of habitations under 1,000 persons in MP had road connections, the lowest road connectivity among the states.

75. The Project is categorized as a poverty intervention. By focusing on states that are among India's poorest and by serving the rural parts of these states where poverty is highest, the Project is carefully targeted at areas that are predominantly poor. By providing rural habitations with good all-weather road connections for the first time, the Project will address one of the main underlying causes of poverty and deprivation in CG and MP. By building in strong provisions to ensure the sustainability of the roads to be built, the Project will provide a lasting instrument for enabling people to lift themselves out of poverty. As is well documented,³¹ such support will have direct impacts on poverty reduction in the immediate project influence areas by providing people with access to economic opportunities, links to better priced markets, employment opportunities, and better quality social and other services, as well as short-term project-related employment. Equally important, it will have important indirect impacts on poverty reduction. Improved transport efficiency and extension of the transport network will contribute to overall economic growth in the two states, leading to increases in incomes and employment opportunities and generating higher tax revenues to support the state governments' other programs for economic growth, poverty reduction, and human development.

²⁷ Government of India. 2001. *Poverty Estimates for 1999-2000*. Press Information Bureau.

²⁸ Until 2000, CG was part of MP. Most available poverty and human indicators refer to the former MP inclusive of CG.

²⁹ The states' poverty head count rate is 37.4%, compared with the national average of 26%. Life expectancy of 56.8 years for men and 57.2 years compares with the national averages of 62.4 years for men and 63.4 years for women. Their infant mortality rate of 90 deaths per 1,000 live births compares with a national average of 70. They also have a substantially higher proportion of scheduled tribes (STs) and scheduled castes (SCs). In MP 35.3% of the population are STs or SCs, compared with 24.5% nationally. The proportion of STs and SCs in CG is believed to be higher than that in MP.

³⁰ In 2001 the population density of MP was 192 per km², compared with 324 nationally.

³¹ An extensive range of sources is cited in the India Country Strategy and Program.

76. During project formulation, case studies were conducted to compare before and after, and with and without rural roads improvements completed over the past 5 years in MP and CG. The results are summarized in Appendix 12. Further details are in Supplementary Appendix J. The case studies confirm the mechanisms through which the Project may be expected to contribute to poverty reduction, including (i) growth in agricultural incomes due to access to higher priced markets, ability for the first time to transport horticultural and other higher value produce to markets, and reduced spoilage; (ii) growth of the local economy, leading to increased incomes and employment opportunities; (iii) the ability to travel to take up jobs outside of the habitation or residence; (iv) reduction in prices of consumer goods and services due to lower transport cost; (v) improved health and longevity due to access to hospitals and health services (including access to hospitals at time of delivery); (vi) improved education due to improved access to schools (including postprimary schooling), improved capacity to attract qualified school teachers, and more frequent supervision visits by school inspectors; (vii) improved access to agricultural, veterinary, and extension services; and (viii) improved opportunities for participating in the wider society outside of people's home villages.

77. The beneficiaries of the Project will be the bulk of the rural population of the two states: (i) direct users of road transport, including owners/operators of buses and trucks, passengers of the various vehicle categories, labor, and the Government; (ii) those benefiting indirectly because they live in the area of influence of the roads; and (iii) those benefiting indirectly through the wider impacts of higher economic growth in their districts and in the states as a whole.

2. Poverty Impact Ratio

78. Distribution analysis was undertaken to assess the extent that the direct economic benefits quantified in the economic analysis (para. 71) would accrue to poor people, and to estimate the poverty impact ratio for the sample subprojects. Initially estimates were made of the distribution of the quantified benefits to the various categories of road users (bus and truck operators/owners; bus passengers; car, utility, and motorcycle owners, drivers, and passengers; and users of bicycles and animal-drawn vehicles). A user survey was then conducted to establish the proportion of the poor among passenger users, freight users, and vehicle owners/operators. The poor represented 80% of all passengers using transport facilities, about 50% of people using freight services, and 75% of owners of nonmotorized vehicles such as bicycles. The estimated poverty impact ratio was 1.32, indicating that the total net economic benefits reaching the poor will exceed the total net economic benefits of the Project.³² This strongly indicates that the Project is highly pro-poor. This analysis is explained in detail in Appendix 11 and Supplementary Appendix I.

3. Gender

79. Gender assessment conducted as part of the socioeconomic and poverty analysis impacts found that transport connectivity can contribute in establishing the conditions for raising the social, educational, and health status of women. Better transport services open up opportunities for more girls to attend postprimary schools outside the village. They also contribute to safe motherhood by providing access to better health services outside the village and reducing the obstacles to improved health services within the village. Women interviewed referred to the psychological benefit of being able to maintain more frequent contact with their families in distant locations. The extent that potential gender benefits are realized will be affected by social and

³² The poor will receive most of the gross economic benefits, but contribute only a small share of gross investment costs.

cultural factors, such as cultural constraints that may restrict female mobility beyond the village, and poor people's perceptions of the opportunity cost of educating girls compared with boys.

4. Land Acquisition and Resettlement

80. A social assessment and a 20% sample survey of households were undertaken for 33 sample subprojects with a combined length of 247 km. In CG, nine subprojects in two districts (Bastar and Mahasamund), with a length of 105 km, were covered. In MP, 24 subprojects in four districts (Bhopal, Sehore, Guna, and Sidhi), with a length of 142 km, were covered. Field verification confirmed that the width of the existing roads, originally built by panchayat/village authorities on revenue (government) land, will be sufficient to accommodate the 7.5 m right-of-way to be improved through the Project. As a result, construction of the project roads will require minimal acquisition of land, only for shoulder adjustment and drainage.

81. The subprojects surveyed in CG require acquisition of 22 hectares from 192 households. About 32 households will experience loss of 10-15% of frontage of structures due to road widening through the village. In MP the subprojects surveyed require acquisition of 4 hectares of land for minor adjustments in road shoulders and drainage. An estimated 429 households will lose agricultural land. The average loss of agricultural land will be only 3.15 square meters per household, compared with an average farm size of 2 hectares. On average only three families per km will be affected.

82. Based on the social assessment, a land acquisition plan (LAP) was prepared for the sample subprojects. The plan is guided by the Government's land acquisition laws/regulations and ADB's policy on involuntary resettlement and other social safeguard guidelines. It stipulates eligibility and provisions for various types of losses (land, crops/trees, and structures). In India, particularly under PMGSY, due to the economic benefits and increased value of land property from improved roads, voluntary land contribution by affected households is common practice in acquiring land for improvement of rural roads. The Project will provide three options for mitigating impacts: (i) voluntary land contribution, (ii) replacement land, and (iii) cash compensation. The entitlement matrix establishes the parameters for mitigating the range of losses likely to be experienced by the households. Households headed by females and other vulnerable households will be eligible for further cash assistance. The summary LAP for sample subprojects is in Supplementary Appendix K. For additional subprojects requiring land acquisition, a land acquisition framework (LAF) was prepared in accordance with ADB's requirements for sector loans. The LAF presents the policy and procedures for preparing LAPs in accordance with ADB's policy on involuntary resettlement. The LAF is in Supplementary Appendix L.

83. More than 25% of the population of the project influence area are indigenous peoples/STs. In the past, STs depended on forest resources for food. Most are now subsistence farmers. Nearly 40% of people in the influence area of the subprojects in Sidhi are STs. For the other sample subprojects the proportion of STs in the influence area is generally less than 10%. Because of poor transport infrastructure, many STs have limited access to regular market economy, agricultural extension, and health and education services. Lack of market access, health problems, and illiteracy remain the principal causes of their poverty and vulnerability. By improving access, the sample subprojects will help reduce poverty and improve the human development status of STs. No negative impacts are expected. Land acquisition will not be required for the sample subprojects in areas with a high proportion of STs as the road connectivity improvements will be on the existing road alignments. For any additional subprojects that could have adverse impacts on STs, an indigenous peoples development framework (IPDF) was developed to guide subproject preparation (Supplementary Appendix M). The framework

was prepared in accordance with ADB's requirements for sector loans and ADB's indigenous peoples policy.

84. The PICs will include expertise to assist the states in implementing the LAPs and IPDPs. NGOs will be separately recruited to independently monitor and verify implementation of LAPs and IPDPs (para. 56).³³

D. Environmental Impact

85. The initial environmental examination (IEE) for the sample subprojects found that there will be only minor negative environmental impacts associated with the project road investments. The environmental monitoring and management plan included in the IEE provides for mitigation of such adverse impacts. The mitigation measures will be incorporated into the subproject designs and followed during Project construction, operation and maintenance; the IAs, assisted by the PICs, will be responsible for monitoring implementation of the measures. The IEE concluded that the mitigation measures are manageable, and therefore a full environmental impact assessment is not required. The summary IEE is in Supplementary Appendix N.

86. Assisted by the PICs, the IAs will prepare an overall IEE for each annual batch of additional subprojects in their respective states, focusing on any environmental problems identified and mitigation required.

E. Project Risks

87. The risk of nonsustainability of the Project due to inadequate maintenance will be addressed by the asset management and capacity building component. This component will establish systems for planning and executing road maintenance under contract, and the state governments have agreed to earmark sufficient funding to meet the estimated maintenance costs. The component will also ensure that the state governments enter into contractual commitments to maintain the entire PMGSY rural roads network, including the project road investments, for at least 10 years of operations.

88. The risk of implementation delays has been addressed by establishing a rural roads development agency in each state to act as IA. The IA will have authority to decide on implementation including procurement, suitably qualified core staff to manage implementation effectively, and sufficient resources to engage consultants and contractors to perform the main engineering and civil works tasks. The performance of the MPRRDA in terms of quantity and quality of PMGSY roads constructed has confirmed the advantage of this arrangement compared with implementation by state government departments. To avoid the risk of overextending the implementation capacity of the IAs, consultants, and contractors, the level of annual road connectivity expenditure under the Project will be similar to that already achieved by the two states under PMGSY.

89. The economic analysis of the investment component suggests no significant economic risks. The criteria for selecting subprojects will ensure that each package of subprojects will have an EIRR of at least 10-12%. Sensitivity tests and risk analysis show that the project will be economically viable even under a combination of adverse scenarios.

90. The risk of adverse social and environmental impacts has been addressed in the criteria and procedures for subproject selection and preparation. The risk of road connectivity

³³ The NGO may be a domestic consultant with appropriate expertise and experience in implementing resettlement.

improvements leading to increased road accidents will be addressed by the road safety component.

VI. ASSURANCES

A. Specific Assurances

91. In addition to the standard assurances, the Government and state governments of CG and MP have given the following assurances, which are incorporated in the legal documents.

1. General

92. The Project will be carried out in accordance with the PMGSY guidelines as supplemented by Project-specific requirements of various ADB policies as agreed upon in the loan documents.

93. The Government, and the governments of CG and MP will assist the IAs in obtaining approvals and clearances for timely Project execution under the PMGSY guidelines and other applicable laws and regulations of the Government and state governments.

94. The Government will cause the governments of CG and MP to provide, as necessary, counterpart staff, land facilities, and counterpart funding for the Project in accordance with the financing plan—cost of land acquisition and compensation, and implementation and monitoring under the LAPs and IPDPs (including unforeseen expenses beyond the estimates), utility relocation, general project management expenses, and road maintenance—in a timely manner through approved annual budget allocations.

2. Road Maintenance

95. All maintenance works, including routine and renewal, for completed PMGSY roads in CG and MP will be outsourced to private contractors.

96. The governments of CG and MP will employ contractors under the construction contracts to carry out maintenance of all PMGSY and Project roads during the first 5 years (the initial 5-year maintenance period).

97. The governments of CG and MP will provide adequate funding for proper maintenance of the PMGSY roads, in accordance with the estimates provided to MORD in their respective commitment letters in this regard. Any increases in the actual amounts to be provided will be met by the governments of CG and MP through additional budget allocations, or other alternative sources of financing such as Mandi Cess in the case of MP.

98. The governments of CG and MP will ensure that the financing of maintenance of PMGSY roads as provided under para. 97 will not involve reduction of budgets for maintaining other roads under the responsibility of CG and MP that are not included under the PMGSY.

99. As also required under the PMGSY guidelines, except as ADB may otherwise agree, CG and MP will require the IAs (through the PIUs) to transfer maintenance of the PMGSY roads to designated zilla panchayats before the end of the initial 5-year maintenance period for each such road. The governments of CG and MP will also allocate the requisite funds to zilla panchayats for such maintenance in accordance with para. 97.

100. The governments of CG and MP will ensure that zilla panchayats enter into further maintenance contracts with competitively procured contractors (on the basis of the standard performance-based contracts for road maintenance to be prepared by PMC). The contracts will begin upon completion of the initial 5-year maintenance period under the related construction contracts and will cover routine maintenance and renewal of all PMGSY roads for further periods of not less than 5 years.

101. Within 3 years of loan effectiveness, the governments of CG and MP will introduce a simple planning, costing, and expenditure control system for routine and periodic maintenance of PMGSY roads by the designated zilla panchayats.

102. Within 18 months of loan effectiveness, MORD will have progressed in its dialogue with the states participating in PMGSY with regard to making adequate plans, financing arrangements, and commitments to properly maintain the PMGSY network over its useful economic life.

3. Road Safety

103. As part of the MTR, MORD, the governments of CG and MP, and ADB will review the outcomes of the startup phase of the community road safety program to consolidate the institutional mechanism, financing modalities, and detailed implementing arrangements to ensure sustainable road safety programs for the roads to be developed under PMGSY and the Project at the national and state levels.

4. Land Acquisition

104. The governments of CG and MP will ensure that the IAs will implement the provisions of the LAP for sample subprojects as agreed upon with ADB and in accordance with the framework set out in the LAP and in conformity with all applicable laws and regulations, and ADB's policy on involuntary resettlement. During implementation, the IAs will prepare and implement LAPs for additional subprojects in accordance with the principles and procedures set out in the LAF, to be submitted to ADB for approval before awarding civil works contracts. If changes to an agreed LAP are required, the IA will seek ADB approval for such changes before awarding any civil works contracts for subprojects included in the LAP.

105. The governments of CG and MP will ensure that the IAs will not award any civil works contract unless they have, subject to provisions of paragraphs 106-107 and 116-118, acquired or made available the land and rights to land free from any encumbrances, and cleared the utilities, trees and any other obstruction from such land, required for commencement of construction activities in accordance with the schedule agreed under the related civil works contract.

106. The governments of CG and MP will ensure that the settlement of issues, as applicable, relating to land acquisition and resettlement compensation payments will include (i) payments of full compensation/replacement land or value of land/structure (residential/commercial) to legal titleholders; (ii) payment of full replacement value of structure (residential/commercial) to affected informal settlers/roadside squatters; and (iii) payment of other additional benefits and provision of assistance in accordance with the LAP provisions, including income restoration assistance during project implementation and additional assistance to vulnerable groups such as STs, SCs, and households headed by women.

107. The governments of CG and MP will ensure that IAs will disclose approved LAPs for additional subprojects and make available the information to the affected people and communities

before awarding civil work contracts, and confirm that summary LAPs will be posted on the ADB web site.

108. The governments of CG and MP will ensure that the IAs will recruit PICs with expertise in social development, land acquisition, and resettlement to help prepare, implement, and supervise LAPs for all subprojects.

5. Execution of Civil Works Contracts

109. The governments of CG and MP will (i) acquire or make available on a timely basis the land and rights in land, free from any encumbrances; and (ii) clear the utilities, trees and any other obstruction from such land, on a timely basis, i.e., strictly in accordance with the schedule as agreed under the related civil works contract, as required for construction activities relating to each section of the related civil works contract under the subproject.

110. The governments of CG and MP will ensure that subsequent to award of civil works contract under any subproject, no section or part thereof under the civil works contract will be handed over to the contractor unless the provisions for settlement of land acquisition and compensation, disclosure and environmental safeguards (paras. 106, 107 and 116-118) have been complied with.

6. Social Impacts

111. Wherever applicable, the subprojects will be implemented in accordance with ADB's policy on indigenous people, as amended from time to time, and the IPDF.

112. Within 3 months of loan effectiveness, the governments of CG and MP, through the IAs, will recruit NGOs to independently monitor and verify the implementation of LAPs and IPDPs, and any voluntary contributions of land under the Project.

113. The governments of CG and MP will ensure through specific provisions in the bid documents and the civil works contracts financed under the Project that the contractors will (i) disseminate information at work sites on the risks of sexually transmitted diseases and HIV/AIDS as part of the health and safety measures for those employed during construction; (ii) follow legally mandated provisions on health, sanitation, and appropriate working conditions, including accommodation, where appropriate, for construction workers at camp sites; (iii) comply with all applicable labor laws, not employ child labor for construction and maintenance activities, and provide appropriate facilities for children of labor in construction camp sites; (iv) provide equal opportunity for women for road construction activities, and not differentiate wages for men and women for work of equal value.

114. The governments of CG and MP will ensure that compliance with provisions in para. 113 is monitored by the IAs. The civil works contracts will also provide for their termination by the employer for breach of any provision.

115. The governments of CG and MP will ensure acceptance of the Project through effective community participation in selecting and implementing subprojects in accordance with the PMGSY guidelines.

7. Environment

116. The governments of CP and MP will ensure that (i) subprojects will be implemented in accordance with ADB's requirements as set forth in the ADB's *Environmental Assessment Guidelines* (2003), as amended from time to time, and (ii) all environmental mitigation measures identified in the IEEs for all subprojects are incorporated into the subproject designs and followed during project construction, operation and maintenance.

117. The IAs will prepare and implement IEEs including EMPs and mitigation measures, if any, for all additional subprojects, with detailed assessments for subprojects that will pass through forestland or forested areas in accordance with ADB's *Environmental Assessment Guidelines* (2003), as amended from time to time.

118. The governments of CG and MP will require the IAs to implement the Project in accordance with all applicable laws and regulations regarding wildlife and protected areas/forest areas for subprojects that would involve roads passing through forest areas and address these under the relevant IEE for such subprojects. No construction work will be undertaken on sections of subprojects that pass through a forest reserve unless clearance is granted by the Government's Ministry of Environment and Forest, and no subproject will be located within an environmentally sensitive area such as a wildlife sanctuary, national park, or other areas with significant ecological functions that are declared as national parks, sanctuaries, or national/international cultural heritage.

8. Subproject Selection

119. MORD will ensure that the subprojects follow the eligibility criteria and are promptly processed for approval by ADB as described in detail in Appendix 7.

B. Condition for Loan Disbursement

120. The Government will have paid the front-end fee on the loan.

VII. RECOMMENDATION

121. I am satisfied that the proposed loan would comply with the Articles of Agreement of ADB and recommend that the Board approve the loan of \$400,000,000 to India for the Rural Roads Sector I Project from ADB's ordinary capital resources with interest to be determined in accordance with ADB's LIBOR-based lending facility; a term of 25 years, including a grace period of 5 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft Loan and Project Agreements presented to the Board.

TADAO CHINO
President

27 October 2003

SUBSECTOR ANALYSIS

A. Introduction

1. India's transport system is one of the largest in the world. It serves a land area of 3.3 million square kilometers (km) and consists of roads, railways, and air services. Inland water transport plays a small role in some states and has a total traffic share of 0.15%. In the past, railways were the predominant transport mode. In 1960 railways carried 85% of goods traffic (in ton km) and 51% of passenger traffic (in passenger km). By 2001, the figures had declined to 32% of goods and 13% of passenger traffic. Road transport is now the dominant mode and accounts for 68% of goods traffic (in ton km) and 87% of passenger traffic (in passenger km).

B. Roads Subsector, Government Strategy, and Road Sector Institutions

1. The Roads Subsector and the Importance of Rural Roads

2. The road network can be subdivided into three main categories: (i) national highways, (ii) state highways and major district roads (MDRs), and (iii) rural roads. In the country as a whole, national highways account for about 58,112 km or 2%; state highways and MDRs for around 607,119 km or 18%; and rural roads for about 2,650,000 km or 88% of the total road network. Although national highways comprise only 2% of the road network, they carry about 40% of the total road traffic. The state highways and MDRs provide linkages with the national highways, district headquarters, important towns, tourist centers, and minor ports. The MDRs within districts connect areas of production with markets, rural areas to district headquarters, and to state and national highways.

3. The road network is inadequate at the national, state, and district levels. It is unable to handle high traffic density at many places and has poor riding quality. Widespread overloading of freight vehicles damages the road pavement. Use of the road pavement by both motorized and nonmotorized vehicles (bicycles, animal-drawn vehicles, etc.) causes congestion and high levels of traffic accidents. In rural areas, roads become impassable during the rainy season due to missing bridges, and inadequate, defective, or missing drainage culverts. One main reason for the poor state of the road network is lack of adequate funding for maintenance and for improving the quality of the network.

4. Improving the road transport network is important for the economic development and social integration of the country. Over 70% of India's population live in rural areas. Providing rural areas with all-weather roads is a key component of rural development and economic growth, and will significantly improve the quality of life of the majority of the people. Roads have considerable impacts on poverty reduction for they lead to higher agricultural incomes, increased productive employment opportunities, and improved access to economic and social services.¹

2. Government Strategy

5. The main objective of the road sector in the Government's Tenth Plan (2002-2007) is the balanced development of the total road network, which includes widening roads, improving riding quality, strengthening road safety measures, and establishing wayside amenities. Two major investment initiatives will be implemented. The first is the National Highway Development

¹ Asian Development Bank. 2002. *Impact of Rural Roads on Poverty Reduction: A Case Study-Based Analysis*.

Project comprising the 5,846 km golden quadrilateral linking Delhi, Mumbai, Chennai, and Kolkata; and the 7,300 km north-south, east-west corridors from Kashmir to Kanyakumari and Silchar to Porbandar. This project, which is being implemented by National Highway Authority of India,² envisages creating four/six-lanes on the existing network at a cost of Rs540 billion (\$11 billion). Financing comes from earmarked cess on petrol and diesel, multilateral funding, budgetary allocations, and market borrowing. The second major initiative is the Pradhan Mantri Gram Sadak Yojana (PMGSY)³ which has the overall objective of connecting rural habitations with populations of 500 or more to all-weather roads by 2007. The estimated cost is around Rs600 billion (\$12 billion). Financing is being provided from earmarked cess, multilateral funding, and budgetary allocations.

C. Rural Roads Subsector Profile

1. Rural Roads Network and Traffic

6. The rural road network consists of zilla panchayat roads, gram panchayat roads, and community roads. There are five major surface types: (i) track, (ii) earth, (iii) gravel, (iv) waterbound macadam, and (v) blacktop. Neither track nor earth roads are passable in all-weather conditions. Gravel and waterbound macadam roads often become impassable during heavy rains. The majority of the network of rural roads is under-developed, of low standard and poor quality, structurally weak, poorly maintained, and extremely deteriorated.

7. Madhya Pradesh (MP) has a total road network of 202,240 km, of which 57,205 km is surfaced. There are 4,717 km of national highways, 7,923 km of state highways, 30,070 km of district roads, and 159,530 km of rural roads. Around 80% of all roads in MP are single lane (3.75 m carriageway), 14% intermediate lane (5.5 m) and only 2% are 2-lane (7 m) or more. Approximately 37% of roads are blacktop; 42%, waterbound macadam; and 21% have no surface treatment. The Public Works Department of the Government of MP is responsible for 25,033 km, while the remaining 134,497 km of roads are the responsibility of the Madhya Pradesh Rural Development Department, and the panchayats.

8. Chhattisgarh (CG) has about 50,000 km of roads, of which national highways make up 1,827 km; state highways, 3,611 km; MDRs, 2,118 km; other district roads, 27,526 km; and tracks, about 15,000 km. Excluding tracks, only 30% of the total road network has a bituminous surface. Of the total road network 35,000 km is the responsibility of the Public Works Department. The remainder falls under the responsibility of the Chhattisgarh Department of Panchayat and Rural Development, and the panchayats.

9. Rural roads are essentially low-volume roads with wide variations in traffic volume and composition. Traffic is motorized and nonmotorized (bicycles, animal-drawn vehicles, etc.). Traffic counts in 2002 in MP showed motorized traffic volumes averaging 51 vehicles per day and non-motorized traffic averaging 69 vehicles per day. The average traffic compositions for motorized traffic showed between 37% and 45% motorcycles, 20% cars, and 10% trucks. The remaining traffic was composed mainly of tractors. Of the nonmotorized traffic, approximately 83% were bicycles and the remainder were animal-drawn vehicles. Similar traffic counts in 2002 in CG showed motorized traffic between 35 and 80 vehicles per day.

² In addition, the National Highways Authority of India is also creating four lanes on another 1,000 km of highways, 400 km roads connected to ports and 600 km for other projects, at a cost of Rs40 billion.

³ Prime Minister's Rural Roads Program.

2. Vehicle Fleet and Transport Services

10. The vehicle fleet in India totaled around 50 million vehicles in 1999-2000. Buses accounted for 1%; trucks, 5%; cars and jeeps, 13%; and motorcycles and scooters, 71%. The remainder was mostly auto-rickshaws (three-wheelers) and agricultural tractors. The number of automobiles has been growing at approximately 9% a year, and heavy commercial vehicles, at 7.5% over the last 9 years.

11. In MP, the Madhya Pradesh Transport Department is responsible for licensing, registering and regulating motor vehicles, drivers, and passenger and freight transport. In 2001 over 2.9 million motor vehicles were registered: 74% motorcycles, 5% cars and jeeps, 3% commercial trucks, 2% buses and minibuses, 2% two- and three-wheeler public transport vehicles, 9% tractors, and 5% others. Between 1990 and 1998 the registered vehicles increased at an average rate of 10.7% per annum.

12. In CG, the Transport Department is responsible for motor vehicle regulation and driver licensing. It has eight regional transport offices. In 2001-2002, 978,000 motor vehicles were registered: 80% motorcycles, 4% cars and jeeps, 14% commercial vehicles, and 2% buses, mini-buses, and other passenger vehicles.

13. Both freight and passenger services are operated by private operators and state road transport undertakings (SRTUs).⁴ Freight services are predominantly owned by individual private operators with 1-3 trucks per operator. Private truck operators are estimated to be handling over 80% of total freight traffic. The SRTUs handle less than 20% of the total traffic with a truck strength that was estimated at around 671 trucks at the end of the Annual Plan for 2000-2001. Similarly, passenger transport services are supplied by both SRTUs and private operators. However, following liberalization, the share of SRTUs operating passenger transport services has declined. The share of the private sector in the total number of buses has increased from 57% in 1980/81 to 77% in 1997. Taking into account the traffic carried by other commercial and personal vehicles, the share of the private sector in total passenger traffic is estimated at about 90%.

14. Passenger fares for public transport and freight rates in rural areas are competitive.⁵ They are determined through market competition and are not regulated. The majority of operators of passenger services and freight transport on rural roads provide services as an extension of their other economic activities, to supplement their incomes. For example, many freight operators are farmers with their own tractor or pickup truck who offer services for transporting agricultural produce to market. As the incomes of rural farmers are low, there is a high degree of competitiveness in freight rates to obtain additional income from this source of employment. In the rural passenger transport market, many individual operators owning jeeps, pickups and other vehicle types compete in taking passengers to local markets and other facilities. Most rural passenger transport operators are farmers who offer passenger services as a side-line. Therefore, services are often erratic and usually have no fixed schedule.

⁴ There are 62 SRTUs throughout India.

⁵ In contrast, for state roads there are factors limiting the competitiveness of passenger transport and freight transport. For example on state roads in Chhattisgarh passenger fares are set by the Chhattisgarh Transport Department. The fare schedules are set by vehicle class for buses, taxis, and minibuses. Freight rates on state roads are fairly competitive, but there are isolated areas where rates are not competitive, and have been set by the Shippers Association.

3. Road Maintenance and Funding

15. The major part of the rural road network is in extremely poor condition. Rural roads that are paved are often worn out only a few years after paving. Even basic maintenance practices are lacking. For rural roads, systematic planning, execution, and financing schemes for maintenance are almost nonexistent.

16. Following the 73rd Constitutional Amendment, maintenance of rural roads is to become the responsibility of the panchayat institutions. Maintenance responsibilities for all rural roads that have been constructed or upgraded are to be transferred to the concerned panchayats. The state authorities are to remit state government funds to the identified panchayats for the requisite maintenance.

17. In November 2000 Parliament passed the Central Road Fund Act whereby the Central Road Fund will allocate to development of rural roads 50% (approximately Rs25 billion per annum) of the excise duties (cess) raised on high-speed diesel. The fund is dedicated exclusively to road development. State governments and panchayats are responsible for financing maintenance.⁶ The PMGSY guidelines require states to commit to providing maintenance funds as a condition for continued funding of construction under PMGSY.

⁶ The 2003/04 budget has increased the levy of diesel cess by a further Rs0.50 per liter, of which 50% or an estimated Rs10 billion per annum will be assigned to PMGSY.

HABITATIONS ELIGIBLE FOR ROAD CONNECTIVITY WORKS UNDER PMGSY

No.	State	Category^a			Total
		1,000+	500-999	250-499	
1	Andhra Pradesh	106	223	100	429
2	Arunachal	65	123	346	534
3	Assam	3,491	3,070	250	6,811
4	Bihar	11,547	7,606	-	19,153
5	Chhattisgarh	2,635	6,134	6,839	15,608
6	Goa	3	8	-	11
7	Gujarat	401	2,306	100	2,807
8	Haryana	1	2	-	3
9	Himachal Pradesh	236	866	2,297	3,399
10	Jammu & Kashmir	840	984	1,165	2,989
11	Jharkhand	2,534	4,427	6,396	13,357
12	Karnataka	275	256	75	606
13	Kerala	2,224	2,306	-	4,530
14	Madhya Pradesh	2,383	6,819	300	9,502
15	Maharashtra	224	841	250	1,315
16	Manipur	28	151	336	515
17	Meghalaya	14	196	712	922
18	Mizoram	37	114	124	275
19	Nagaland	29	83	62	174
20	Orissa	3,856	6,786	300	10,942
21	Punjab	90	460	351	901
22	Rajasthan	3,088	6,695	200	9,983
23	Sikkim	17	138	175	330
24	Tamil Nadu	768	1,345	100	2,213
25	Tripura	203	706	1,182	2,091
26	Uttar Pradesh	12,114	18,584	-	30,698
27	Uttaranchal	100	524	1,439	2,063
28	West Bengal	11,478	8,837	100	20,415
Total		58,787	80,590	23,199	162,576

PMGSY = Pradhan Mantri Gram Sadak Yojana (Prime Minister's Rural Roads Program).

^a This includes only unconnected habitations covered by works of new connectivity.

^b This data will be further updated as states have not completed conducting surveys to identify eligible habitations and propose connectivity improvements as part of the core network.

Source: Ministry of Rural Development.

EXTERNAL ASISTANCE TO THE ROAD SECTOR

A. Asian Development Bank

No.	Project Name	Type	Amount (\$)	Date Approved
Technical Assistance				
0955	Road Improvement	PP	75,000	24 Feb 1988
1058	Pavement Management	A&O	490,000	3 Jan 1989
1059	Expressway System Planning	A&O	260,000	3 Jan 1989
1164	Second Road	PP	100,000	9 Jun 1999
1325	Vadodara-Bombay Expressway	PP	600,000	15 Jun 1990
1402	Pavement Management for National Highways	A&O	760,000	30 Oct 1990
1403	Private Sector Participation in Expressway Financing, Construction and Operation	A&O	500,000	30 Oct 1990
1404	Road Construction Industry	A&O	340,000	30 Oct 1990
1325	Vadodara-Bombay Expressway (Supplementary)	PP	250,000	19 Mar 1991
1678	Third Road	PP	250,000	26 Mar 1992
1942	Faridabad-Noida-Ghaziabad Expressway	PP	550,000	27 Aug 1993
1951	Bombay-Vadodara Expressway TA Project Environmental Impact Assessment	PP	90,000	10 Sep 1993
2001	Road Safety	A&O	210,000	29 Nov 1993
2002	Environmental Management of Road Projects	A&O	240,000	29 Nov 1993
2003	Technical Standards of Highway Concrete Structures	A&O	350,000	29 Nov 1993
2986	Western Transport Corridor-Facilitating Private Participation	PP	1,000,000	9 Feb 1998
3142	North-South Corridor Development in West Bengal	PP	1,000,000	23 Dec 1998
3361	Capacity Building for Contract Supervision and Management in the National Highways Authority of India	A&O	600,000	22 Dec 1999
3445	Establishing a Public Private Joint Venture for the West Bengal North-South Economic Corridor Development	A&O	150,000	25 May 2000
3538	Preliminary Engineering for the WP Corridor Development	PP	150,000	13 Nov 2000
3539	Resettlement and Environmental Assessment for the WB Corridor Development	PP	150,000	13 Nov 2000
3540	Economic and Poverty Analysis for the West Bengal Corridor Development Project	PP	150,000	13 Nov 2000
3361	Capacity Building for Contract Supervision and Management in the National Highways	A&O	600,000	22 Dec 1999
3365	Capacity Building for Social Development	A&O	800,000	23 Dec 1999
3540	Economic and Poverty Analysis for the West Bengal Corridor Development	PP	150,000	13 Nov 2000
3751	Madhya Pradesh State Roads	PP	250,000	29 Oct 2001
3752	National Highway Corridor & Public-Private Partnership	PP	250,000	29 Oct 2001
3845	Madhya Pradesh State Roads Engineering Design	PP	1,000,000	14 Mar 2002
3914	Economic Studies for the Rural Roads Sector Development	PP	150,000	3 Sep 2002
3915	Engineering Studies for the Rural Roads Sector Development	PP	150,000	3 Sep 2002
3916	Environmental Analysis for the Rural Roads Sector Development	PP	100,000	3 Sep 2002
3917	Institutional and Policy Development Studies for the Rural Roads Sector Development	PP	150,000	3 Sep 2002
3918	Social Analysis for the Rural Roads Sector Development	PP	150,000	3 Sep 2002
3995	Chhattisgarh State Roads Sector Development	PP	800,000	21 Nov 2002
4013	Institutional Strengthening and Capacity Building for Madhya Pradesh State Road Sector	A&O	1,500,000	5 Dec 2002
4036	National Highway Corridor (Sector)	PP	500,000	16 Dec 2002

No.	Project Name	Amount (\$mn)	Date Approved
Loans from Ordinary Capital Resources			
0918	Road Improvement	198.00	10 Nov 1988
1041	Second Road	250.00	30 Oct 1990
1274	National Highways	245.00	29 Nov 1993
1747	Surat-Manor Tollway Project	180.00	27 July 2000
1839	Western Transport Corridor	240.00	20 Sept 2001
1870	West Bengal Corridor Development	210.00	11 Dec 2001
1944	East-West Corridor	320.00	26 Nov 2002
1958	Madhya Pradesh State Roads Sector Development (Program Loan)	30.00	5 Dec 2002
1959	Madhya Pradesh State Roads Sector Development (Project Loan)	150.00	5 Dec 2002

B. Other Funding Sources

Region/State	Project Name	Project Length (km)	Loan Amount (Yen mn)	\$mn Equivalent
Japan Bank for International Cooperation				
Uttar Pradesh	Mathura-Agra	51	4,855	43.3
Uttar Pradesh	Allahabad-Naini Bridge	5	10,037	89.6
Andhra Pradesh	Chilakaluripet-Vijayawada	83	11,360	101.4
Orissa	Jagatput-Chandikhol	33	5,836	52.1
Uttar Pradesh	Ghaziabad-Hapur	33	4,827	43.0
World Bank Group				
		Amount (\$ million)		
		IBRD	IDA	Date Approved
Countrywide	Roads		72.11	1 Jun 1961
Bihar	Bihar Rural Roads		35.00	1 Nov 1980
Countrywide	National Highway	200.00		1 May 1985
Gujarat	Gujarat Rural Roads		119.60	1 Feb 1987
Countrywide	State Roads		80.00	1 Oct 1988
Countrywide	State Roads	170.00		1 Oct 1988
Countrywide	Second National Highways	153.00		1 May 1992
Countrywide	Second National Highways		153.00	1 May 1992
Countrywide	State Road Infrastructure Development Technical Assistance		51.50	1 Dec 1996
Andhra Pradesh	State Highways	350.00		1 Jun 1997
Countrywide	Third National Highways	516.00		12 May 2000
Countrywide	Gujarat State Highways	381.00		15 Sep 2000
Countrywide	Grand Trunk Road Development	589.00		21 Jun 2001
Karnataka	Karnataka State Highways Improvement	360.00		24 May 2001
Kerala	Kerala State Transport	255.0		14 Mar 2002
Mizoram	Mizoram State Roads		60.0	14 Mar 2002

A & O = advisory and operational, IBRD = International Bank for Reconstruction and Development, IDA = International Development Association, PP = project preparatory.

POLICY MATRIX

	Issue	Intervention	Impact	Status
1.	Project Selection a. National level Development of concept of strategic through road network b. State level in Madhya Pradesh (MP) and Chhattisgarh(CG) i. Identification of strategic through road network ii. Incorporation of economic viability criterion	<p>Policy dialogue with Ministry of Rural Development (MORD) to identify a core network of rural roads in each district that will be the backbone providing connectivity to all planned link rural roads</p> <p>Implementing agencies in both states adopted criteria to ensure that link roads are developed in conjunction with necessary improvements to through routes serving them</p> <p>Give priority to developing economically viable rural roads</p>	<p>Giving priority to rural roads forming part of this strategic through road network will allow for the optimization of network benefits from the investment in rural roads.</p> <p>Will contribute to development of an efficient network and eliminate the problem of link roads lacking adequate through routes to provide effective improvements in through accessibility</p> <p>Will ensure economic efficiency and sustainability</p>	<p>Incorporated in updated PMGSY guidelines</p> <p>Being undertaken by implementing agencies in both states</p> <p>Incorporated project economic internal rate of return (EIRR) criterion, with provision for accepting EIRR of at least 6% for 15% of annual expenditure to address the difficulty in quantifying all the economic benefits in very poor and remote areas</p>
2.	Financing – National Level Financing of project preparation and supervision activities	Policy dialogue with MORD to allow the use of Pradhan Mantri Gram Sadak Yojana (PMGSY) funds to finance consultancy services for project preparation and supervision	This will encourage more states to use consultants for preparing detailed project reports (DPRs), and for supervising works. This in turn will help increase the professionalism with which DPRs are prepared and project supervision is carried out.	Incorporated in PMGSY guidelines

	Issue	Intervention	Impact	Status
3.	Project Implementation a. National level Formulation of standardized contract documents b. State level (MP and CG) i. Establishment of autonomous rural roads development authority to implement PMGSY ii. Determination of minimum and maximum limits for contract packages c. State level (CG only) Improving project preparation and supervision activities	<p>Policy dialogue with MORD to formulate standardized contract documents for project preparatory consulting services, project construction works, and project supervision consulting services, including the option for states to finance maintenance of roads by the contractor for the first 5 years operations</p> <p>Policy dialogue with government of CG to establish such authority to allow efficient decision making, especially for procurement, and adopt use of consultants and contractors as the main delivery modality</p> <p>Implementing agencies in both states agreed that the contract packages will generally be between \$1 million–3 million equivalent for contracts financed under the Asian Development Bank (ADB) loan</p> <p>Policy dialogue with implementation agency to ensure the use of consulting services for project preparation and supervision activities</p>	<p>Use of standardized documents will help states ensure effective consultancy and contracting implementation arrangements for project preparation, construction, and supervision thus helping ensure the quality of the roads constructed</p> <p>This will improve the efficiency and speed of implementation.</p> <p>This will ensure that contract packages are attractive to qualified contractors without stretching their implementation capacity. This in turn will help ensure effective project delivery on schedule.</p> <p>This will help increase the professionalism with which DPRs are prepared and project supervision is carried out.</p>	<p>MORD has introduced the standard contract documents</p> <p>CG established the CG Rural Roads Development Agency</p> <p>Adopted for the Project</p> <p>Adopted for the Project</p>
4.	Project sustainability a. National level Maintenance planning and financing	<p>Policy dialogue with MORD to require states participating in PMGSY to provide firm undertakings regarding the planning and financing of future maintenance of rural roads network</p>	<p>Adequate planning and financing commitments are necessary for the road assets to be sustainable over their useful economic lives</p>	<p>A loan assurance has been included linking the processing of the next proposed ADB support for PMGSY tentatively scheduled for 2005 to MORD making progress in its dialogue with participating states with regard to making plans, financing arrangements and commitments to properly maintain the PMGSY network.</p>

	Issue	Intervention	Impact	Status
	b. State level (MP and CG) Maintenance plan of action	Policy dialogue with implementing agencies in the states for them to formulate an action plan for the maintenance of roads built under the PMGSY program. The maintenance action plan estimates the annual cost of necessary maintenance, the sources of financing, the institutional arrangements that will be used to carry out maintenance and the institutional capability of the agencies entrusted with the maintenance function.	A fully costed and funded maintenance action plan, that also shows credible institutional arrangements, will help ensure maintenance of the PMGSY roads and thus the sustainability, not just of the roads, but also the poverty reduction benefits arising from the Project	The implementing agencies are in the process of preparing the maintenance plan of action. The government of CG agreed to provide financing from budgetary sources. The government of MP agreed to finance maintenance by earmarking mandi cess revenues. The Project includes consulting services to establish decentralized systems and capacity for road asset management.
5.	Safeguard Policies State level (MP and CG) a. Environment	Policy dialogue with implementing agencies to submit initial environmental examination (IEE) and exclude roads falling within national parks and wildlife sanctuaries from the project scope	This will help ensure that ADB's safeguard policies relating to the environment are adhered to	Incorporated in the Project
	b. Land acquisition and resettlement	Policy dialogue with implementing agencies to submit land acquisition framework and resettlement framework	This will help ensure that ADB's safeguard policies relating to land acquisition and resettlement are adhered to	Incorporated in the Project
6.	Road Safety National and state levels (MP and CG) a. Community-based road safety	Policy dialogue for introducing a community-based road safety program to mitigate road accident risks by raising awareness	This will mitigate the risk of road accidents and establish community initiatives for supporting road safety	Incorporated in the Project
	b. Road safety audit	Policy dialogue for introducing road safety audit within PMGSY to mitigate potential accident risks at the design stage	This will help reduce the risk of building PMGSY roads with design weaknesses that would lead to road accidents	Incorporated in the Project

PROJECT FRAMEWORK

Design Summary	Project Targets	Project Monitoring Mechanisms	Risks/Assumptions
Goal Reduce poverty and deprivation and support economic growth	Reduced rural poverty rate Improved social indicators in rural areas, including for maternal and infant deaths, safe delivery, immunization, postprimary school dropout, primary school teacher attendance Increased incomes for farmers who obtain better prices for produce and diversifying crops Increased employment opportunities Increased rural enterprise development	National/regional socioeconomic data Monitoring study of socio-economic impacts	Other complementary factors needed for poverty reduction and economic growth are in place.
Purpose 1. Provide rural habitations with all-weather road connectivity and reduce associated vehicle operating costs 2. Establish sustainable asset management systems for rural roads 3. Mitigate the risk of road accidents on rural roads	About 1,900 rural habitations with over 500 persons provided with all-weather road connectivity in Chhattisgarh (CG) and Madhya Pradesh (MP) by end-2007 Average vehicle operating costs on project rural roads reduced by about 50% for cars and jeeps, and 40% for buses and trucks Within 2 years of improvement, bus fares and freight rates on project roads to be reduced on average by 10% and 20% respectively in real terms Reduction in average international roughness index for Pradhan Mantri Gram Sadak Yojana (PMGSY) roads in CG and MP from about 16 before improvement to about 4 after improvement Road maintenance budgeting and planning systems introduced for managing maintenance of PMGSY roads in CG and MP by 2006 Annual financial allocation for maintenance of rural roads network to increase between 2004/05 and 2007/08 from \$1 million to \$20 million in CG and from \$2 million to \$8 million in MP	PMGSY monitoring reports State government budgets Annual road condition surveys Project completion report Monitoring study of socio-economic impacts	Quality of civil works and supervision is good. States adopt the asset management systems. States uphold road maintenance financing commitments. Road safety programs influence drivers, pedestrians, and enforcement agencies.

Design Summary	Project Targets	Project Monitoring Mechanisms	Risks/Assumptions
	<p>Road safety audits carried out for all PMGSY roads at design stage by end-2005</p> <p>Reduced vehicle accident rate¹</p> <p>Road safety campaigns in about 400 rural villages in 2005, 1,000 villages in 2006, and 2,200 villages in 2007</p>		
Components/Outputs 1. Construction of PMGSY roads 2. Asset management and capacity building, including road safety	<p>5,500 km of all-weather rural roads in CG and 5,500 km in MP</p> <p>Design and introduction of rural roads maintenance management system in state headquarters and zilla panchayats, together with training programs and capacity building</p> <p>Maintenance contracts for all PMGSY roads in CG and MP covering first 5 years and then at least 5 additional years</p> <p>Road safety programs carried out for all roads to be improved under the Project</p>	<p>PMGSY monitoring reports</p> <p>Quarterly progress reports</p> <p>Civil works contracts</p> <p>Project completion report</p>	<p>Required institutional capacity is established in CG through Chhattisgarh Rural Road Development Agency.</p> <p>Madhya Pradesh Rural Road Development Agency continues to be an effective implementing agency in MP.</p> <p>Consultants and contractors have capacity to carry out works.</p> <p>Zilla panchayats have enough capacity to manage road maintenance at district level.</p> <p>Communities participate in road safety activities.</p>

¹ Specific targets to be developed by 2005 after preparation of road safety baseline data during start-up phase of road safety component.

Design Summary	Project Targets	Project Monitoring Mechanisms	Risks/Assumptions
Activities/Inputs 1. Project implementation consulting services 2. Project management consulting services 3. Civil works 4. Road safety consulting services 5. Capacity building	Start quarter (Q)4 2003, complete Q4 2007 Start Q4 2004, complete Q4 2007 Start Q4 2004, complete Q3 2007 Start Q1 2004, complete Q4 2007 Start Q1 2005, complete Q4 2007	Quarterly progress reports Subproject preparaton studies Periodic review missions	Advance action allow timely start of implementation. Civil works contracts are promptly awarded. Consultants and contractors carry out works on time.
Inputs 1. Land and civil works 2. Consulting services, training, capacity building, and road safety 3. Interest during construction and front-end fee 4. Project financing	\$496.7 million \$34.6 million \$39.7 million Ordinary capital resources loan of \$400 million and government financing of \$171 million equivalent	Quarterly progress reports Subproject preparatory studies Periodic review missions	Local counterpart funds available on time.

TECHNICAL DESCRIPTION AND ESTIMATED COST OF SAMPLE SUBPROJECTS

1. The roads to be constructed or upgraded under the Project are rural roads comprising village roads and other district roads to provide all-weather connectivity to habitations. The project roads will be built along the alignments of the existing earth/gravel roads that are in poor condition. The majority of these roads are impassable for 3-4 months during the wet season. As they presently carry a low volume of traffic—on average less than 50 motorized vehicles per day—and projected traffic for them after 20 years will still be below 1,000, the project roads are classified as low-traffic roads.

A. Design Standards for Project Roads

2. The design criteria adopted are in accordance with the Indian Roads Congress (IRC) publication *Rural Roads Manual* (IRC:SP:20-2002) and other IRC design codes that have been followed by the Prime Minister's Rural Roads Program (PMGSY). The standards are consistent with standard international practices adopted by the American Association of State Highway and Transportation Officials design standards and Transport Research Laboratory Overseas Road Note 31: Guide to the Structural Design of Bitumen-Surfaced Roads in Tropical and Subtropical Countries, and are found appropriate.

3. PMGSY only requires that roads should be negotiable in all kinds of weather. The choice of surfacing takes into account factors such as traffic, soil type, and rainfall. Under the Project, the subprojects must meet an economic internal rate of return threshold to ensure they are economically justified. In many cases, bitumen surfacing will be the most economic option, particularly because (i) the unit construction cost of \$40,000-45,000 per kilometer is low; (ii) under monsoon conditions there are risks that gravel-surfaced roads will be washed away by rains; and (iii) gravel roads require frequent maintenance if they are to realize their potential life, but there are uncertainties about establishing a permanent capacity sufficient for carrying out required activities.

B. General Design Consideration

4. The major improvements on the project roads follow:

- (i) widen the existing roadway to 7.5 meters (m)—efforts will be made to confine widening within the existing right-of-way to minimize adverse environmental and social impacts;
- (ii) provide 3.75 m wide carriageway with granular subbase, waterbound macadam as base, overlaid with bitumen;
- (iii) provide 3.75 m shoulder (1.875 m on each side);
- (iv) raise the embankment to provide a minimum subgrade level of 0.5 m above natural ground level or 0.6 m above highest flood level to meet hydraulic requirements;
- (v) improve horizontal and vertical alignment to allow a design speed of 50 km/h on level terrain; the existing alignment will be followed in most cases to minimize resettlement;

- (vi) provide adequate road safety features through a safety audit;
- (vii) provide proper cross-drainage structures, where necessary, to ensure all-weather connectivity; conduits for future irrigation pipes will be provided;
- (viii) provide road furniture including signs, kilometer posts, etc.; and
- (ix) establish tree plantations along the roads where appropriate.

C. Estimated Cost of Sample Subprojects

5. The project roads are rural roads designed to meet a very low level of traffic volume and minimum all-weather connectivity. The unit cost of existing PMGSY roads is generally low—in the vicinity of \$30,000 per km for projects cleared for implementation in 2000-2003 in Madhya Pradesh and Chhattisgarh. The roads are mostly new construction requiring earthwork.

6. As improved design criteria will be adopted for the subproject, civil works cost under ADB funding is expected to increase. The estimated unit cost per km of the sample subprojects (approximately 500 km in each state) is \$44,200 in Chhattisgarh and \$41,400 in Madhya Pradesh (see Table). The increase in costs is mainly due to increase in cross-drainage works and the quantity of earthwork to meet the requirements of the improved design criteria.

Estimated Unit Costs per km of Sample Subprojects
(\$)

Item	Chhattisgarh	Madhya Pradesh
Road (earthwork, pavement)	36,200	35,500
Cross-drainage works	8,000	5,900
Total Cost	44,200	41,400

SELECTION CRITERIA AND APPROVAL PROCESS FOR SUBPROJECTS

A. Subproject Selection

1. Selection of road connectivity subprojects by the Ministry of Rural Development (MORD) will be subject to Asian Development Bank (ADB) approval. The criteria for selecting subprojects follow:

- (i) Subprojects will cover rural roads that lack an all-weather road connection.
- (ii) Subprojects will be eligible for construction or upgrading in accordance with the Pradhan Mantri Gram Sadak Yojana (PMGSY) guidelines, and be included in the respective district core network.
- (iii) Identification of priority link roads will be based on a ranking using criteria defined in the PMGSY guidelines: (a) provide new connectivity to unconnected habitations with a population greater than 1,000 (500 in the case of scheduled areas as given in the Fifth Schedule to the Constitution of India); and (b) provide new connectivity to unconnected habitations with a population greater than 500 (250 in the case of scheduled areas as given in Fifth Schedule to the Constitution of India).
- (iv) Subprojects will be ranked using an area approach, selecting packages of roads that contain (a) the link road that connects the highest priority habitation; (b) the through road that serves the link road; and (c) other eligible link roads that connect to the through route.
- (v) Subprojects will be technically feasible, and a detailed project report will be prepared.
- (vi) Road safety audit of the subproject will have been conducted and necessary road safety mitigation measures incorporated in the subproject designs.
- (vii) For each selected package of road subprojects [see (iv)], economic analysis will be prepared in accordance with ADB's *Guidelines for the Economic Analysis of Projects* as amended from time to time and the estimated economic internal rate of return (EIRR) of the package will be at least 10-12%, except that each state may assign up to 15% of annual project road construction expenditure to packages in very poor and remote areas on the basis of a weighting of socioeconomic indicators of economic potential, incidence of poverty, and difficulty of access, as acceptable to ADB.
- (viii) Subprojects will be socially sound, and minimize the need for land acquisition, and include measures to mitigate any social impacts they will cause.
- (ix) An initial social assessment (ISA) for the subproject will have been prepared in accordance with ADB's *Handbook on Poverty and Social Analysis*, as amended from time to time.
- (x) If a subproject involves any land acquisition, it will be included in a land acquisition plan (LAP) to be prepared following the measures set forth in the land acquisition framework (LAF) prepared in accordance with ADB's *Policy on Involuntary Resettlement*, 1995, as amended from time to time, and submitted to ADB for review and approval before civil works contracts are awarded.
- (xi) If any indigenous peoples/scheduled tribes are likely to be significantly affected by a subproject, an indigenous people's development plan (IPDP) following the measures set forth in the IPDP framework will be prepared in accordance with

ADB's *Policy on Indigenous Peoples*, 1998, as amended from time to time, and submitted to ADB for review and approval before civil works contracts are awarded.

- (xii) Subprojects will be environmentally sound, and none will be located within an environmentally sensitive area, such as a wildlife sanctuary, national parks, or other area having significant ecological functions.
- (xiii) An initial environmental examination (IEE) report will have been prepared in accordance with ADB's *Environmental Assessment Guidelines*, 2003, as amended from time to time.
- (xiv) Sufficient government counterpart funding will be allocated by the Government or state governments, as required to implement the subproject as scheduled.
- (xv) All necessary central and state government approvals will have been obtained.

B. Approval Process for Subprojects

2. All subprojects must comply with ADB's policies and guidelines, and satisfy ADB's procedures for subproject preparation, including the technical, operational, environmental, social, and resettlement dimensions. In respect of the sample subprojects, these requirements were met during project preparation. For additional subprojects the requirement will be met during project implementation.

3. Two months before starting procurement action for the additional subprojects for inclusion in the second, third, and fourth annual batches, the implementing agencies (IAs) through MORD will submit to ADB for approval a report providing details of the compliance of each proposed subproject in the batch with the selection criteria (para. 1). The approval process for each batch of additional subprojects will be as follows:

- (i) With the assistance of project implementation consultants (PICs), the IA prepares a consolidated report indicating the compliance of each proposed subproject with the selection criteria, including an overall IEE for all subprojects, which will focus on any environmental problems identified and mitigation required, and including an ISA, LAP, and, if necessary, IPDP for each area.¹
- (ii) With the assistance of the project management consultant (PMC), the National Rural Roads Development Agency (NRRDA) of MORD as per PMGSY Guidelines, screens the report, arranges for any refinements to meet ADB requirements, and prepares a summary checklist summarizing the eligibility, preparation status, and safeguard compliance of each subproject.
- (iii) Subject to addressing any modification as required under clause (iv) above, the IA submits the report and checklist through MORD to ADB for approval.
- (iv) The ADB approves the proposed subprojects, subject to any further modifications required.
- (v) Subject to addressing any modification as required under clause (iv) above, the IA proceeds with procurement for the subprojects approved by ADB.

¹ Each PIC will be responsible for providing the IA with a report covering the districts under its responsibility, including an IEE, ISA, LAP, and, if necessary, IPDP. The IA will then prepare a consolidated report for all subprojects in the state, including a consolidated IEE, ISA, LAP, and, if necessary, IPDP.

COST ESTIMATES AND FINANCING PLAN

(\$ million)

Item	Foreign Exchange	Local Currency	Total	Foreign Exchange (%)	ADB	Govt
1. Land Acquisition and Resettlement						
a. Madhya Pradesh	0.00	4.80	4.80	0	0.00	4.80
b. Chhattisgarh	0.00	4.80	4.80	0	0.00	4.80
Subtotal	0.00	9.60	9.60	0	0.00	9.60
2. Civil Works						
a. Madhya Pradesh	109.85	133.95	243.55	45	184.00	59.55
b. Chhattisgarh	109.85	133.95	243.55	45	184.00	59.55
Subtotal	219.20	267.90	487.10	45	368.00	119.10
3. Consulting Services						
a. Implementarion Consulting Services ^a						
i. Madhya Pradesh	3.30	10.10	13.40	25	13.40	0.00
ii. Chhattisgarh	3.30	9.70	13.00	25	13.00	0.00
Subtotal	6.60	19.80	26.40	25	26.40	0.00
b. Project Management and Monitoring ^b	2.50	1.20	3.70	68	3.70	0.00
c. Road Safety Consultant ^c	0.00	0.20	0.20	0	0.00	0.20
Subtotal	9.10	21.20	30.30	30	30.10	0.20
4. Capacity Building	1.10	0.80	1.90	58	1.90	0.00
5. Community Road Safety Program ^d						
a. Madhya Pradesh	0.00	0.70	0.70	0	0.00	0.70
b. Chhattisgarh	0.00	0.70	0.70	0	0.00	0.70
Subtotal	0.00	1.40	1.40	0	0.00	1.40
6. Incremental Administration	0.00	1.00	1.00	0	0.00	1.00
Total Baseline Costs	229.40	301.90	531.30	43	400.00	131.30
Front-End Fee	2.00	0.00	2.00	100	0.00	2.00
IDC and Commitment Fees	37.70	0.00	37.70	100	0.00	37.70
Total Project Cost ^e	269.10	301.90	571.00	47	400.00	171.00

IDC = interest during construction.

^a Including (i) project implementation consultants, and (ii) independent monitoring of land acquisition.

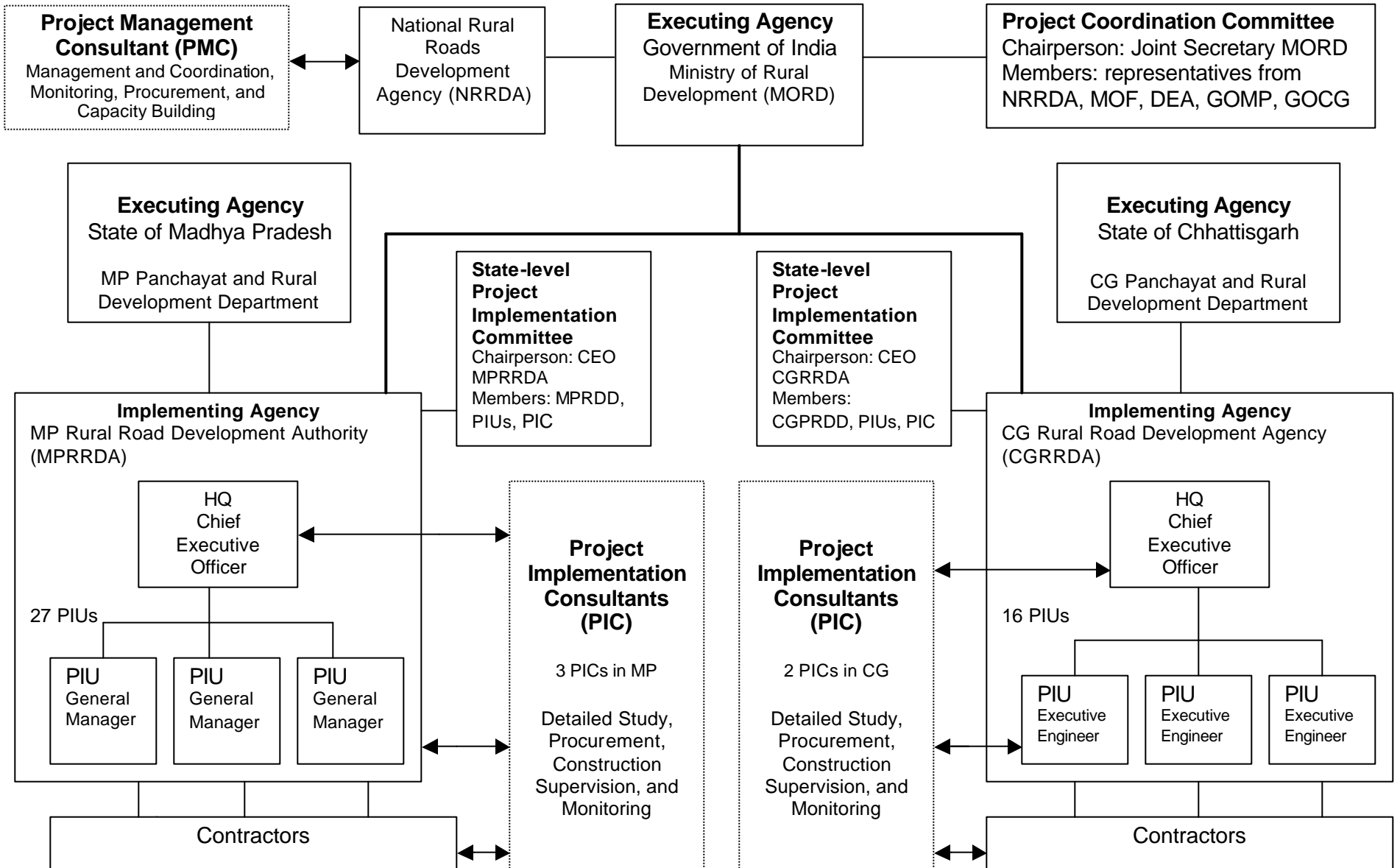
^b Including (i) project management consultant, and (ii) performance audit.

^c Covering road safety audit and support for community road safety program (item 5).

^d Covering program delivery by state government.

^e Including taxes and duties.

IMPLEMENTATION ARRANGEMENTS



CEO = chief executive office, PIU = project implementation unit.

IMPLEMENTATION SCHEDULE

Project Component	2003				2004				2005				2006				2007			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Consulting Services																				
Project Management Consultant																				
Consultant Selection																				
Consulting Services																				
Project Implementation Consultants																				
Consultant Selection																				
Consulting Services																				
Civil Works																				
Batch I																				
Subproject Preparation																				
Contract Procurement																				
Contract Works																				
Batch II																				
Subproject Preparation																				
Contract Procurement																				
Contract Works																				
Batch III																				
Subproject Preparation																				
Contract Procurement																				
Contract Works																				
Batch IV																				
Subproject Preparation																				
Contract Procurement																				
Contract Works																				

SUMMARY ECONOMIC AND DISTRIBUTION ANALYSES

A. Introduction

1. The Project involves improving about 11,000 kilometers (km) of village and other district roads, of which about 5,500 km will be in Chhattisgarh (CG) and 5,500 km in Madhya Pradesh (MP). Under the Project, road subprojects, which will typically be about 3-8 km long, will be selected and implemented in clusters of adjacent roads within districts. Due to the sector lending approach, a sample of about 1,000 km was selected for detailed preparation before Board consideration, with the remaining 10,000 km to be similarly prepared during project implementation. The economic analysis examined 794 km of sample subprojects comprising 375 km in CG and 419 km in MP, equivalent to about 7% of the total roads to be built under the Project.

2. In the economic evaluation, the without-project case represents the current situation whereby villages are served by rudimentary earth roads. The with-project case represents improvement to all-weather standard. Road improvement will reduce operating costs, leading to increased economic activity and growth in traffic. The economic internal rate of return (EIRR) compared the annual streams of economic capital and operating costs and benefits. All costs, benefits, and revenues were expressed in 2003 constant prices. The analysis period is for the construction period followed by 20 years of operation. The detailed assumptions for the economic analysis and distribution analysis are in Supplementary Appendix I.

B. Economic Analysis

1. Traffic Volumes and Traffic Forecasts

3. Classified traffic counts for the project roads in 2002 were obtained from the two state governments. Field surveys and traffic surveys were carried out in 2003 to verify the traffic count, and convert them to an annual average daily traffic (ADT) basis. The traffic counts were separated into motorized traffic (cars/utility, buses, trucks, tractors, and motorcycles) and nonmotorized traffic (bicycles and animal-drawn vehicles). Traffic volumes on most subproject roads averaged around 100 vehicles per day, of which about 40-50% were motorized and 50-60% nonmotorized.

4. Different traffic categories were distinguished for forecasting purposes: (i) normal traffic, (ii) generated traffic, and (iii) induced traffic. Normal traffic is traffic that would use the sample subproject roads irrespective of whether they are improved. Generated traffic is traffic that did not use the road before improvement but will be attracted after improvement due to the reduction in travel cost or in travel time. Induced traffic is additional traffic caused by growth in local economic development as a result of road improvement.

5. For normal traffic, the forecast growth rates for freight traffic were based on analysis of gross domestic product and the income elasticity of transport demand. Forecast growth of passenger traffic was based on the population growth rate, per capita income growth, and the income elasticity of transport demand. The adopted traffic growth rates varied between 4% and 9% per annum depending on vehicle type. Based on the average vehicle composition for the total sample of subproject roads, the forecast overall growth rate was approximately 7% for 2003-2010 and 6.3% beyond 2010.

6. Generated and induced traffic were considered for motorized vehicles only. Both traffic types will be attracted to the improved subproject roads. Generated traffic was estimated using the price elasticity of demand.¹ In the first year after improvement, generated traffic was estimated at 30-60% of normal traffic, depending on vehicle type and the respective price elasticity of demand. To assess the induced traffic potential of the subproject roads, traffic surveys were conducted for 30 similar rural road improvements in CG and MP that had been completed and has been opened to traffic for 1-2 years. The actual traffic in the opening years was compared with what would be expected on the basis of the original traffic before improvement, normal traffic growth, and estimated generated traffic. Sudden jumps in traffic volumes were observed, to the extent that actual traffic was often more than 150% greater than forecast normal traffic. A conservative estimate for induced traffic assumed that this would eventually equal 100% of base year traffic, but would be phased in over the first 5 years operations, since changes in economic development in the areas served by subproject roads will be gradual.

2. Costs

7. The economic costs of the subprojects were derived from the financial costs. They include construction and maintenance costs, and exclude price contingencies, taxes, duties, and interest during construction. A standard conversion factor of 0.90 was applied to financial costs of nontraded inputs to calculate economic prices. A shadow wage rate factor (SWRF) of 0.7 was used to obtain the economic costs of unskilled labor. The subprojects were expected to have an average economic life of 20 years.

3. Benefits

8. The major economic benefits of the Project were quantified in terms of (i) vehicle operating cost savings arising from the improved road surface, (ii) time savings due to reduced journey time on improved roads, and (iii) savings in the marketable surplus of agricultural products due to reduction in spoilage of goods traveling along the project roads.

9. Benefits for normal, generated, and induced traffic were estimated using the Roads Economic Decision model for economic evaluation of low-volume roads. The model predicts pavement deterioration and estimates yearly vehicle operating costs over the life of the investment. The model also calculates the time savings attributable to each vehicle type. The benefits to generated and induced traffic were calculated by assuming that the demand curve is linear with respect to cost, and the benefit per unit of traffic is half that of normal traffic.

4. Economic Internal Rate of Return

10. The economic evaluation discounted the stream of costs and benefits over 2004-2024, valued in 2003 prices. The EIRR was calculated for each district cluster of sample subprojects, based on estimates for individual sample subprojects, and for the sample subprojects as a whole. The EIRR for the sample subprojects as a whole was 26.6%. The EIRRs for district clusters of subprojects and for the sample subprojects as a whole, are summarized in Table A11.1.

¹ At a price elasticity of demand of one, a 10% decrease in transport cost will give rise to a 10% increase in traffic.

Table A11.1: Summary of Net Present Value and Economic Internal Rate of Return for the Sample Subproject Roads

State	District	Number of Roads	Length (km)	NPV (Rs Million)	EIRR (%)
Madhya Pradesh	Betul	10	44.95	48.96	19.1
	Bhopal	7	24.18	38.47	21.3
	Guna	10	48.60	27.08	15.6
	Jhabua	12	54.11	144.16	30.1
	Morena	6	50.68	94.65	23.6
	Sehore	4	26.29	30.27	20.0
	Seoni	14	60.38	323.59	46.9
	Sidi	4	50.41	128.37	25.1
	Ujjain	10	59.19	10.02	13.0
State Total		77	418.79	845.57	24.3
Chhattisgarh	Bastar	4	44.57	74.36	25.9
	Bilaspur	8	28.51	13.62	15.0
	Durg	8	44.65	182.19	31.0
	Kawardaha	5	31.30	135.19	35.8
	Korba	7	29.95	46.38	21.3
	Mahasamund	5	60.50	118.36	21.1
	Raigarh	6	44.94	113.85	28.4
	Raipur	4	32.90	107.68	30.3
	Rajnandgaon	2	28.00	97.93	33.4
	Sarguja	5	30.13	241.62	60.9
State Total		54	375.45	1,131.18	29.0
Overall Total		131	794.24	1,976.75	26.6

Source: TA 3914-IND, *Rural Road Sector Development Project*.

5. Sensitivity and Risk Analysis

11. The sensitivity of the EIRR for the total sample subprojects was analyzed with respect to changes in the benefit and cost streams. The sensitivity tests covered (i) a construction cost increase of 20%, (ii) benefits reduced by 20%, (iii) a reduction in traffic growth rates by 50%, (iv) exclusion of generated traffic benefits, (v) exclusion of time savings benefits, (vi) combination of a 20% increase in capital costs and 20% reduction of benefits, and (vii) a 20% reduction of benefits and exclusion of generated traffic and time savings benefits.

12. Table A11.2 below summarizes the EIRR for the base case and the sensitivity tests. The base case EIRR for the sample subprojects as a whole was 26.6%. The EIRR remains above the opportunity cost of capital of 12% in each of the sensitivity tests. Sensitivity tests for the district clusters of subprojects and for selected individual subprojects are shown in Supplementary Appendix I. The results indicate that the EIRRs for clusters of subprojects and for individual subprojects are robust under adverse scenarios.

Table A11.2: Sensitivity Test for Total Sample of Subproject Roads

Scenario	EIRR (%)
Base Case	26.6
Sensitivity Tests	
(i) Capital Cost 20% Higher	22.7
(ii) Benefits 20% Lower	21.4
(iii) Traffic Growth 50% Lower	22.8
(iv) No Generated Traffic Benefits	22.7
(v) No Time Savings Benefits	25.6
(vi) Capital Cost 20% Higher, Benefits 20% Lower	18.1
(vii) Benefits 20% Lower, No Time or Generated Benefits	17.0

EIRR = economic internal rate of return.

Source: TA No. 3914-IND, *Rural Road Sector Development Project*, ADB staff estimates.

13. Risk analysis was also undertaken for the total sample of subproject roads. The economic analysis model performed the risk analysis based on triangular probability distributions for the main input parameters. This enables analysis to be made based on the uncertainty present in the estimates of the input parameters to generate results that show all possible outcomes. Risk analysis was undertaken for the total sample of subproject roads² by running a simulation in which possible values of the variables were randomly sampled 1,000 times using a Monte Carlo nonstratified technique. The results are summarized in Table A11.3. Under the tests conducted there is only a 3.8% probability that the EIRR will fall below 12%.

Table A11.3: Risk Analysis for Total Sample of Subprojects

Scenario	(%)
Base EIRR	26.6
Probability of EIRR less than 12%	3.8
Minimum EIRR estimate	5.1
Maximum EIRR estimate	64.6
Median EIRR estimate	25.1

C. Distribution Analysis and Poverty Impact Ratio

14. Distribution analysis was used to disaggregate the estimated economic benefits among passenger and freight users, vehicle owners/operators, labor,³ and the government. The assessment of the poverty impact ratio (PIR) examined how much each of the different stakeholders would benefit from the project, and what proportion for each group of stakeholders is poor. The starting point was to estimate the share of benefits accruing to each category of vehicles, including passenger and freight vehicles as well as nonmotorized traffic. It was necessary to identify not only the beneficiaries (owners/operators, road users, etc.) but also the proportion of each beneficiary category that is poor. It was also necessary to estimate (i) how

² Additionally, individual road subprojects were also analyzed and results are detailed in Supplementary Appendix I.

³ As some of subproject capital expenditure and maintenance costs will be spent on local labor, unskilled laborers will gain net benefits to the extent that their paid wages are higher than their opportunity cost of labor (reflected in the SWRF).

much of the benefits for each vehicle category in the analysis will be passed on to the user of the vehicle, and (ii) the ownership of each vehicle category. For this purpose, field surveys were undertaken of passengers, drivers, and farmers in sample subproject districts in CG and MP. From these surveys a series of assumptions were developed regarding benefits that will be passed on to users of transport services. Distribution analysis was used to estimate a poverty impact ratio (PIR) based on assumptions of how much of the benefits to each class of user will be passed on to the poor. The assumptions were made from the information collected in field surveys and other relevant data. The assumptions are described in Supplementary Appendix I.

15. Table A11.4 shows the distribution of benefits for the total sample of subproject roads in present value terms, using a discount rate of 12%, and the calculation of the PIR. The estimated PIR was 1.32, indicating that the total net economic benefits reaching the poor will exceed the overall total net economic benefits.⁴ This indicates that the Project is highly pro-poor.

Table A11.4: Distribution of Net Benefits (Rs million) and Estimation of Poverty Impact Ratio

Item	Financial Present Value	Economic Present Value	Economic Less Financial	Passenger Users	Freight Users	Vehicle Owners	Labor	Govt/ Economy	Net
Benefits									
Road User Benefits	0	3,822.14	3,822.14	1,063.37	376.52	2,292.19		90.06	
Cost									
Capital Cost	(1,694.40)	(1,491.88)	202.52					202.52	
O&M	(322.98)	(280.99)	41.99					41.99	
Labor	(103.60)	(72.51)	31.09				31.09		
Net Present Value	(2,120.98)	1,976.76	4,097.74	1,063.37	376.52	2,292.19	31.09	334.57	
		Gains and Losses		1,063.37	376.52	2,292.19	31.09	(1,786.41)	1,976.76
		Proportion of the Poor (%)		80	50	75	80	10	
		Net Benefits for the Poor		850.69	186.26	1,719.14	24.87	(178.64)	2,604.33
Poverty Impact Ratio									1.32

Note: The net loss to the government/economy of negative 1,786.41 is calculated as the sum of negative 2,120.98 and +334.57.

Source: TA 3914-IND, *Rural Road Sector Development Project*; ADB staff estimates.

16. A sensitivity analysis of the PIR was prepared to test the impact of changes in key assumptions. The sensitivity tests were (i) a 50% increase in competition, and (ii) a 50% decrease in competition. The results are in Table A11.5. The PIR remains highly pro-poor even with reduced competition. If competition were to increase, the PIR would improve further.

Table A11.5: Sensitivity Analysis of Poverty Impact Ratio

Scenario	Total Sample of Subprojects
Base Case Poverty Impact Ratio	1.32
50% Increase in Competition	1.34
50% Reduction in Competition	1.29

Source: Distribution analysis.

⁴ The poor will receive most of the gross economic benefits, but contribute only a small share of gross investment costs.

SUMMARY ANALYSIS OF SOCIOECONOMIC AND POVERTY IMPACT

A. Linkage to the Country Poverty Analysis

Sector identified as national priority in country poverty analysis	Yes	Sector identified as a national priority in the Country partnership agreement	Yes
Contribution of the sector/subsector to reduce poverty in the states of Madhya Pradesh (MP) and Chhattisgarh (CG), India:			
<p>The proposed Rural Roads Sector I Project aims to reduce poverty by encouraging human development and economic growth through the provision of 5,500 kilometers (km) of all-weather road connectivity in MP and 5,500 km in CG, which will directly benefit 5.2 million rural villagers in MP and CG. The Project is part of the Pradhan Mantri Gram Sadak Yojana (PMGSY), a national program also known as the Prime Minister's Rural Roads Project. PMGSY, which began in 2001, aims to reduce poverty in rural areas by providing all-weather connectivity to habitations with a population of 1,000 or more by 2003, and to habitations with 500 or more by 2007. A special provision is to include settlements with populations over 250 people in hilly, desert, and tribal areas. The roads range from 1 to 22 km and will link previously isolated villages to provincial, state, and national road networks.</p> <p>Project areas are currently isolated for up to 4 months during monsoon season. The situation contributes to poverty by reducing access to social services—notably health and education—veterinary and agricultural support services, markets, and various affirmative action programs for disadvantaged groups. Where all-weather connectivity is provided, all socioeconomic groups benefit. Studies comparing completed PMGSY roads with unimproved roads (control sample) provide indications of the benefits the Project will bring to the rural population in the project area.</p> <p><i>Agricultural diversification</i> has rapidly followed the provision of all-weather roads to district markets, potentially increasing the incomes of farmers in all income groups. Milk and vegetable production can potentially increase annual incomes of marginal farmers by Rs4,000-8,000 a year, of small farmers by Rs20,000 or more, and of farmers with medium-size or large holdings by Rs50,000 or more. Increased nonagricultural investment mainly by the non-poor, occurred in enterprises ranging from small shops and service businesses to transport enterprises.</p> <p><i>Social service delivery, access, and social status of the villages</i> have improved, with increased attendance by teachers and health personnel, and more frequent supplies for various government poverty relief programs. Access to social services beyond the village improved because improved transportation services made distant services accessible on a daily, year-round basis. Attendance at middle and high schools outside the village increased. All groups, including the poorest, commented on the benefit that the upgrading had on increasing the social status of the village and the families living there.</p> <p><i>Gender Impacts:</i> Improved connectivity and transportation improved the conditions and opportunities for raising the social, educational, and health status of girls and women, and preconditions for safe motherhood. In one village it was recorded that more girls were being sent to high school outside the village when transport services improved. Women also benefited from more frequent contact with their families in distant locations.</p> <p><i>Poverty Impacts:</i> Control studies (conducted close to project locations during project preparation) of communities provided with upgraded all-weather roads in recent years confirmed that the Project will decrease poverty by removing economic and social development barriers created by isolation. The studies showed that in both states quality and frequency of service delivery within the villages improved and access to social services beyond the village—including health, education, finance, veterinary and agricultural support services—and various</p>			

poverty relief and affirmative action programs for disadvantaged groups became available on a daily, year-round basis. Attendance at middle and high schools outside the village increased, particularly among girls, who were permitted, in increasing numbers, to continue education beyond the primary level when transport became available. The social status of the village and the families who lived there improved. Improved transport services and traveling conditions increased opportunities for those dependent on wage labor to seek employment in nearby towns, and more opportunities to commute between the workplace and village. Some landless households benefited from new opportunities to make small investments such as raising cows and operating roadside stalls.

The studies showed that economic diversification occurs rapidly following the provision of all-weather road access to district markets, increasing the incomes of farmers in all income groups. Production and marketing of high-value perishable products such as milk and vegetables became possible on a commercial basis, thus potentially increasing annual incomes of marginal farmers by Rs15,000 a year or more, of small farmers by Rs20,000 or more, and farmers with medium-size or large holdings by Rs50,000 or more. Landless laborers reported that improved connectivity increased opportunities to access higher-paid, nonagricultural work, and enabled many laborers to commute instead of live in squatter camps far from their homes. The landless poor also increased their incomes by making small investments such as raising cows and operating roadside stalls. Overall, connectivity increased investments in nonagricultural micro-enterprises and larger investments in transport services. Communities with all-weather road access are more likely to attract assistance from existing and proposed district poverty reduction projects.

B. Poverty Analysis

Poverty Intervention

The *Madhya Pradesh Human Development Report* (1998), which was compiled before the division of MP in 2000 to create the new state of CG, ranks MP (including CG) 15th out of 16 major states in terms of human development indices.¹ An ADB study of poverty data nationwide ranks MP 7th out of 16 major states on the basis of rural poverty head count statistics.² The latest state government data for MP show that 37.4% of the state population and 37.6% of the rural population were living below the poverty line in 1999-2000, compared with national averages of 26% and 27.1%, respectively.

On the basis of poverty-line data, the rural population of these states rank among the seven poorest states in India.³ The estimated proportion of families living below the poverty line in the district project areas is 49-76% in MP and 50-58% in CG, which is considerably higher than the 1999-2000 state average for MP of 32.28%.⁴ The Project will be assisting people living in isolated and remote areas where economic opportunities and services are scarce. The project preparatory studies indicate poverty rates in these areas are well above the rural averages for MP and CG. On the MP deprivation index, the districts range from 0.389 in peri-urban Bhopal to 0.533 in rural Guna.⁵ Major factors underlying poverty in the project areas are (i) physical isolation and lack of transport connectivity, as well as (ii) landlessness; (iii) uneconomic size of landholding; (iv) effects of drought and lack of access to irrigation; and (iv) social exclusion due to low caste or tribal status. Rural poverty is generally associated with deprivation of assets,

¹ Madhya Pradesh Human Development Report 1998. Government of Madhya Pradesh. p. 96.

² K. Sunararam and Suresh D. Tendulkar. 2000. *Poverty in India: An Assessment and Analysis and Implications for Country Strategy and Program in India. An Update*. Asian Development Bank.

³ Ibid. Table 3: Percent of Rural Population of India below Poverty Line by State, 1983-2000. p. 22.

⁴ District Poverty Initiative Project (DPIP) Baseline State Report, Madhya Pradesh. 2001. DPIP data provided by MORD, Chattisgarh. These figures are based on household income and expenditure surveys, number of people entitled to ration cards, special poverty studies for DPIP in MP, and 1999 census data and state total in Sunararam and Tendulkar. Table 3: Percent of Rural Population of India below Poverty Line by State 1983-2000. p. 22.

⁵ Latest available figures from Madhya Pradesh Human Development Index 1998.

landlessness, or uneconomic size of landholdings, illiteracy, vulnerability, low income and consumption manifested by relatively lower health and nutritional status, and in many areas with the effects of drought and lack of access to irrigation. The social and economic inequality of men and women is a further dimension of poverty, one that is more pronounced in rural Madhya Pradesh. Women's economic and educational opportunities are restricted by early marriage and seclusion or restricted mobility. Codes of female propriety outweigh the considerations of efficiency and productivity, so even poor men use bicycles to transport fuel, milk and other goods, but all women (except for those who can afford to remain secluded in their homes) must walk, and carry water and fuel and fodder on their heads.

C. Participation Process

During project preparation, participatory consultations were conducted with all stakeholders in all project locations. The project beneficiaries were unanimous in their desire for the project to proceed, and keenly aware of its prospective benefits to them. The Project is featured in and complements the development plans of both states to reduce poverty, including their DPIPs,⁶ improve the quality of life of the rural poor, and increase rural productivity. Nongovernment organizations will be involved in monitoring the implementation of land acquisition and resettlement plan.

D. Potential Issues

Issues	Significant/ Non-significant/ none	Strategy to Address Issues	Output
Land acquisition and resettlement	Significant	No resettlement is required but a land acquisition plan (LAP) has been prepared for sample subprojects and a land acquisition framework (LAF) for additional subprojects. The executing agency (EA) will ensure that adequate compensation is paid to the affected persons at the market rate or the circle rate, whichever is higher. Internal monitoring by the EA will ensure that all activities are implemented as planned.	LAP, LAF
Gender	Non-significant	The Project will provide both men and women with improved income and employment opportunities. It will offer special benefits to women by increasing girls' access to middle and higher education, and women and children's access health care and related social services. Benefits to women were more evident in CG because mobility is the norm for tribal women and girls in this state, many of whom ride bicycles. There are also fewer cultural constraints to the mobility of women in caste communities.	No

⁶ District Poverty Initiative Projects (DPIP) assisted by the World Bank.

Affordability	None	There will be no affordability issues as no road user fees or taxes will be levied on the beneficiaries, other than taxes on the purchase of motorized vehicles, which will not affect the poor.	No
Labor	None	Labor opportunities arise only during the construction phase, which offer opportunities for employment of men and women at minimum wage rates (which are higher than prevailing agricultural wages). The EA expressed commitment to ensuring that the minimum wage would be paid to labor on project sites.	No
Indigenous People	Non-significant	In MP only a small, assimilated minority of indigenous peoples (IP) live in the project areas. In CG IP are the majority of beneficiaries in four locations and a large minority in three other localities. In all these areas there are existing gravel roads of reasonable quality under dry season conditions, and so IP living on these stretches tend to be culturally integrated with non-IP and are better served economically and socially than IP living isolated in localities with no roads. Surveys undertaken for project preparation did not indicate differential impacts, either positive or negative between IP and non-IP in project locations. Complementary development activities for MP and CG have been covered under the World Bank project of DPIIP.	IPDF
Other risks/ vulnerability	Non-significant	The EA should ensure road safety measures in project locations where the road will pass through a number of villages on each stretch. The measures should include road signs indicating low speed limits, and police and citizen awareness activities.	None