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The Independent Evaluation Group

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PROJECT PERFORMANCE ASSESSMENT REPORT

India

GUJARAT STATE HIGHWAY PROJECT (IBRD-45770)

KARNATAKA STATE HIGHWAYS IMPROVEMENT PROJECT (IBRD-46060)

And

ASSESSMENT OF ANALYTIC AND ADVISORY ACTIVITY

INDIA ROAD TRANSPORT SERVICE EFFICIENCY STUDY (P075079)

June 28, 2012

IEG Public Sector Evaluation
Independent Evaluation Group

Currency Equivalents (annual averages)

Currency Unit = Indian Rupee (INR)

1995	US$1.00	Rs.32.43
1996	US$1.00	Rs.35.43
1997	US$1.00	Rs.36.31
1998	US$1.00	Rs.41.26
1999	US$1.00	Rs.43.06
2000	US$1.00	Rs.44.94
2001	US$1.00	Rs.47.19
2002	US$1.00	Rs.48.61
2003	US$1.00	Rs.46.58
2004	US$1.00	Rs.45.32
2005	US$1.00	Rs.44.10
2006	US$1.00	Rs.45.31
2007	US$1.00	Rs.41.35
2008	US$1.00	Rs.43.51
2009	US$1.00	Rs.48.41
2010	US$1.00	Rs.44.72
2011	US$1.00	Rs.53.01 (as of December 2011)

Abbreviations and Acronyms

EMU	Environmental Management Unit
ERR	Economic Rate of Return
FIDIC	Fédération Internationale des Ingénieurs-Conseils
FY	Fiscal Year
GDP	Gross Domestic Product
GOG	Government of Gujarat
GOI	Government of India
GOK	Government of Karnataka
GSHP	Gujarat State Highway Project
ICR	Implementation Completion and Results Report
IDS	Institutional Development Strengthening
INR	Indian Rupees
IRI	International Roughness Index
KPWD	Karnataka Public Works Department
KRDCL	Karnataka Road Development Corporation Ltd
KSHIP	Karnataka State Highways Improvement Project
M&E	Monitoring and Evaluation
MDR	Major District Roads
NGO	Non Governmental Organization
NH	National Highway
O&M	Operation and Maintenance
PAD	Project Appraisal Document
PPP	Public-Private Partnership
R&BD	Roads and Buildings Department
R&R	Resettlement and Rehabilitation
SH	State Highway
TA	Technical Assistance

Fiscal Year

Government: April 1—March 31

Director-General, Independent Evaluation	:	Ms. Caroline Heider
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Contents

This report was prepared by Ramachandra Jammi, who assessed the project in November 2011. The report was peer reviewed by John Riverson and panel reviewed by Peter Freeman. Romayne Pereira provided administrative support. Murahari Reddy, Consultant, joined the Karnataka portion of the mission.

Boxes

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Principal Ratings

Gujarat State Highway Project (IBRD-45770)

Evaluation Criteria	*ICR**	*ICR Review**	*PPAR*
Outcome	Highly Satisfactory	Highly Satisfactory	Highly Satisfactory
Risk to Development Outcome	Negligible to Low	Negligible to Low	Negligible to Low
Bank Performance	Satisfactory	Satisfactory	Satisfactory
Borrower Performance	Highly Satisfactory	Highly Satisfactory	Highly Satisfactory

Karnataka State Highways Improvement Project (IBRD-46060)

Evaluation Criteria	*ICR**	*ICR Review**	*PPAR*
Outcome	Satisfactory	Satisfactory	Moderately Satisfactory
Risk to Development Outcome	Moderate	Moderate	Moderate
Bank Performance	Satisfactory	Satisfactory	Moderately Satisfactory
Borrower Performance	Satisfactory	Satisfactory	Moderately Satisfactory

Road Transport Service Efficiency Study (P075079) – Analytical and Advisory Activity

Evaluation Criteria	*Rating*
Results	Moderately Satisfactory
Relevance	Moderately Satisfactory
Quality	Satisfactory
Dialogue	Moderately Satisfactory

* The Implementation Completion and Results Report (ICR) is a self-evaluation by the responsible Bank department. The ICR Review is an intermediate IEG product that seeks to independently verify the findings of the ICR.

Key Staff Responsible

Gujarat State Highway Project (IBRD-45770)

Project	*Task Manager/Leader*	*Division Chief/ Sector Director*	*Country Director*
Appraisal	Guang Z. Chen	Vincent Gouarne	Edwin R. Lim
Completion	Alok N. Bansal	G. George Tharakan (Acting)	Isabel M. Guerrero

Karnataka State Highways Improvement Project (IBRD-46060)

Project	*Task Manager/Leader*	*Division Chief/ Sector Director*	*Country Director*
Appraisal	Fabio Galli	Jonathan Kamkwalala	Edwin R. Lim
Completion	Ke Fang	G. George Tharakan (Acting)	Isabel M. Guerrero

Road Transport Service Efficiency Study (P075079)

Project	*Task Manager/Leader*	*Division Chief/ Sector Director*	*Country Director*
Appraisal	Zhi Liu	Guang Z. Chen	Michael F. Carter
Completion	G. George Tharakan	Guang Z. Chen	Michael F. Carter

IEG Mission: Improving World Bank Group development results through excellence in evaluation.

About this Report

The Independent Evaluation Group assesses the programs and activities of the World Bank for two purposes: first, to ensure the integrity of the Bank's self-evaluation process and to verify that the Bank's work is producing the expected results, and second, to help develop improved directions, policies, and procedures through the dissemination of lessons drawn from experience. As part of this work, IEG annually assesses 20-25 percent of the Bank's lending operations through field work. In selecting operations for assessment, preference is given to those that are innovative, large, or complex; those that are relevant to upcoming studies or country evaluations; those for which Executive Directors or Bank management have requested assessments; and those that are likely to generate important lessons.

To prepare a Project Performance Assessment Report (PPAR), IEG staff examine project files and other documents, visit the borrowing country to discuss the operation with the government, and other in-country stakeholders, and interview Bank staff and other donor agency staff both at headquarters and in local offices as appropriate.

Each PPAR is subject to internal IEG peer review, Panel review, and management approval. Once cleared internally, the PPAR is commented on by the responsible Bank department. The PPAR is also sent to the borrower for review. IEG incorporates both Bank and borrower comments as appropriate, and the borrowers' comments are attached to the document that is sent to the Bank's Board of Executive Directors. After an assessment report has been sent to the Board, it is disclosed to the public.

About the IEG Rating System for Public Sector Evaluations

IEG's use of multiple evaluation methods offers both rigor and a necessary level of flexibility to adapt to lending instrument, project design, or sectoral approach. IEG evaluators all apply the same basic method to arrive at their project ratings. Following is the definition and rating scale used for each evaluation criterion (additional information is available on the IEG website: http://worldbank.org/ieg).

Outcome: The extent to which the operation's major relevant objectives were achieved, or are expected to be achieved, efficiently. The rating has three dimensions: relevance, efficacy, and efficiency. *Relevance* includes relevance of objectives and relevance of design. Relevance of objectives is the extent to which the project's objectives are consistent with the country's current development priorities and with current Bank country and sectoral assistance strategies and corporate goals (expressed in Poverty Reduction Strategy Papers, Country Assistance Strategies, Sector Strategy Papers, Operational Policies). Relevance of design is the extent to which the project's design is consistent with the stated objectives. *Efficacy* is the extent to which the project's objectives were achieved, or are expected to be achieved, taking into account their relative importance. *Efficiency* is the extent to which the project achieved, or is expected to achieve, a return higher than the opportunity cost of capital and benefits at least cost compared to alternatives. The efficiency dimension generally is not applied to adjustment operations. *Possible ratings for Outcome:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

Risk to Development Outcome: The risk, at the time of evaluation, that development outcomes (or expected outcomes) will not be maintained (or realized). *Possible ratings for Risk to Development Outcome:* High, Significant, Moderate, Negligible to Low, Not Evaluable.

Bank Performance: The extent to which services provided by the Bank ensured quality at entry of the operation and supported effective implementation through appropriate supervision (including ensuring adequate transition arrangements for regular operation of supported activities after loan/credit closing, toward the achievement of development outcomes. The rating has two dimensions: quality at entry and quality of supervision. *Possible ratings for Bank Performance:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

Borrower Performance: The extent to which the borrower (including the government and implementing agency or agencies) ensured quality of preparation and implementation, and complied with covenants and agreements, toward the achievement of development outcomes. The rating has two dimensions: government performance and implementing agency(ies) performance. *Possible ratings for Borrower Performance:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

Preface

This Project Performance Assessment Report, prepared by the Independent Evaluation Group (IEG), evaluates two transport projects, the *Gujarat State Highways Project (2000-07)* and the *Karnataka State Highways Improvement Project (2001-07),* and a major analytical product for the road sector in India, the *Road Transport Service Efficiency Study (2006)*.

The two projects are among twelve state-level transport projects supported by the Bank in the past fifteen years covering Assam, Andhra Pradesh, Himachal Pradesh, Kerala, Mizoram, Punjab, Orissa, Rajasthan, Tamil Nadu, and Uttar Pradesh. Both the Gujarat and Karnataka projects involved upgrading, strengthening, and maintenance of state highways, and institutional strengthening of road sector agencies through technical assistance. Land acquisition and resettlement issues were important in both projects.

The two projects were selected for assessment because they had similar objectives and were implemented in provinces with comparable populations and lengths of highway networks, though they differed in some respects including institutional capacity, and the scale of land acquisition and resettlement issues. The Bank's task management responsibilities were managed from the Bank's headquarters for the Gujarat project and from the Bank's country office in New Delhi for the Karnataka project. The findings on sustainability of outcomes from the projects are also likely to be a useful input into the forthcoming IEG evaluation of sustainable infrastructure services and the World Bank Group.

The *Road Transport Service Efficiency Study* is one of several important analytical products prepared by the Bank for India's transport sector over the last fifteen years. It directs attention to the importance of addressing regulatory, institutional and technical issues in improving road transport efficiency as a complement to the large investments that are being made in the country in developing road infrastructure.

IEG prepared this report based on an examination of the relevant Project Appraisal Documents (PADs), Implementation Completion and Results Reports (ICRs), legal agreements, project files and archives, as well as other relevant reports, documents, memoranda and working papers. An IEG field mission visited India during November 2011. Discussions were held with Bank staff in Washington, DC and in New Delhi, and government officials in New Delhi and in Gujarat and Karnataka states. The mission discussed the projects' experience and the effectiveness of Bank assistance with other stakeholders including road users and project affected persons. Extensive site visits were undertaken in both the states covering several segments of roads addressed under the two projects. The visits also covered selected project affected persons as well as structures that were impacted and rehabilitated by the projects.

The mission expresses its appreciation for the generous time and attention given by the Borrower and all concerned parties. A list of persons met by the mission is in Annex E.

Following IEG practice, copies of the draft report were to government officials and implementing agencies for their review but no comments were received.

Summary

This Project Performance Assessment Report assesses the development effectiveness of two transport projects in India, the *Gujarat State Highways Project (2000-07)* and the *Karnataka State Highways Improvement Project (2001-07)*; and a major analytic product for the country's road sector, *Road Transport Service Efficiency Study (2006)*.

The objective of the Gujarat project was to "assist Gujarat in enhancing the state capacity for effective and efficient road infrastructure planning and management and maximizing the existing road infrastructure asset utilization through priority investments and increased funding for maintenance in the road sector." The Karnataka project objective was "improving the state's core road network." The *Road Transport Service Efficiency Study* addressed non-infrastructure factors that impair the efficiency of road transport services in the country and made recommendations for long-distance passenger bus services, the trucking industry, and the motor insurance sector.

Building the institutional capacity of Roads Agencies. The Gujarat Project has helped the state's roads agency (Roads and Building Department) to improve its capacity for the planning and maintenance of road infrastructure. The progress made in various aspects of institutional development – planning, procurement, data collection and analysis using a Road Management System, contract management and quality control, and environmental and social safeguards – has been largely mainstreamed into the Roads and Building Department. Administrative efficiency has shown steady and impressive improvement. Physical targets under the project for road improvement and related outcomes were achieved in a highly cost-effective and efficient manner and have been demonstrably sustained beyond project completion. Several state governments and road agencies have shown interest in learning from Gujarat's experience from the project.

Under the Karnataka project, actions initiated through the Institutional Development and Strengthening action plan showed mixed results. The capacity of the Karnataka Public Works Department for contract management improved significantly. Awareness and capacity for implementing environmental and social safeguards was enhanced. A Geographic Information System (GIS)-based database for the road network is now substantially populated and posted on the Public Works Department website. Greater progress needs to be made in expanding and utilizing this Road Information System, which is crucial for the systematic planning and management of the state's road network. More progress also needs to be made in e-procurement, human resource management, and implementation of a revised departmental code. Overall, the gains made on the institutional front have yet to extend significantly beyond the Project Implementation Unit to the rest of the Public Works Department at project completion. The follow-up project, Karnataka State Highways Improvement Project II which commenced in 2011 builds upon the institutional development and strengthening actions initiated under this project.

Sustaining the project-led gains in institutional capacity and road quality. The improvements in the quality and service outcomes of project roads have been largely maintained over the last five to seven years in Gujarat, and steadily budgetary provision

has been made for their sustainability through periodic maintenance. A road user survey, as well as feedback to the IEG mission from beneficiaries confirms improvements in road quality, driving comfort, reduction in travel time, and easier access to services. The additional provision of service roads in several places has facilitated greater use of mechanized equipment and easier transportation of agricultural inputs and produce. The upgrading of priority roads under the project has also increased the state's ability to attract public-private partnership schemes in future road expansion and maintenance. The project appears to have benefited from state-wide governance initiatives that have had a mitigating impact on 'rent-seeking' behavior by supervisory staff and staff of central agencies/departments concerned with permissions and clearances.

At completion, the Karnataka project's outcome targets relating to the quality of project roads were met. A majority of the project roads display acceptable levels of road quality in terms of the International Roughness Index. However, 5-7 years after upgrading/rehabilitation, some of the project roads are beginning to show signs of distress. Superior planning efforts and adequate maintenance funding will be needed to prevent further deterioration that may soon require expensive rehabilitation. The study on the establishment of a Road Fund to ensure long-term availability of funds for road maintenance was completed as planned and is now being pursued under the follow-on project launched in 2011. Road safety across the state has improved in terms of accident-related fatalities per 10,000 registered vehicles during the project period and beyond, though the gross number of fatalities continues to rise. Institutional improvements – including capacity for planning, management, and the Road Information System – need to be consolidated and carried forward. Several of these issues have already been incorporated in the follow-on project.

The crucial impact of borrower commitment on project outcomes. The Gujarat project's outcomes have benefited from the state government's commitment to the project and its overall administrative and governance initiatives. With this support, the Roads and Building Department was able to complete practically all the road works planned under the project, despite the unprecedented demands placed on it in the aftermath of a devastating earthquake (2001). The Roads and Buildings Department leadership also succeeded in fostering a collaborative and productive relationship with the contractors and engineers.

The Karnataka project also benefited from government commitment and support. But project outcomes could have been strengthened through greater support for the project's institutional development goals. Greater coordination between the concerned state government departments and the implementing agency might have speeded up and facilitated the process of shifting utilities, land acquisition, and resettlement and rehabilitation, as well as the pilot initiative on road safety. The implementing agency could have made greater progress in deploying the Road Information System for systematic planning and management of the road network. There is scope for developing a more collaborative relationship with contractors and engineers.

Value added by the Bank. The Bank's support throughout the project in facilitating the transfer of knowledge are favorably acknowledged by the officials of both state governments. Discussions with Gujarat's Roads and Buildings Department officials

suggest that they see a lot of value in associating with the World Bank as a window to the latest knowledge and practices in road sector management and the Bank's international experience. The roads agencies in both states credit the Bank with having raised their awareness and capacity for implementing environmental and social safeguards.

The initial capacity of the roads agencies in the two states and the different lengths of exposure to new knowledge and practices through Bank projects (the Karnataka project was the first dedicated World Bank project for the roads sector in the state, while the Gujarat project was the second roads sector project in that state) partly contributed to the relative differences in the outcomes for the two projects. In terms of Bank supervision, the Gujarat project was managed from the Bank's headquarters, while the Karnataka project was managed primarily from the country office. The locus of supervision did not appear to make a significant difference in terms of timeliness, frequency, or quality of interaction with the borrower. However, lending costs were two-and-a-half times higher for the Gujarat project, partly because of additional work necessitated by the nearly two-year delay between project appraisal and effectiveness. Supervision costs for the Gujarat project were higher compared to the Karnataka project by a margin of 30 percent partly due to higher travel costs.

The *Road Transport Service Efficiency Study* addressed selected issues that might reduce potential benefits to long-distance road transport services in India, from the large investments being made in the nation's highways. The study made recommendations on regulatory policy for inter-city passenger transport safety, rationalization of highway toll rates and taxes, incentives for using multi-axle trucks that would reduce transport costs and road damage, removing tariff controls, and allowing competition in the motor insurance sector. Though these issues have been the subject of ongoing policy dialogue and reports within India, this study aimed to add value through an in-depth study for selected states, surveys and interviews of key stakeholders, and case studies of China and Pakistan as comparator countries. Lack of political will at the central and state government levels remains a barrier to taking tough decisions on the issues addressed by the study. However, the study remains current in that it has been referenced by some recent research work and prominent publications.

Ratings

The Gujarat project is rated **high** in terms of relevance of the project development objective and design, achievement of objectives, and efficiency. In terms of development outcome, the Gujarat project is rated **highly satisfactory**. Risk to development outcome is rated **negligible to low**. Borrower performance is rated **highly satisfactory** while Bank performance is rated **satisfactory**.

The Karnataka project is rated **substantial** for relevance of the project development objective and design, **substantial** for enhancing the quality of the core state highway network, **modest** for improving network management and road safety, and **substantial** for efficiency. Development outcome is rated **moderately satisfactory** and risk to development outcome is rated **moderate** due to some shortcomings in the performance of institutional, maintenance, maintenance funding, and safety initiatives. Borrower performance and Bank performance are rated **moderately satisfactory.**

The strategic relevance and ownership of the "Road Transport Service Efficiency Study" is rated **moderately satisfactory**. However, the quality of the additional information and analysis from the study is considered **satisfactory**. The dissemination and dialogue for the study as well as the results from the study are rated **moderately satisfactory**.

Lessons

- **The physical and financial sustainability of a road network hinges on the road agency's capacity to undertake needs-based and timely implementation of road improvement and maintenance works. This enables optimal use of available funds, and avoids greater costs of repair in the future.** Gujarat has been able to consolidate its capacity for planning road works to a greater extent than Karnataka, and this is reflected in difference in the condition of selected project roads, 5-7 years after project completion.

- **Institutional and administrative capacity-building should be carried out in step with the readiness of the target agency to internalize it.** In retrospect, institutional reforms in the Karnataka project could have been attempted in a phased and incremental manner, allowing time for them to be integrated with wider operations, and obtaining the support of key government departments.

- **As road agencies evolve from being providers of roads services to 'managers' of increasingly outsourced functions, it is essential that core competencies are retained and strengthened to ensure sustainable management of the road network.** These core competencies cover planning, technical design, road management systems, contract management and environmental and social safeguards.

- **The roads agency should lead the way in creating a productive working relationship with other entities involved in the implementation of roads projects.** A culture of partnership and cooperation was demonstrated in Gujarat between the Roads and Buildings Department, road works contractors and supervising engineers which minimized disputes and speeded up implementation.

- **Decentralization of the Bank's project leadership and supervision does not appear to confer any significant advantage over the task leadership based at headquarters.** Feedback from the road agencies in Gujarat and Karnataka suggests that the locus of Bank task management did not make a significant difference in terms of response time and attention span.

- **A knowledge product that seeks to cover a subject that has already been well studied must provide clear justification of its likely added value.** The *Road Transport Service Efficiency Study* added value from surveys and interviews of stakeholders and gathering the experience of comparator countries. The study served to renew policymakers' attention to politically challenging issues facing operators of freight trucks and passenger bus services, and the motor insurance sector.

Caroline Heider
Director-General
Evaluation

1. Background and Context

1.1 This Project Performance Assessment Report evaluates two transport projects, the Gujarat *State Highways Project* (2000-07) and the *Karnataka State Highways Improvement Project* (2001-07), and a major analytical product for the road sector in India, the *Road Transport Service Efficiency Study* (2006). The two projects were selected for assessment because they had similar objectives for improving roads and road sector management, and were implemented in states with comparable populations and lengths of highway networks. However, they differed in some respects, including institutional capacity of the roads agencies, the scale of land acquisition, resettlement issues, and the location of the Bank's supervision team (headquarters-based and country-based, for Gujarat and Karnataka respectively). The findings on sustainability of outcomes from the projects would also be a useful input into the forthcoming IEG evaluation of sustainable infrastructure services and the World Bank Group. The *Road Transport Service Efficiency Study* is one of several important analytical products prepared by the Bank for India's transport sector over the last fifteen years and sought to complement the large investments that are being made in the country in developing road infrastructure.

1.2 Rapid economic growth in India during the last 10-15 years has stimulated an increasing demand for improving the quality of road infrastructure across the country including the states of Gujarat and Karnataka. Apart from the national highways and rural roads, this has brought into focus the shortcomings in quality and capacity of the existing state highway networks and the several funding and institutional issues that impede their development.

1.3 With the central Government increasingly focused on national highways and rural roads, the state highway subsector depends on the state governments for funding the upkeep of its highways and related institutional development. The larger portion of state funding, however, goes to rural roads because of the increasing need to address rural development issues. As a result, state governments have looked to external sources of funding, and more recently, the private sector, to fund state highways. Apart from the World Bank, the Asian Development Bank and the Government of Japan have been the principal sources of external funding for state highways projects.

1.4 India's total road network is estimated at 3.3 million kilometers – the third largest in the world[1] – and carried 65 percent of the freight and 80 percent of passenger traffic in the country in 2010.[2] It includes a primary network consisting of national highways, a secondary network comprising state highways and major and other district roads; there is also a tertiary network of rural or village roads. In broad terms, the central government is responsible for the construction and maintenance of National Highways, while the state and local governments are responsible for the secondary and tertiary networks within their jurisdictions.

[1] The largest road networks in the world are in the U.S.A and China, with 6.6 and 4.0 million kilometers, respectively. Source: International Roads Federation. http://www.irfnet.org

[2] Ministry of Road Transport and Highways, Government of India. morth.nic.in.

1.5 The national highways account for 2 percent of the country's road length and carried 40 percent of traffic in terms of vehicle-kilometers travelled in the year 2009. State highways and district roads together form 13 percent of the road network and also carry 40 percent of the traffic. Rural roads cover the remaining 85 percent of the road network and serve 20 percent of the traffic.[3]

1.6 The Gujarat State Highways Project and the Karnataka State Highways Improvement Project focus on the states' secondary road networks, in particular on state highways. The projects commenced in 2000-01, at a time when both the states were showing strong economic growth and were facing growing demands for better road infrastructure.

1.7 Gujarat, located in the west of India, has an area of 196,024 square kilometers and a population of 60.4 million. An industrially advanced and high growth state, Gujarat contributes about 7 percent of India's Gross Domestic Product (GDP) and is considered a leader in pursuing economic reforms. The state GDP grew at 10.2 percent per annum during 2002-07, a pace higher than the national average (Table 1). Of the entire country, Gujarat accounts for 39 percent of total industrial output, 67 percent of petrochemical production and 20 percent of exports. The state has been pursuing economic reforms across many sectors, including fiscal policy, power, and education, and private sector participation in infrastructure. The private sector has played a crucial role in shaping reforms in various sectors. Gujarat has been a pioneer in complementing these reforms with better governance initiatives.

1.8 Karnataka, located in the southwest of India, has an area of 191,791 square kilometers and a population of 61 million. Considered a middle-income state, it has one of the fastest growing and more vibrant economies in the country. Major contributors to economic growth in the state are manufacturing and service sectors, accounting for 26 percent and 55 percent of the whole country during the year 2006-07. Karnataka is the knowledge and technology hub of India, where many domestic and international software and information technology firms have located in Bengaluru, the capital city. Karnataka's mining and quarrying sector has also enjoyed a boom in recent years due to the increased global demand for raw materials. However, economic activities are largely concentrated in a few cities with Bengaluru and Mysore accounting for 37 percent of the State GDP. Only six out of the 29 districts in the state had a GDP per capita higher than the state's average for 2007-08. Karnataka needs to improve its infrastructure, including roads, if it is to overcome the existing wide regional economic disparities and make economic growth more inclusive.

[3] Ministry of Road Transport and Highways, Government of India. morth.nic.in.

Table 1: Gujarat and Karnataka: Area, Population, GDP Growth

	Gujarat	***Karnataka***	***INDIA***
Land Area (Square kilometers)	196,024	191,791	3,287,240
Population (millions; 2010)	60.4	61.1	1,210
GDP per capita at current prices (2010-2011)	INR 60,946	INR 75,115	INR 53,331
GDP growth at Constant Prices (2005-6 to 2010-11) (percent)	10.3	8.7	8.6

Source: censusindia.gov.in/2011; india.gov.in; planning commission.nic.in

1.9 The length of state highways in the two states is nearly 20,000 kilometers each (Table 2). The district road network in Gujarat (31,134 km) is about 60 percent of that of Karnataka (50,037 km). The percentage of state and district roads that are paved in the two states percent are also significantly higher than the national average of 58 percent. In Gujarat and Karnataka, only about 16 percent and 8 percent, respectively, of State Highways and Major District Roads are of two-lane or higher standard.

Table 2: Selected Road Network Indicators (kilometers) (2011)

	Gujarat	Karnataka
National Highways	3,229	3,958
State Highways	18,556	22,078
District Roads (Major and 'Other')	31,134	50,037
Extent of Paved Road (percent)	91	68
State highways and district roads with at least two lanes (percent)	16	8

Source: Roads and Buildings Department, Gujarat; Public Works Department, Karnataka

1.10 In the years leading to approval of the projects, strong economic growth and a rapid rise in vehicle ownership[4] in both states were placing pressure to augment the existing capacity and quality of their road networks. In the case of primary and tertiary networks, the situation started to improve after the Government of India introduced two important programs, the National Highway Development Program in 1998 and the Prime Minister's Rural Roads Program in 2000. These programs, which are partly funded through the Central Road Fund, have substantially increased the resources allocated for the improvement of the National Highway and Rural Roads networks in all states, including Gujarat and Karnataka. In contrast, the secondary network (state highways and major district roads) continued to suffer from consistent under-funding and weak capacity of the state road agencies.

[4] More recently, during 2001-2006, vehicle ownership has grown at an average annual rate of 11 percent, 15 percent and 13 percent in Gujarat, Karnataka, and India, respectively. (Source: National Bureau of Statistics, India)

1.11 In Gujarat, the World Bank has been involved previously in the roads sector through the Gujarat Rural Roads Project (1987-1996).[5] The Government of Gujarat has over the years taken several measures to strengthen government policies, institutions and procedures for better governance that have impacted all sectors including the roads sector. It has been harnessing information and communication technologies to improve the efficiency and transparency citizen-based services – notable among these are the computerization of land records, and state-wide attention on grievances through regular meetings of administrators at the sub-district, district, and state levels. Simultaneously, Gujarat has also implemented an Integrated Workflow and Document Management System for automating government functions and processes. The Roads and Buildings Department,[6] whose responsibilities include managing the state highway network, uses the e-procurement system in the state for all works valued at higher than US$1 million, irrespective of the source of funding. According to the Gujarat Vigilance Commission, procurement-related complaints have decreased significantly with the advent of e-procurement. Gujarat is also considered to be the first state in the country to have made e-Governance functional in all its municipalities and municipal Corporations.

1.12 The Government of Karnataka has also adopted reforms to improve the quality of governance and service delivery that include simplification of procedures and e-governance, productivity, integrity and accountability in administration and decentralized and participatory governance. Other reforms have targeted public transport provision and parking management. Several public sector units have also been privatized or restructured. The Karnataka Public Works Department is responsible for the state highways and major district roads.[7] It managed the project through a Project Implementation Unit located within the Public Works Department. Separately, the Karnataka Road Development Corporation Limited, which was established in 2002, is responsible for the core network outside the scope of externally sourced funds. Thus, the Public Works Department and the Road Development Corporation are together responsible for the core road network improvement, and after these works are completed, the roads are transferred back to the Public Works Department for maintenance.

1.13 The World Bank was in a unique position to respond to the challenges and opportunities faced by Gujarat and Karnataka in improving their state highway networks by: (a) providing the critical long-term capital needed to support infrastructure development for accelerated economic growth, (b) using its lending and advisory capabilities to leverage the institutional and policy reform process, and (c) ensuring that

[5] Gujarat Rural Roads Project (IDA: US$120M; Credit 1757-IN: 1987-1996).

[6] The Roads and Buildings Department is in charge of about 74,000 kilometers of roads, including a number of bridges and besides its responsibilities for public buildings in the state. National highways are owned and financed by the Government of India's Ministry of Road Transport and Highways (MORTH); the Roads and Buildings Department supervises works executed on national highways behalf of the Ministry. All other categories of roads in the state are owned and financed by GOG, albeit with external funding assistance in some cases (e.g. in the case of PMGSY funding for rural road improvements).

[7] In addition the Karnataka Public Works Department also looks after National Highways passing through the state on behalf of Ministry of Road Transport, Government of India. The Public Works Department manages about 70, 965 kilometers of the road network, excluding national highways.

social and environmental concerns would be fully reflected in project design and implementation.

2. Gujarat State Highways Project

Objectives, Design, and Relevance

OBJECTIVES

2.1 The project development objective of the Gujarat State Highways Project, as stated in the Loan Agreement,[8] was to "assist Gujarat in enhancing the state capacity for effective and efficient road infrastructure planning and management and maximizing the existing road infrastructure asset utilization through priority investments and increased funding for maintenance in the road sector."

DESIGN

2.2 The planned project cost of US$533 million was to be financed by an IBRD loan of US$381 million and a counterpart contribution of US$152 million equivalent from the Government of India. The project consisted of the following components:[9]

- **Component 1: Widening and Strengthening of State Highways** (estimated total cost: US$415.0 million; actual: US$304.4 million). This component would help increase the carrying capacity and structural strength of part of the core state road network[10] through the widening and strengthening of about 800-900 kilometers of high priority state highways.

- **Component 2: Land Acquisition and Relocation and Resettlement Expenditures** (estimated total cost: US$2.0 million; actual: US$8.4 million). This component would finance the payments to project-affected persons for the replacement value of assets acquired, infrastructure facilities and resettlement sites, Relocation and Resettlement entitlements including allowances, training, and monitoring and evaluation expenditures. The amount financed would be net of the land acquisition costs and cash compensation payable by the state to the project-affected persons under the state's Land Acquisition Act.

- **Component 3: Periodic Maintenance of State Highways** (estimated total cost: US$68.0 million; actual: US$59.2 million). This component would help reduce the

[8] The Project Appraisal Document (PAD) has a slightly different wording, but is identical in intent.

[9] The description of the components is slightly different in the Loan Agreement and the Project Appraisal Document, but overall, there is no material difference. The Loan Agreement version is used here.

[10] The core network is the network of all roads necessary to provide basic connectivity to defined population centers

periodic maintenance backlog of the State by funding the overlaying, resealing and minor rehabilitation of about 1,000 kilometers of state highways.

- **Component 4: Design and Supervision of Civil Works Contracts** (estimated total cost: US$32.0 million; actual: US$30.8 million). Internationally experienced supervision consultants would be procured to supervise the widening and strengthening component (Component 1) of the project. They would have full responsibility as the "engineer" on site as per International Federation of Consulting Engineers[11] (FIDIC) conditions. Internationally experienced consultants would be used for the techno-economic feasibility and engineering preparation of the project. Experienced consultants would also be used for preparation of bid documents and oversight of periodic maintenance works.

- **Component 5: Institutional Strengthening, Technical Assistance, Training, and Equipment** (estimated total cost: US$12.0 million; actual: US$5.1 million). This component would fund consultant services and technical assistance required to implement the Institutional Development Strengthening action plans designed to strengthen the Roads and Buildings Department's role as the "manager" of Gujarat's road network. The training needs envisaged under the Project would focus on the planning and management of the state road network with particular emphasis in the areas of procurement, construction and maintenance management of the existing network. Equipment would be procured under this component for Department's office and laboratory modernization and road management systems. This component would also include the procurement of equipment to monitor pollution and noise emissions along main arterial routes.

- **Component 6: Pre-investment Studies** (estimated total cost: US$4.0 million; actual: US$0.48 million). This component would fund the techno-economic feasibility and detailed engineering studies required for a possible follow-up project.

2.3 Six earthquake-damaged bridges were added to Component 1(Road Widening and Strengthening) after the major earthquake that struck Gujarat on January 26, 2001.[12] Also under Component 1, a road length of 22 kilometers was added to one of the contracts (GSHP-12).[13] The fourth annual periodic maintenance program was added to Component 3 (Periodic Maintenance of Highways). All newly-added works were funded from savings under the project as a result of lower-than-expected civil works unit costs and a slight depreciation of the Rupee against the US dollar during the early stages of project implementation.

[11] The *Federation International des Ingenieurs Conseils* (FIDIC) publishes the Multilateral Development Bank Harmonised Edition of the Construction Contract on behalf of Participating Banks, including the World Bank.(www.fidic.org)

[12] The earthquake registered 7.7 on the Richter scale, the second most intense ever recorded in India, killed nearly 20,000 people, and left 600,000 people homeless (en.wikipedia.org/wiki/2001_Gujarat_earthquake, accessed on April 21, 2012)..

[13] Component 1 was carried out through 14 contracts, GSHP-1 to GSHP-14, covering road segments that totaled 886 kilometers.

2.4 The Roads and Buildings Department had overall responsibility for project implementation. A Project Implementation Unit was established to manage project preparation and implementation activities on a day-to-day basis. The Project Implementation Unit was headed by a Special Secretary and Chief Engineer assisted by a number of technical staff. A high level Gujarat Government Tender Committee was responsible for procurement decisions and for overseeing the approval of civil works and consultant contracts.

RELEVANCE

2.5 ***Relevance of the project development objectives is rated High***. The objective was very relevant to the state's developmental needs in the roads sector, and was aligned with the Bank's Country Assistance Strategies at project approval (1997; 2001) as well as the more recent Country Partnership Strategy (2009-12). At approval, the Bank's strategies targeted the reduction of infrastructure constraints for economic growth through modernizing roads sector institutions; improving asset management performance, and supporting the state's overall socio-economic and development goals. More recently, through the Country Partnership Strategy, the Bank has emphasized knowledge and lending solutions that match the needs of a middle-income country/state by promoting state-level reforms in the road infrastructure sector; mobilizing increased outlays for investment and maintenance of road infrastructure; and facilitating private sector involvement in engineering, construction, and maintenance.

2.6 The project's objectives were also aligned with the three main drivers of reforms in Gujarat's roads sector since the early 1980s, namely the Gujarat Road Development Plan (1981-2001); a state cabinet-endorsed 'state road policy' released in 1996; and the Gujarat Infrastructure Agenda: Vision 2020. The objectives remained highly relevant to Government of India's Tenth and Eleventh Five-Year Plans (2002-2007; 2007-11) which have emphasized improvements in infrastructure, including improving the quality and productivity of the transport network for rapid economic growth and poverty reduction.

2.7 ***Relevance of project design is rated High***. The project design appropriately and comprehensively addressed the state's priority needs for improving its core road network. The two physical components for periodic maintenance, and widening and strengthening of the state's highways, addressed the urgent needs of raising the utilization of prioritized road segments. This was complemented by a component for land acquisition and compensation for project-affected persons that precedes the commencement road works. Because the Roads and Buildings Department was new to implementing the Bank's environmental and social safeguards, this component included training and transfer of knowledge through consultants.

2.8 The remaining components addressed institutional capacity building across all key functional areas – planning, roads asset management, technical design, information systems, procurement, contractor management, and monitoring and evaluation – through an institutional strengthening action plan. The institutional components fed directly into the objective of enhancing the capacity for effective road infrastructure planning and management. The project design has evolved from the Bank's wider experience in other

states in India as well as in other countries. Overall, the project's design was consistent with the development objectives.

MONITORING AND EVALUATION DESIGN

2.9 Monitoring and Evaluation (M&E) design included appropriate indicators for both parts of the objective. In respect of enhanced effectiveness and efficiency of planning and management, the project used two outcome indicators for which baseline data and targets were provided – reduction in the maintenance backlog and the ratio of administrative cost to capital/maintenance expenditures. Output indicators covered the implementation of agreed institutional strengthening and modernization action plans and training about 500 staff of the Roads and Buildings Department through appropriate training schemes.

2.10 In respect of maximizing asset utilization, the outcome indicators were reduction in travel time, for which a baseline value and target were provided, and the increase in road traffic, for which no specific baseline figures were provided. The output/intermediate outcome indicator was the length of high priority state highways improved to a 'good standard' International Roughness Index (IRI) less than 4.0 meters/kilometer), for which the default baseline was that none of the roads met this standard at the start of the project. Two other indicators proposed in the project appraisal document – economic rate of return, and the level of maintenance funding did not belong in the M&E design. With hindsight, other intermediate outcome indicators could have been devised to track capacity-building efforts such as mainstreaming the use of the Road Management System for planning the department's work program as well as prioritized and need-based deployment of maintenance funds.

Implementation

2.11 ***Force majeure events caused delay during implementation.*** Project appraisal was completed on March 23, 1998, but due to nuclear sanctions against India that followed soon after[14], the project was approved nearly two and an half years later on September 5, 2000, and became effective on November, 28, 2000. A few months after the loan became effective, Gujarat was hit by a devastating earthquake that killed 20,000 people and caused extensive damage to the state's infrastructure, including roads and bridges. The loan closing date was extended twice, for twelve months each time, and the loan finally closed on December 31, 2007. The first extension was to complete work on the damaged bridges from the earthquake, and the second extension was required because of the delays in civil works construction caused by the unusually prolonged monsoon rains in the summers of 2005 and 2006. The 2001 earthquake also delayed the institutional component, as the Roads and Buildings Department and the state government had to concentrate on post-earthquake emergency reconstruction of roads and buildings. The loan's two-year extension enabled completion of all the planned civil works, and implementation of most of the capacity building and institutional development efforts envisaged at appraisal. The institutional strengthening component (component 4) used only US$5 million against the planned US$12 million, the rest of the

[14] The sanctions followed soon after India's nuclear tests in May 1998.

requirements being met through state funds, and also savings from a favorable exchange rate as well as efficient procurement. In respect of component 6 for pre-investment studies, only $0.48 million was used during the project against the planned US$4 million. This was because the studies continued beyond project completion, and the remaining expenditure was covered by state government as well as the strategic options study for the proposed follow-up project. An amount of US$101 million of the loan was cancelled at the request of the borrower in three installments between June 2004 and June 2006. The delays in implementation of land acquisition and the resettlement action plan pointed out by the Bank's Quality of Supervision Assessment (QSA6) after the mid-term review in March 2002 were satisfactorily resolved by December 2004.

2.12 ***Project activities were completed at significantly lower than expected costs***. Against an estimated project cost of US$533 million the cost at completion was US$408 million; the Bank loan amount was reduced from US$381 million to US$280 million. The reduced cost of the project was mostly attributable to: (a) lower-than-expected civil works costs in part due to significant competitive cost reductions; and (b) depreciation of the Indian Rupee against the US dollar since project appraisal, which ranged between 10 percent and 25 percent over the project period.

2.13 ***A collaborative relationship was maintained between the Employer (Roads and Buildings Department), Engineer and Contractor***. Highly professional conduct by the three contracting parties – the employer (Roads and Buildings Department), the engineers and the contractors helped in the smooth implementation of road works and minimized contractual disputes. The project experienced only seven disputes in the fifteen upgrading works contracts, of which only two cases were referred to arbitration and none was referred to the court. Only six out of the fifteen upgrading works contracts had an upward variation order, whereas the remaining nine were completed lower than the contract prices. The sound collaborative relationship between the different parties was confirmed by the mission through discussions with representative engineers and contractors, and Bank staff. They agreed that the state government made a substantial effort to improve the dispute resolution system and inculcate a culture of cooperation among the three contractual entities. Mandatory monthly meetings were held between the Contractor and the Engineer, and payments were processed in a timely manner. Feedback from interviews suggests that there was active encouragement of dispute prevention and 'across the table' resolution,

2.14 ***There was continuity of Staff in both the Bank and Government teams***. Most of the team members from the implementing agency and the Bank remained in place from project inception and throughout the extended implementation period. This promoted continuity and rapport in the working relationship between the Bank and the client, while building strong ownership and commitment to the project among the Roads and Building Department staff.

SAFEGUARDS

2.15 The project was classified as Category "B" under the Bank's environmental and social safeguards framework and triggered its Environmental Assessment and Involuntary Resettlement policies. An Environmental Assessment, Environmental

Management Plan, and a Resettlement Action Plan were prepared and disclosed appropriately to the public as required. Environmental issues that were identified included: restoration of borrow[15] areas; proper disposal of solid and liquid wastes from construction camps; compensatory planting of trees; proper management of construction camps and maintenance depots; minimizing dust, accidents and vehicular damage; and compliance with air, noise, and emission standards. In respect of land acquisition, a key social issue was to ensure assistance and support to vulnerable and affected squatters and encroachers in re-establishing their shelter and livelihood opportunities.

2.16 ***Overall, environmental safeguards were implemented in a satisfactory – and in many instances – in an exemplary manner.*** Environmental and forestry clearances were obtained in a timely manner after discussions and follow-up with the concerned departmental authorities. More than 8,500 trees were saved by altering the centerline of the road or cross-section or by retaining them on the edges of embankments. Compensatory forestation was undertaken by planting two million saplings, as against 165,000 trees that were cut during construction, and the survival rate is reported to be in an acceptable range, though no specific numbers were available. The mission was shown sections of compensatory forestation during site visits.

2.17 Compliance reports from the Environmental Management Unit and the Bank's supervision mission confirm that environmental safeguard measures were carried out in a satisfactory manner. Soil contamination was prevented by providing interceptors, trays, and sand bed filters that clean the water from the construction sites. Suitable areas for direct disposal from site were identified with the help of local authorities. Debris was recycled for construction work, especially asphaltic debris for village roads, access roads, and low lying commercial and community areas. Local authorities provide support to Borrow area restoration, clearings site of debris and vegetation, dismantling of diversions, safe disposal of scarified bituminous surfaces, and the restoration of demobilized labor camps. Topsoil preservation was carried out through proper stripping and stacking.

2.18 Apart from planned environmental measures, some additional actions were also carried out that helped to minimize impacts on endangered animals in a wildlife sanctuary, and to develop borrow pits as water bodies. Elsewhere, earth from de-silting and deepening of ponds was used to create 21 mounds that have attracted nesting birds over the years (Box 1).

[15] 'Borrow pit' is a construction/ civil engineering term used to describe an area where material (usually soil, gravel or sand) has been dug for use at another location.

Box 1. Going beyond compliance with Environmental and Social Safeguards in Gujarat

Officials of the Roads and Buildings Department displayed strong commitment to the spirit of environmental and social safeguards, and carried out tasks that sometimes went well beyond mere compliance.

An especially noteworthy effort was made on the Viramgam-Halvad corridor, where the potential impacts on endangered animals from the nearby Wild Ass Sanctuary were minimized by constructing four underpasses to allow the animals access to water sources. A 'food garden' of plants favored by the animals was created inside the sanctuary to minimize the movement of animals. Elsewhere, earth from de-silting and deepening of ponds was used to create 21 mounds that now serve as nesting areas for many important migratory and local bird species, including flamingoes, pelicans, herons, storks, cranes, and waders. On another count, the project encouraged the development of water bodies in borrow areas, an effort that materialized in 125 out of 460 borrow pits. The mission visited one such borrow pit converted into a pond near Aithore village, where gently sloping extraction of soil has been carried out to prevent soil erosion, and to allow livestock to use it as a water source.

Roads and Buildings Department staff introduced the mission to households of five different affected persons and their families in the GSHP 9A segment. These families have been given fully constructed houses that are a huge improvement over the makeshift shelters used by the families prior to the project. The affected persons appreciated the efforts of the Department officers for having successfully managed the sensitive matter of integrating them with the existing residents in the area. The mission visited sites where small temples that were close to the road were relocated outside of the right-of-way with mutual agreement and reconstructed in a nearby accessible place (Samiyala village) or relocated and rehabilitated (Siddhpur village). The mission was informed that around 13 similar places of worship had been relocated during the project with the agreement of the local people. On the Mehsana-Palanpur road, a well was retained and the road alignment was changed to accommodate local people's needs to collect water.

Source: IEG mission results.

2.19 ***All required social safeguards actions were satisfactorily completed after overcoming some delays in the beginning.*** In the initial project years, 2002-2004, there were delays in implementing the resettlement action plan, as noted by the Bank's mid-term review, other supervision missions, and a quality of supervision assessment carried out by the then Quality Assurance Group of the World Bank.[16] This was due to delays in making top-up payments (the difference between replacement cost and compensation paid under the Land Acquisition Act[17]) for private land acquisition and providing permanent resettlement to the displaced households to different extents in the three phases of road works. This was in turn mainly due to the state government's lack of experience at that time with the Bank's safeguard policies, and because practical standards for payments that conformed to the Bank's guidelines had not yet been established. In response to the Bank's assessments, the Environmental Management Unit within the Roads and Buildings Department developed suitable procedures and held

[16] Quality of Supervision Assessment 6 (QSA6).

[17] The Land Acquisition Act of India, 1894, allows the government to acquire privately held land for public purposes.

several consultation meetings with all the stakeholders to expedite and complete the resettlement action plan by December 2004. At the end of the process, land acquisition for the project (53 hectares) was smaller than had been identified at appraisal (65 hectares). Similarly, 28 percent fewer households were affected than had been anticipated at appraisal (891 households against 1,253). The lower impacts are due to the efforts made by the Roads and Buildings Department to explore options to minimize the impacts through adjustments in the alignments and reducing the corridor of impact width wherever possible. The final land acquisition and resettlement costs were US$8.4 million, about four times the estimated at appraisal (US$2 million), but still only about 2 percent of the final project cost of US$408 million. The land acquisition and resettlement costs were higher than anticipated due to price increases since appraisal and greater valuation of compensation requirements realized in practice.

2.20 An independent resettlement impact assessment by a non-governmental organization, the Rural Development and Management Institute, Ahmedabad, found that the project has not caused any significant adverse impacts on the livelihoods of affected persons. Additionally, the study shows that the living and economic conditions of affected persons have improved. Fifteen families that had lost their homes that ranged from 8 to 15 square meters in size were provided with larger homes of 20 to 25 square meters with better water and sanitation facilities, and separate bathrooms and toilets. Fifty-nine families were entitled to training but twenty of them preferred compensation in kind such as livestock. Of the families that opted for training, feedback from a sample size of 60 percent showed that about half the respondents were earning an additional 500-1000 per month at the end of the project. The post-project average family income for project affected persons was INR5,380 (US$110) against INR3,661 (U$75) in the base line and INR4,744 (US$95) for the control group.

2.21 The mission conducted site visits to different segments of road works, and verified documentation of affected persons, applicable entitlement categories[18] for compensation, and the actual compensation paid. The sites were chosen by the mission to provide wide coverage, subject to the time available for the visits. [19] Beneficiaries were chosen by the Roads and Buildings Officials based on reasonable access and availability. The mission met with beneficiaries with a variety of entitlements, and received confirmation from th e beneficiaries that they were satisfied with their settlement, which in some cases exceeded their expectations. One affected person was below the poverty line with an income of INR 2000 per month (approximately US$40) when his small roadside business was displaced by the project. He was given Rs. 7000 (approximately US$140) for alternative training in radio and television repair. The beneficiary reported that his economic situation was better than before displacement. In the same area, another affected person used to own a roadside bicycle repair shop that was shifted to the opposite side. He was given formal training for cycle repairs and continues his business on the other side of the road and supplemented his income by

[18] The entitled categories cover provision of shelter, rental assistance, shifting assistance, vocational training, and subsistence grants. Each affected person was paid based on applicable categories and eligible amounts.

[19] The visits covered areas covered by contracts GSHP-1 (Sarkhej – Viramgam); GSHP-6 (Mehsana-Palanpur); GSHP-8 (Ladvel-Dakor); and GSHP-9 (Vadodara-Jambusar).

selling tea and snacks. He also reported that his income improved after rehabilitation works were completed. The mission visited the households of five different affected persons and their families in the GSHP 9A segment whose living conditions have also improved greatly after resettlement (Box 1). Several places of worship that fell in the right-of-way were handled with sensitivity and relocated with mutual consent and with improved facilities.

FINANCIAL MANAGEMENT

2.22 ***Financial management was adequate after experiencing initial problems***. The Roads and Buildings Department was familiar with the Bank's financial reporting, accounting and auditing requirements from its experience with the Gujarat Rural Roads Project. The State Highways Project attempted to build upon this by implementing a computerized Project Financial Management System capable of providing timely and reliable information to monitor progress in achieving the project's objectives. After initial problems (lags in data entry; lack of compatibility with annual reporting; and excessive dependence on consultants for data inputs and system operations) the System was installed at division offices and the central office, and its operation was taken over by trained finance staff. Financial management arrangements are reported to be continuously satisfactory from mid-2005 until the loan was closed, and no qualified audits were reported.

2.23 ***Procurement of works, goods and equipment, consulting services and training components was carried out in accordance with the Bank's guidelines***. The widening and strengthening of civil works were procured through international competitive bidding and implemented in three phases, with the majority of contracts in packages of US$10-40 million. The bidders for these civil works were pre-qualified in accordance with Bank guidelines. The periodic maintenance of civil works was procured through national competitive bidding in packages of US$1-5 million. The Roads and Building Department performed its procurement role efficiently and proved proficient in preparing tenders, evaluating bids, and awarding contracts. The upgrading works contracts were signed at an overall 18 percent lower price than the estimated costs, a significant measure of the project's procurement efficiency. Moreover, only six of the fifteen upgrading works contracts had an upward variation in contract price during implementation, whereas the remaining nine have been completed at lower than contract price, reflecting adoption of efficient contract management and cost control measures during implementation.

Achievement of the Objectives

2.24 This report assesses the two major outcomes pointed to in the statement of objectives: (1) "to enhance the capacity of Government of Gujarat for the *effective and efficient planning and management* of road infrastructure", and (2) "*maximize existing road infrastructure asset utilization* " (outcomes in italics). The outcome indicators for part (1) are to reduce the ratio of administrative cost to capital/maintenance expenditures by 10 percent by the end of the project and to achieve an International Roughness Index (IRI) <4 meters/kilometer on project roads. The outcome indicators for part (2) of the PDO were reduction of travel time (10 percent for the 1,900 kilometers of roads covered by the project), and reduction in maintenance backlog (20 percent on all state highways.)

ENHANCING THE STATE'S CAPACITY FOR EFFECTIVE AND EFFICIENT ROAD INFRASTRUCTURE PLANNING AND MANAGEMENT. ***Rated High*.**

2.25 The objective of enhancing the state's capacity for road sector management was pursued mainly through the Institutional Strengthening Action Plan, (i) moving towards a 'whole-of-network' approach to monitoring and planning for roads development and maintenance; (ii) strategic organizational changes and newly defined responsibilities including a policy and planning function; (iii) initiating systematic road condition data collection and information technology-based tools for maintenance planning and programming; (iv) improving capacity for environmental and social safeguard compliance through a new environmental management unit; (v) enhancement of the Roads and Buildings Department's financial management capabilities with the operational Project Financial Management System; (vi) greater provision for training for Roads and Buildings Department officers; and (vii) preparation of procedure manuals[20] to streamline standards and procedures.

2.26 The project has helped the Roads and Buildings Department to lay greater emphasis on road network management, planning and policy as compared to its focus on traditional execution of civil works. The project succeeded in meeting or exceeding most of its key output targets and performance indicators with respect to physical road works as well as in building institutional capacity.

2.27 ***Outputs*.** A Policy and Planning Unit was set up in the Roads and Buildings Department with the responsibility for preparing annual budget plans for the department by using a computer-based Gujarat Road Management system. A Highway Design Unit was also created. The Department benefited from working with experienced international consultants through transfer of knowledge and skills in technical and procurement matters, and in the management of consultants and civil works contracts.

2.28 The Gujarat Road Management System is a complex system consisting of several modules/systems that need to be continually populated with data. The *Road Information System*, which defines the nodes and links of the network and basic road characteristics had gathered this data for the state's highways and district roads at project completion, and is presently in an advanced stage of covering rural roads. The *Pavement Management System* is designed for technical and financial analyses for multi-year road work's programming and optimization under budget constraints. and is being used for the Roads and Building Department's annual and five year plans. The *Bridge Management System* is geared towards preventive maintenance of bridges, and is presently in the form of a catalogue of bridge condition with photographs. The system continues to be populated with more details to improve its utility. The *Traffic Information System* is fully functional and is being used as intended to produce forecasts of average annual traffic. Axle-load data and origin-destination data are collected intermittently by the Traffic Information System in the course of preparing projects. The *Environment and Social Information System* has been populated, but more attention and resources need to

[20] Quality system manual for the Roads and Buildings Department; Model Quality assurance Plan for a Project; Construction Supervision Manual: Road Maintenance Manual: Quality Control Test Procedures Manual

be committed for use as necessary when new projects are initiated. The *Budgeting and Programming System* is set up to use Highway Design and Maintenance software (HDM-4) to prioritize expenditures and generate a multi-year works programs, or using a decision-tree method to generate a one-year works program. The *Routine Maintenance Management System* is designed to improve the quality of routine maintenance through standardization of activities, and its impact on efficient expenditure on routine maintenance in the process of filtering to the level of field offices. The *Accident Information System* requires greater coordination with the police department. The effectiveness of the *Monitoring and Evaluation System* relies on regular updating of data, and more incentives need to be created for field officers to enter details into the system on a periodic basis.

2.29 Several Roads and Bridge Department staff were trained on road management systems. Some of these staff supervise external consultants on the Road Management System while senior officers provide overall guidance.

2.30 The project helped to refurbish and strengthen the Staff Training College,[21] which imparts training to state public works engineering staff, in terms of physical and professional resources. An annually updated three-year rolling training program was launched. A multi-phase manager development program was initiated for middle-level staff for the new and evolving responsibilities in Gujarat's road sector environment. Overall, over 1, 500 Roads and Bridges Department staff, representing over 75 percent of the professional staff were trained during the project's lifetime, exceeding the target of 500. The training covered contract management/procurement, monitoring and evaluation, environmental and social safeguards functions and management, project management, planning, finance, quality control/management, and, more recently, e-procurement/e-governance. The pace of training is being sustained because of the general emphasis placed on training by the state government through mandating that 1.5 percent of a department's budget be set apart for this purpose, which is considered a unique development among Indian states.

2.31 A Human Resource Development post was created in the Roads and Bridges Department. These duties are presently assumed by the Chief Engineer in the project implementation unit, assisted by the Staff Training College. A number of initiatives have resulted from this collaboration but progress needs to be made in preparing job specification/descriptions as a pre-cursor to performance appraisal, career planning and programs for training and development.

2.32 Much of the gains in capacity-building have been sustained through ensuring continuity of trained and experienced staff in the project implementation unit. While staff has been rotated since the project closed due to the relatively lower scale of activity, staff with experience in the key planning, design, and safeguards functions has been retained at appropriate levels. The policy and planning work is gradually being outsourced. These functions are supervised at the level of the Chief Engineer in the Project Implementation Unit.

[21] The mission, activities, and achievements of the Staff Training College are provided in their website (stc.gujarat.gov.in), though website requires to be updated.

2.33 The Environmental Management Unit was staffed adequately and performed well during the project. A state-wide 'Social and Environment Management Policy and Guidance' was prepared under the project, and is now applied to all investment projects undertaken by the Roads and Buildings Department. Presently, the environmental and safeguards function is undertaken by officers in addition to other duties, and is overseen at the Chief Engineer's level. The bulk of the environmental and social safeguards work has been now outsourced as part of feasibility and design work for new projects.

2.34 ***Outcomes.*** The Project Planning Unit set up under the project functioned well during the project period and was able to prepare subsequent budget plans for 2007 and 2008 based on the computer-based Gujarat Road Management system. This is a significant achievement for effective and efficient road planning and management, compared to the past practice by which all the budget plans were prepared manually, with less emphasis on data support and analysis.

2.35 The Roads and Buildings Department displayed an impressive and consistent increase in administrative efficiency during the project period and beyond. The administrative cost in the capital maintenance and maintenance budget was reduced by almost half from 30 percent at project approval to 15.7 percent at project completion. The figure for 2011 shows a further decrease to 11.5 percent[22] indicating an impressive and continued improvement in administrative efficiency beyond the project. Interviews conducted during the mission suggest that the increased administrative efficiency can be attributed partly to the capacity improvement during the project, apart from the financial discipline maintained by the Roads and Building Department as well as state government oversight. While the Roads and Buildings Department's work program and budget have grown manifold since the beginning of the project, there has also been a steady decline in the numbers of both professional and casual workers. The number of professional workers has declined from 11,075 in 2004 to 9,381 in 2010, and the number of casual laborers declined from 10,621 in 2000 to 8,338 in 2010. These numbers are seen as another indicator of an overall increase in agency's administrative efficiency, although to some extent it also reflects the outsourcing of some functions.

2.36 According to the presentation given to the mission, the core modules of the Gujarat Road Management System – Road Management System, Pavement Management System, and the Budgeting and Programming System – are operational. The Pavement Management System is being used for the Roads and Building Department's annual and five year plans. Together with inputs from the Traffic Information system, these systems are used to produce a prioritized program of works, subject to budget constraints. It already provides a stronger basis for making budget estimates for maintenance funding and conducting constructive dialogue with the state's finance department. An example of road condition data collected by the Road Management System for several road segments (including some visited by the mission) are given below in Table 3. Currently, a prioritized program of works is produced annually, using available road condition data and different budget assumptions. This approach has helped to prioritize and commit

[22] For the financial year 2011, the administrative cost of Roads and Buildings Department was Rs. 5760 million against a capital/maintenance expenditure was Rs. 45050 million. (Source: Roads and Buildings Department)

resources to roads based on traffic growth and other relevant parameters. Officials also cite a request from the ministerial level for road condition data underpinning budget estimates, which is unprecedented. Taking all these aspects into consideration, IEG's assessment is that the component systems of the Road Management System are being mainstreamed into the management of the road network in Gujarat.

Table 3. Gujarat Road Management System: Sample Road Condition Data

Road Segment	***International Roughness Index (IRI) (meters per kilometer)***
Vataman - Pipli	3.49
Viramgam - Dhangandhra	3.67
Vadodara - Padara – Jamusar	4.18
Surat - Olpad	3.66
Surkhej - Viramgam	3.60
Rajkot - Morbi	3.80
Rajkot - Jamnagar	3.57
Mehsana - Palanpur	3.79
Ladvel - Dakor	3.86
Jamnagar - Khambhaliya	3.72
Halol - Godhra	4.24
Godhra - Shamlaji	2.96
Dhoalaka - Bagodara	3.65
Dakor - Godhra	3.83
Bharuch - Dahej	4.02
Dhangandhra - Halavad	3.23

Source: Roads and Building Department, Government of Gujarat
Note: Period of observation: October 2011 to February 2012

2.37 Gujarat achieved strong results in reducing the maintenance backlog for state highways during the project and has kept up this trend in the years after project completion. The maintenance backlog for state highways was halved from 10,000 kilometers at the start of the project to 5,000 kilometers at project completion, including a contribution of 1,900 kilometers reduction by the project. More recent figures confirm that as of 2010, 1,700 kilometers of state highways were pending for maintenance (resurfacing). Against that figure, 1,290 kilometers were resurfaced in 2011.

2.38 ***Other outcomes.*** There has been a high degree of interest shown by other states to learn from various aspects of Gujarat's experience in the roads sector. In this connection, Roads and Buildings Department has received visits from road sector officials (and in a few cases, political leaders) from the states of Maharashtra, Kerala, Madhya Pradesh, Mizoram, Orissa, and Bihar. Visits from Chhattisgarh and Assam were arranged by the Bank's task team.

MAXIMIZING THE EXISTING ROAD INFRASTRUCTURE ASSET UTILIZATION. *Rated High*.

2.39 ***Outputs.*** Priority investments for the road infrastructure asset base were chosen through the 'whole-of-network' approach of monitoring and planning. The targets for

upgrading and rehabilitating roads were met or exceeded (nearly 900 kilometers upgraded against a target of 873 kilometers and about 1,000 kilometers improved/widened as targeted).

2.40 In nominal terms, the budget allocation for routine and periodic maintenance almost doubled between 2001-02 and 2008-09, through this increase may be smaller in real terms. (Table 4). Feedback from Roads and Buildings Department officials suggests that the government is in a position to meet the estimated budget needs for routine and periodic road maintenance. With the goal of securing long term sustainability of road maintenance financing, the task of establishing a Road Fund[23] had been included in the Institutional Action Plan of the project. However, the increasing availability of funds from state, national and private sector sources in successive years has shifted the focus from building a consensus on the Road Fund. However, given the continued strong demand for road infrastructure development and extension in the state, the issue of the Gujarat Road Fund has been included in the new Vision 2020 document of the state government. The outlay for routine and periodic maintenance has increased consistently in nominal terms from 2001-02 to 2008-09.

Table 4: Gujarat: Routine and Periodic Maintenance Outlay for Roads

Year	***Indian Rupees (million)***	***Approx. US$ million***
2001-2	3,090	65
2002-3	2,820	58
2003-4	2,920	63
2004-5	3,650	81
2005-6	3,280	74
2006-7	5,940	131
2007-8	5,700	138
2008-9	6,110	140

Source: Roads and Building Department, Government of Gujarat

2.41 ***Outcomes.*** The quality of project roads has been maintained at a 'good' quality (IRI < 4.0 meter/kilometer). The average car/truck/bus speed increased from 50 km/h to 60 km/hour on project roads implying a reduction in travel time of 16 percent. Traffic growth on roads that received periodic maintenance averaged 6.3 percent annual growth during the four-year period after completion of works. For roads that were widened and upgraded, the average growth in traffic ranged between 1 percent to over 10 percent in the first three years after construction.

2.42 The mission selected four contracts for site visits out of fourteen in the project, to make a balanced assessment of the current status of project roads. The sites were selected to provide wide regional coverage subject to time available. The contract sites were Sarkhej-Viramgam (GSHP-1; 47.5 km); Mehsana-Palanpur (GSHP-6; 55.4 km); Ladvel- Dakor (GSHP-8; 63.7 km); and Vadodara-Jambusar (Contracts GSHP 9A; 9B; 92.8km). In general all the road segments that were visited displayed good surface and

[23] A Road Fund is a financial mechanism dedicated to road maintenance and financed by specific earmarked tax revenues, and overseen by an independent Road Fund Board.

riding quality. In most cases, the shoulders have been kept clear, and vegetation growth on the sides of the roads has been managed well. Road signs and markings in most cases are clear and visible, though they are showing signs of wear in a few spots. This points to good construction quality and attention to proper drainage.

2.43 Prior to the implementation of the project, a survey conducted on the roads subject to periodic maintenance showed that the roughness of the pavement was in the range of International Roughness Index (IRI) 6 to 20 meters/kilometer and on roads subject to widening and strengthening it was at 6.5. The desirable level is 4.0 meters/kilometer or lower. After the completion of the project the roughness was recorded at about International Roughness Index (IRI) 4 meters/kilometers on roads which received periodic maintenance, and International Roughness Index (IRI) 1.5-2.2 meters/kilometers on roads which were widened and strengthened. The latest figures for several road segments covered by the project show an International Roughness Index (IRI) less than 4.0 for most segments. (Table 4).

2.44 Reduction in travel time. After the completion of periodic maintenance on the roads, the following average speed of travel was recorded: 50 km/h (against 35 km/h on the roads in their pre-project condition) on the 1st– and 2nd-year roads, and 60 km/h (against 40 km/h on the roads in their pre-project condition) on the 3rd– and 4th-year roads. This implies that travel time of the road users has been reduced by 30 percent on the 1st and 2nd-year roads and 33 percent on 3rd and 4th-year roads. The average speed of light motor vehicles on roads improved under the Widening and Strengthening Component was recorded in the range of 60-65 km/h and on some clear straight stretches cars can achieve a speed of 80-100 km/h. This contrasts with 35-40 km/h prior to the project, and sometimes 20 km/h on several severely deteriorated road stretches. Though no speed measurements have been made of heavy vehicles on the roads under either project component, the observations of the Roads and Buildings Department's engineers indicate that heavy vehicles are also able to cruise at higher speeds than before, staying in the left-hand lane and allowing more overtaking opportunities for faster light vehicles. The traffic count surveys conducted on the roads have recorded the average annual growth rate of 6 percent on the roads that received periodic maintenance. The survey conducted on the roads improved under the Widening and Strengthening Component also showed traffic growth, which was significant on some roads and moderate on others. No systematic compilation of data is available for travel times on project roads since project completion. The mission's conversations with roads users during site visits confirmed that travel times have reduced considerably since the road improvements have been completed. A typical piece of anecdotal evidence comes from truck drivers using the Mehsana-Palanpur road. They indicated that a stretch of this road that took about two and an half hours to cover before upgradation now takes a little over an hour.

2.45 ***Other outcomes***. The improved quality of project roads has created a demand from other quarters of the state for roads of similar quality. There are signs that local politicians are responding to this demand. Feedback from interviews with officers of Roads and Building Department suggests that experience with the State Highway Project may have influenced the adoption of the 10 meter road width standard for the state government's program for state highways, the Pragati PathYojana, for nine-high speed

corridors to connect tribal, coastal, industrial, and rural areas with mainstream areas, The project has helped improve port connectivity (Annex B Table 2).

2.46 Another major outcome has been to develop the capacity of contractors by an order of magnitude. Packaging of works in variable sizes has helped develop industry capacity by providing opportunities to all categories of contractors, including local contractors, and enabling contactors to graduate to larger contracts from satisfactory execution of smaller ones. The project helped contractors to invest in advanced equipment, and avail of expertise and training from the project's expert consultants and Roads and Bridges Department staff. Several contractors have grown from handling contracts of between INR10-80 million to contracts of INR 250-1000 million.

2.47 The improved quality of roads under the project increases the scope for attracting private sector interest in public private partnerships in the provision of road infrastructure. This can potentially result in greater efficiency and the inflow of private investment can reduce the pressure on the government's resources, which can then be directed towards improving roads that have less potential for public private partnerships.

2.48 Gujarat has seen a steady growth in vehicle ownership in the ten years after project effectiveness, with the number of vehicles more than doubling during the period. In absolute terms, road-linked fatalities per capita have increased over the same period by 42 percent. In both these respects Gujarat has mirrored the experience for all of India. However, in terms of fatalities per 10,000 vehicles, Gujarat's performance as of 2010 (6.32) is significantly better than for India as whole (10.6). (Table 5).

Table 5. Trends in Vehicle Growth and Road Fatalities: India; Gujarat

Year	*Fatalities per 100,000 population*		*Fatalities per 10,000 vehicles*		*Population ('000)*		*Registered Motor Vehicles ('000)*	
	INDIA	*GUJARAT*	*INDIA*	*GUJARAT*	*INDIA*	*GUJARAT*	*INDIA*	*GUJARAT*
2001	7.9	8.88	14.7	8.18	1,028,610	50,700	54,991	5,499
2002	8.1	9.88	14.4	8.49	1,045,547	51,594	58,924	6,010
2003	8.1	9.94	12.8	8.02	1,062,388	52,504	67,007	6,508
2004	8.6	10.15	12.7	7.65	1,079,117	53,429	72,718	7,087
2005	8.7	10.12	11.7	7.04	1,095,722	54,371	81,502	7,817
2006	9.5	11.13	11.8	7.15	1,112,186	55,330	89,618	8,622
2007	10.1	12.28	11.8	7.28	1,128,521	56,306	96,707	9,497
2008	10.5	12.34	11.4	6.87	1,144,734	57,298	105,353	10,289
2009	10.8	11.98	10.9	6.35	1,160,813	58,309	114,951	10,999
2010	11.36	12.65	10.6	6.32	1,179,839	59,337	126,049	11,873

Source: Ministry of Road Transport and Highways, Government of India; Gujarat Socio-Economic Review: 2004-2010, Government of Gujarat; National Crime Records Bureau, GOI and World Bank analysis.

2.49 A road user satisfaction survey administered at the end of the project to people in four sectors – agriculture, education, health and business showed a variety of benefits arising from more comfortable driving conditions, higher speed, reduction in travel time and costs, and increased availability of commercial vehicles. These benefits included:

increased use of mechanized equipment for cultivation and easier transportation of agricultural inputs; easier access to raw materials; improved access to preventive and health care facilities.

2.50 Senior officers of the Roads and Buildings Department who worked on the project told the mission that the Bank had added a "lot of value" to their understanding and implementation of safeguard polices for environmental and social management. Similarly, several PIU field staff that the IEG mission met during site visits acknowledged their increased awareness and understanding of the need for complying with environmental and social safeguards. WB's task team and especially its social and environmental staff came in for praise from Roads and Buildings Department officials for their persistent efforts in overcoming initial skepticism and reluctance among Roads and Buildings Department staff as well as contractors and engineers towards safeguard policies, and ultimately ensuring that the policies were implemented in letter and spirit. Similarly, contractors with whom the mission had discussions acknowledged that the Bank's safeguard specialists and Roads and Buildings Department staff helped to raise their awareness in this respect. All parties felt that safeguards provisions were being mainstreamed into their regular work.

Efficiency

2.51 ***The efficiency of the project in meeting its objectives is rated High***. The combined economic rate of return (ERR) for the first two project components (Widening and Strengthening, and Maintenance) was estimated at appraisal at 44 percent, with a net present value of $838 million (equivalent to $1,066 million at 2007 prices), while the revised ERR at the completion of the project was 57 percent, with a net present value of $1,107 million at 2007 prices. The benefits from the institutional strengthening component were difficult to quantify, and hence were not included in the economic evaluation of the project at either appraisal or completion. However, both the environmental mitigation measures and relocation and resettlement costs were fully incorporated in the calculation of the ERRs at appraisal and completion for component 1 (Widening and Strengthening). Overall, the economic analysis carried out at project completion used assumptions similar to that at project appraisal.

2.52 The higher than expected ERR at project completion was due to the increase in benefits from higher than expected traffic growth, and significant cost reduction in Component 1 (road widening and strengthening). Traffic growth on roads that received periodic maintenance averaged 6.3 percent annual growth during the four-year period after completion of works. For roads that were widened and upgraded, the average growth in traffic ranged between 1 percent to over 10 percent in the first three years after construction. At project appraisal, an average growth rate of between 4 and 11 percent was forecast for all projects in the initial year, which was expected to remain below an average annual increase of 8 percent during 2002-7, and stabilize thereafter. Apart from the favorable exchange rate during the early years of the project, the cost reduction was achieved by the state government's commitment to reducing costs through making robust cost estimates, developing a highly competitive market for contractors, tight management

of contracts by the Roads and Buildings Department, as well as robust oversight by the Finance Department.

2.53 The design and supervision of civil works as well as the institutional strengthening and technical assistance tasks were carried out within the range of costs estimated at appraisal. In terms of time, practically all institutional development activities were either completed or well advanced at project completion, and in many cases carried forward beyond that stage.

Ratings

OUTCOME

2.54 ***Overall project outcome is rated Highly Satisfactory***. The project objectives in respect of both physical improvements of roads as well as institutional development were appropriate to the needs of the state's roads sector. The project design was robust and realistic in taking into account the state's commitment to the project and its institutional endowments. Most outputs of the complex institutional strengthening and development plan were completed resulting in strong outcomes including a reduction in road maintenance backlog and improvement in administrative efficiency. The physical objectives of the project were achieved in terms of upgradation, rehabilitation and maintenance. Major outcomes of road quality including reduction in the roughness index and travel time were achieved. Efficiency of the project was high in terms of the high economic rates of return and cost savings of about 18 percent in physical works. Based on *High* relevance of the objectives and *High r*elevance of design, and *High* achievement of both objectives, and *High* efficiency, the overall outcome of the project is rated *Highly Satisfactory*.

RISK TO DEVELOPMENT OUTCOME

2.55 ***The risk that the achieved development outcomes will not be sustained is rated Negligible to Low***. The state government and the implementing agency, the Roads and Building Department, continue to display strong commitment to the development of the roads sector. At the government level, this is reflected in the important role for roads and highways in the Gujarat Infrastructure Agenda: Vision 2020. The government's commitment is also reflected in the steady increase in funds for the roads sector over the years (Table 6) as well as the funds for periodic and routine maintenance in particular (Table 4). The Roads and Buildings Department has also maintained continuity in areas of institutional improvement including planning, procurement and contractor management. The gains from improvement in environmental and social safeguards management have been mainstreamed into the implementing agency. Furthermore, structure and processes for overall public sector governance and more particularly in the road sector have continued beyond the project period.

2.56 The gains in institutional capacity from the project have been sustained due to the broad continuity in the composition of the project implementation unit beyond the project and provision and an orderly rotation of staff since project completion. From the mission's discussions with the Roads and Buildings Department officials, engineering

consultancy firms and contractors, the knowledge and experience gained from the project has been mainstreamed in the implementing agency. This track record provides a good basis to the ongoing efforts in the institutional capacity building and sustainability agenda for the roads sector.

Table 6. Gujarat Roads: State Budget and World Bank Loan/grant vs. Expenditure

	State Budget		*World Bank Loan/Grant*		*Expenditure*	
Year	*INR million*	*US$ million*	*INR million*	*US$ million*	*INR million*	*US$ million*
2001-2	5,600	115	1040	21	4,700	97
2002-3	7,670	165	1920	41	6,600	142
2003-4	7,970	176	3640	80	7,410	164
2004-5	7,370	167	3870	88	6,630	150
2005-6	11,200	247	4310	95	9,630	213
2006-7	10,430	252	2550	62	8,970	217
2007-8	12,920	297	910	21	9,240	212
2008-9	16,260	336	250	5	14,940	309

Source: Roads and Building Department, Government of Gujarat

2.57 The implementing agency has also demonstrated a high level of commitment and ownership by launching a long term financing options study, using its own resources.

BANK PERFORMANCE

Quality at Entry

2.58 ***The quality at entry for the project is rated Satisfactory***. At the identification and preparation stages, the Bank's team collaborated productively with the state government's proactive project preparation activities at entry. The task team took care to conduct careful and thorough preparatory work particularly because this was the Bank's first highway sector project in Gujarat. The project design applied lessons from other states of India and other countries in the region, and made a detailed review of the engineering aspects of the physical components, environmental and social factors, and financial management. Emphasis was placed on encouraging competitive tendering and improving procurement and governance practices. Much time was spent on ensuring robust and realistic cost estimates for civil works in coordination with the implementing agency. M&E design was adequate and provided appropriate outcome indicators for both the objectives of the project.

2.59 This was the second Bank-financed transport project in the State after the Gujarat Rural Road project (1987-1996) and built upon that prior experience, including lessons from IEG's performance assessment of that operation (IEG 1996). Preparation of the project also benefited from technical assistance through the States' Road Infrastructure

Development Technical Assistance Project (1991-1996).[24] The key lessons that were taken into account from these and other relevant projects included early attention to comprehensive planning; institutional strengthening measures; procurement actions; inter-agency coordination and ownership; full site preparation; and the integration of environmental management in project planning and design.

2.60 The project was prepared in a participatory manner with several workshops and discussions that brought together all relevant stakeholders. An important aspect of these consultations was to facilitate the formulation of the Institutional Strengthening Action Plan (ISAP) to help the transformation of the Roads and Buildings Department from a "provider" of services to a "manager" of road infrastructure. The main risk perceived risk at appraisal was that inadequate maintenance funding might impede efforts to reduce the maintenance backlog. In practice, the state government fulfilled its commitment to increase maintenance funding by significant increments annually throughout the project period and beyond.

Quality of Supervision

2.61 ***The Bank's quality of supervision during the project is rated Satisfactory***. The Bank's supervision missions were carried out at regular and frequent intervals and fielded teams with a good skill mix. There were 17 supervision missions between FY2001 and FY2007, facilitating frequent interaction and detailed attention to issues. Many Bank team members remained associated with the project throughout its implementation and were fully aware of the project history and the capacity of the implementing agency, allowing them to provide quick and appropriate advice.

2.62 The mid-term review in 2002 discussed the qualitative aspects of performance, making allowance for the delays in physical works caused by the major earthquake of 2001. However, the deviation from the intermediate targets for end-2002 was not clearly assessed by the mid-term review mission.

2.63 The Quality of Supervision Assessment conducted by the Bank's Quality Assurance Group in August 2004[25] rated the overall quality of supervision as moderately satisfactory. It rated procurement, financial management, legal and environmental aspects as satisfactory. However, due to persistent problems of compliance with the resettlement action plan since May 2004, supervision of social aspects of the project was rated moderately unsatisfactory. In response, the Bank's team quickly improved its support to solve this problem, and compliance with social safeguard policies was fully achieved by December 2004, thanks to repeated consultation meetings with the stakeholders. In their feedback to the mission, Roads and Building Department officials also noted the important role played by the Bank's safeguards specialists in raising

[24] The objective of the States' Road Infrastructure Development Technical Assistance Project was to assist sixteen participating states including Gujarat and Karnataka in the preparation of high priority road investments aimed at Bank financing, while promoting policy reforms in the provision, financing and maintenance of road infrastructure. This project, too, was the subject of an IEG Performance Assessment. (IEG 2005.)

[25] Quality of Supervision Assessment 6 (QSA6).

awareness of safeguard issues in the implementing agency and their guidance and persistence in ensuring that environmental and social measures were carried out in a satisfactory manner.

2.64 Feedback to the mission from Roads and Buildings Department staff and management indicates that World Bank staff was generally open-minded, helpful and flexible, and balanced local conditions with solutions that were based on experience in other countries. For instance, the Bank originally favored large contract packages to attract capable contractors. The Roads and Building Department considered the packages too small to attract international bidders and too large for local contractors. In the case of one large package, only five contractors were prequalified, and the lowest bid was 27 percent higher than the engineer's estimate, with an overall spread of 2 percent between the bids. The Bank agreed with the Roads and Building Department's suggestion that the contract be split and re-bid. The smaller contracts were won by contractors who had not been able to prequalify earlier, and the job was finally completed at less than the engineer's estimates.

BORROWER PERFORMANCE

Government Performance

2.65 ***The Gujarat government's performance is rated Highly Satisfactory***. The state government committed substantial resources ($7 million) for project preparation under the States' Road Infrastructure Development Technical Assistance Project (1991-1996), without any assurance at that time that the project would go ahead. The state government also funded the pre-feasibility study focusing on the investment needs of the core state highway network in 1994 and the preparation of the Strategic Options Study to identify roads for improvement. During project implementation, the government's close monitoring of the procurement process and expenditures helped to avoid any cost-overruns and also contributed to substantial project savings. The Finance Department consistently followed up with the Roads and Buildings Department to provide justification for expenses. Throughout the project there was active involvement of and access to the Roads and Bridges Department executive and senior officers of the Gujarat state government.

2.66 Overall, the state government sustained a high degree of readiness and commitment to begin implementing certain preparatory activities (such as studies, designs; and required clearances) from prior to the project launch, regardless of the two-year delay in loan negotiations and approval. The project stayed on track and did not require restructuring despite the two-year suspension due to nuclear sanctions beginning June 1998, and the devastating earthquake of 2001. During the project, there was a generally cooperative relationship between the various governmental stakeholders including the forestry department, utility agencies, and the finance department, and realistic work plan targets were established for each entity.

2.67 A recently published assessment of the Gujarat road sector suggests that the project benefited from improved processes to mitigate the 'rent-seeking' behaviors of supervisory staff and staff of central agencies/departments that are involved with

permissions, approvals, and payments (Bandyopadhyay and Stankevich 2011). Among these features was the use of e-procurement for contracts greater than INR 1 million (approximately US$20,000) irrespective of source of funding, as required by the state government. According to the Gujarat Vigilance Commission, a government body that investigates corruption charges, procurement related complaints have generally decreased with the advent of e-procurement including for the roads sector. Gujarat has also implemented an on-line mechanism for release of sanctioned funds up to the level of field officers, avoiding delays and difficulties in timely disbursement of contractor's bills and discharging other financial commitments. Key management mechanisms that provide scope for greater accountability and control, including the Integrated Workflow and Document Management System (IWDMS), provided accessible, transparent information on the state of progress and are being used to pinpoint the sources of delay. The state government's policy of generally keeping staff for at least three years in professional, technical and administrative positions before being rotated to other positions is a positive factor worthy of emulation in other Indian states and elsewhere.

Implementing Agency Performance

2.68 ***Implementing agency performance during the project is rated Highly Satisfactory***. The implementing agency – the Roads and Buildings Department – managed the project in a professional manner, paying attention to quality and costs. The Roads and Buildings Department benefited from strong and committed leadership and support from the relevant government departments. Continuity of staff postings in the Roads and Buildings Department was a positive contributory factor to the outcomes of the project. The agency was proactive in making arrangements during project preparation, including the timely completion of studies and designs. Careful design and cost review at the pre-bidding stage helped to lower the costs of road works. Strong contract management was demonstrated by the Roads and Buildings Department and helped to minimize delays and keep implementation within the contractually stipulated time-frame. The agency also succeeded in fostering a collaborative and productive relationship with the contractors and engineers, which was reflected in the smooth implementation of road works and minimal contractual disputes.

2.69 The project paid due attention to environmental management during planning and implementation. Good practices were followed for public involvement and consultation. The state government showed commitment to implementing environmental and social safeguards policies by setting up an Environmental Management Unit in the Roads and Buildings Department headed by a Superintending Engineer and staffed by environmental and social safeguard staff who worked with the engineers and contractors. During the project period, this arrangement helped coordination with Bank missions on safeguards issues, enforcement of agreed measures, and follow-up on pending issues. The Environmental Management Unit prepared and delivered training for consultants, contractors and Roads and Buildings Department field staff, through workshops as well as field-based exercises. Environmental Management was also included as a separate training module in the Staff Training College.

2.70 The Roads and Buildings Department showed its commitment to addressing environmental and social issues through the successful establishment of the

Environmental Management Unit which proved to be a well-managed project-level institutional arrangement. The Environmental Management Unit conducted supervision and monitoring of safeguards measures and established an acceptable supervision and reporting system for the purpose. The Environmental Management Unit pursued forestry and environmental clearances in consultation with relevant agencies and successfully collaborated with the concerned departments. The project followed a policy of retaining non-interest bearing sums of money from contract payments as a disincentive to contractors against non-compliance with contract clauses for environmental safeguards. A coordination mechanism was developed between the Roads and Buildings Department and the forestry department through the Environmental Management Unit. Overall, the creation of Environmental Management Unit worked well in implementing safeguards requirements during the project and this arrangement may be considered for other states in India with similar projects and safeguards issues.

2.71 Over the project period, the Roads and Buildings Department enhanced its capacity for construction supervision and gained confidence in managing and taking ownership of the road network. The mission's discussions with Project Implementation Unit and other Roads and Buildings Department staff indicated that the learning and experience from the project has had a positive learning impact on Department staff beyond the Project Implementation Unit.

MONITORING AND EVALUATION

2.72 **M&E Implementation**. The mid-term review in 2002 discussed the qualitative aspects of performance, making allowance for the delays in physical works caused by the major earthquake of 2001. However, the deviation from the intermediate targets for end-2002 was not clearly assessed by the mid-term review mission. The Roads and Buildings Department began collecting data on performance indicators in 2004 and the findings were discussed with the Bank team periodically from December 2004 onwards. A series of Performance Assessment and Beneficiary Surveys was conducted by the Roads and Buildings Department in November 2005 and December 2007, which provided feedback on road quality, performance, and road user satisfaction.

2.73 **M&E Utilization**. Discussions with the Roads and Buildings Department officials and task team members suggest that qualitative and quantitative data from periodic progress reports were used to track progress of project activities and to take measures to speed up implementation. Beginning in 2004, data for performance indicators provided feedback on outputs and outcomes and served the purpose of a feedback mechanism. Overall, the Quality of M&E is rated *Substantial.*

3. Karnataka State Highways Improvement Project

Objectives, Design, and Relevance

OBJECTIVES

3.1 The overall project development objective, as expressed in the Loan Agreement and the Project Appraisal Document, was to assist Karnataka in "improving its core road network." This statement of objectives does not explicitly point to the anticipated outcomes associated with the road network improvements, but the subsequent text in the Project Appraisal Document lists three specific outcomes to meet the development objective: enhancing the capacity and quality of the core state highway network; more efficient and effective network management, and delivery of road infrastructure services (World Bank 2001b, p. 2).[26] and improved road safety. The core road network includes state highways and the most heavily trafficked major district roads.

COMPONENTS

3.2 At appraisal, the project was estimated to cost US$447 million, financed by a $360-million World Bank loan and $87 million from the Karnataka state government. The project had the following components:

- **Component 1**: **Upgrading and widening of state highways** (cost at appraisal: US$315.0 million; at completion: US$356.2 million).This component was expected to support an increase in the capacity and structural strength of part of the core road network through the upgrading and widening of about 1,000 kilometers of priority state highways and construction of about 50 kilometers of new bypasses.

- **Component 2**: **Rehabilitation of state highways and major district roads** (cost at appraisal: US$107.2 million; at completion: US$158.7 million). This component aimed at reducing the periodic maintenance backlog on the core road network by funding the overlaying, resealing, and minor rehabilitation of about 1,300 kilometers of state highways and major district roads..

- **Component 3**: **Institutional Strengthening, Advisory Technical Assistance, Training, Equipment, and Pre-investment Studies** (cost at approval: US$17 million; at completion: US$19.2 million). This component aimed at financing consultant services and Technical Assistance and Training programs to facilitate the implementation of the Institutional Development Strengthening Action Plan designed to strengthen the overall institutional capacity of the Karnataka Public Works Department. It was also expected to fund the short- and medium-term training activities of Public Works Department managers and staff, office equipment for implementing an e-governance program within the Department, laboratory modernization, and development of road management systems, other logistical

[26] The PAD also mentions "improved allocation and provision of funding for the road sector" would be necessary to meet the development objective. However, this we would argue is an output rather than an outcome, as it is completely under the control of the borrower.

support including vehicles, and techno-economic feasibility and detailed engineering studies for future road investment projects.

- **Component 4**: **Pilot Highway Safety Program** (cost at approval: US$4 million; at completion: US$0.6 million). This component was expected to finance civil works for the implementation of engineering and traffic management measures to enhance road safety and mitigate traffic accidents at selected black spot locations along the project corridor. The component supported Technical Assistance and consulting services for safety audits and the development of a proposed safety management system and equipment for safety management system.

2.4 The Karnataka Public Works Department had overall responsibility for project implementation. The Department established a Project Implementation Unit to manage project preparation and implementation activities on a day-to-day basis. The Project Implementation Unit was headed by a Chief Project Officer supported by a Chief Engineer and other technical and administrative staff.

RELEVANCE

3.3 ***Relevance of the objective is rated Substantial***. The project development objective is highly relevant to the state's developmental needs in the roads sector, and aligned with the Bank's Country Assistance Strategies at project approval (CAS 1997; 2001) and well as the more recent Country Partnership Strategy (FY2009-12). However, the objective was poorly articulated in that it did not convey a sense of expected outcomes and benefits from the project. The state government articulated its strategy for the roads sector through its Infrastructure Policy (1997) and Policy on Road Development (1998). These documents recognized that road development, rehabilitation and maintenance are critical to meet growing demands for improved infrastructure. They pointed to the need for progressive widening and strengthening of the core road network with prioritization based on economic grounds, and to concentrate on improvement of maintenance management and funding on the primary state road network because of their strategic importance to the state's economic development needs. The Bank's strategies called for mobilizing increased outlays for investment and maintenance of road infrastructure; and facilitating private sector involvement in engineering, construction and maintenance.

3.4 ***Relevance of project design is rated Substantial***. The project design addressed the immediate needs for rehabilitating and upgrading prioritized roads as well as the improving the capacity of the Public Works Department roads agency for managing the road network. Together with the government's commitment to make greater provision of funds for regular maintenance, the physical and institutional components were geared to the project development objective of improving the quality of the core road network. The project design also included a pilot intervention for improving road safety, an important element of the quality of the network. Provision was made for supporting resettlement and rehabilitation arising from land acquisition, and transfer of expertise for implementing environmental and social safeguards. The institutional component was designed to enhance the capacity of the Public Works Department through a Institutional Strengthening Action Plan (ISAP) that covered all areas of planning and management for

the Public Woks Department. The monitoring and evaluation framework provided appropriate and measurable outcome indicators. Overall, the project's design was consistent with the development objectives.

MONITORING AND EVALUATION DESIGN

3.5 The project used six outcome indicators: (a) the share of state highways in good condition (IRI < 4.0 m/km); (b) the share of state highways in bad condition (IRI > 7.0 m/km); (c) reduction in state highway links with volume-to-capacity ratio greater than 1; (d) reduction in travel time on project roads; and (e) reduction in road accident deaths per 10,000 registered vehicles. The sixth outcome indicator proposed by the project related to the improvement in the living standards of the project affected persons. Intermediate outcome indicators in the project appraisal document relating to road safety were the number of accident blackspots removed and the share of state highways using a computerized accident analysis system. In respect of maintenance funding, output indicators included in the M&E design was the variance between the Medium-Term Financial Plan budget and actual expenditures; and maintenance funding gap for the core road network. Other intermediate outcomes proposed by the project design relate to efficiency measures (cost and time overruns) and goals for environmental and social safeguards implementation, which are normally covered in the assessment of safeguards. In retrospect, other intermediate output indicators could have been devised to track capacity-building efforts, such as mainstreaming the use of the Road Information System and training.

Implementation

3.6 ***The project period was extended by ten months, but there were no significant changes in the scale or scope of the project.*** Project appraisal was completed on January 18, 2001; the project was approved on May 24, 2001, and became effective on August 8, 2001. The closing date was extended by 10 months from December 31, 2006 to October 31, 2007 to account for delays in civil works. There were delays in the mobilization of some contractors, as well as delays in procurement and supervision. In some cases, design changes and variations in the scope of road works also contributed to the delay. Shifting of utilities and land acquisition were initially affected due to insufficient coordination with relevant government departments. Abnormally high monsoon rains that affected Karnataka (2005-2006) resulted in flooding in several project areas and delayed the completion of some works and the start of some contracts.

3.7 There were lags in disbursement, but eventually the project caught up and disbursement was ultimately on target. The loan was fully disbursed and the Bank recovered the Special Account advance (US$25 million) before loan closing. An unallocated loan amount of US$29.4 million along with a small unutilized loan amount were reallocated to accommodate the increase in costs due to price escalation and variations.

3.8 ***Limited experience and skills among contractors were a constraint in the initial years.*** The project was the first major externally funded roads project in the state of Karnataka. Prior to this project, although most improvement contracts were undertaken

by private sector contractors, there was no emphasis placed on their management capacity and understanding of international standards for road contracts. Most of the local contractors faced technical capacity constraints and lacked proper construction management skills and experience in resource planning and execution. As a result, some contractors fell behind schedule and required contract time extensions. In one case a contractor that had won five rehabilitation bids could not make sufficient progress in their work, which led to the contracts being terminated and re-bid. During project implementation, training was delivered to the Public Works Department staff and contractors on modern contract management techniques to enhance their capacity, and together with on-the-job experience.

3.9 ***Greater deployment and capacity of the Public Works Department staff was needed for contract supervision and handling non-infrastructure related programs***. While the Public Works Department made a commitment to supervise a significant amount of the rehabilitation works under the project, it failed to fill a large number of vacancies (18 vacancies out of 44 supervisor positions) in the field offices during the project. This contributed to delays in physical implementation of the contracts that were directly supervised by the Public Works Department leading to contractors' seeking time extensions.

SAFEGUARDS

3.10 The project was classified as a Category "A" project under the Bank's environmental and social safeguard policies. The safeguard polices for environmental assessment, involuntary resettlement, and indigenous peoples[27] were triggered. A Sectoral Environmental Assessment, a detailed Environmental Impact Assessment, an Environment Management Plan, and a Resettlement Action Plan were prepared following public consultation and stakeholder meetings. The documents were disclosed to the public, as required. In Phase II of the road works, separate Environmental Management Plans were prepared to confirm the extent of adverse impacts on sensitive environmental habitats traversed by these roads. Clearances were obtained from the Government of India for the road segments passing through a national park and sanctuary,[28] with the necessary safeguards being included in the works contracts. Overall compliance with environmental and social safeguard requirements was satisfactory though there were shortcomings and delays in the course of their implementation as discussed below.

3.11 **Environmental Safeguards.** The provisions of the Environmental Management Plan were integrated into contracts and their implementation was monitored by the Public Works Department and its environmental consultants. The enforcement of some environmental management measures that were incidental to works, such as proper storage, re-utilization and/or disposal of debris, and clearance of culverts, was lacking in several contracts due to the understaffing of the Public Works Department environmental team. Regulatory clearances were inordinately delayed due to differences in

[27] The policy on indigenous peoples was triggered as a matter of abundant caution, but no issues under this policy materialized during the project.

[28] Rajiv Gandhi National Park, the buffer area of the Dandeli Wild Life Sanctuary, and the periphery of Anshi National Park

interpretation of land ownership between the Public Works Department and the Forestry Department and late identification of the issue. There were delays in obtaining the required permissions in a few of these rehabilitation packages in the Western Ghats hill range, even after extensive discussions with the Forestry and Revenue Department officials. A total of 45,753 trees were cut to make way for the upgrading works. Re-planting was carried out as stipulated at the rate of ten saplings for every tree that was cut down. Survival rates of replanted trees was reported to be high (an average of 92 percent) at the end of the project.

3.12 Contractors were provided with sensitization training on environmental issues. An environmental supervision manual was prepared which helped streamline the environmental management function at the Project Implementation Unit. The main principles of the manual have been incorporated into the Departmental Code. The Departmental Code is expected to be cleared by the finance ministry by mid-2012. Continuity of staff working on environmental issues in the project implementation unit as well as from the Banks' team helped to ultimately ensure satisfactory implementation of environmental provisions during the project.

3.13 **Social Safeguards**. The land acquisition process was slow, and took an average of 28 months.[29] Insufficient coordination with other government departments regarding compensation payments added to the delay. High turn-over of the key land acquisition and rehabilitation and resettlement staff and consequent understaffing in the Social Development and Resettlement Cell affected progress in implementation of the resettlement action plan during the first years of the project. Some changes made in engineering designs during project implementation further contributed to delays in land acquisition and resettlement.

3.14 Ninety hectares of private land belonging to 1,260 landowners was acquired in the project and it impacted 2,520 non-title holders, including 265 households that lost their dwellings and 404 households that lost their livelihoods. Compensation and assistance were provided to all these affected people in compliance with resettlement and rehabilitation entitlements, except for about 45 identified families that migrated to nearby towns or adjoining villages and could not be traced. Land acquisition costs and cash compensations under the project were funded entirely by the state government. Resettlement and rehabilitation entitlements, including allowances, training, and monitoring and evaluation of project expenditures, were eligible for Bank financing. The total cost of implementation of land acquisition and resettlement impacts was about INR 180 million, about 0.80 percent of the total project cost.

3.15 There was a delay in the implementation of resettlement and rehabilitation policy in the villages of Athni, Nagamangala, Chikkanayakanhalli, and Siriguppa (which were impacted during the project due to design changes) where the local authorities demolished properties of encroachers without offering compensation and assistance. However, after this matter came to the attention of the Bank team, the Public Works

[29] More than half of the 59 land acquisition proposals took more than 2 years to resolve, with an average time of about 26 months. Only 7 percent of the proposals took less than 18 months. The minimum and maximum time spent on completion of land acquisition process is 14 and 42 months, respectively.

Department promptly carried out an assessment of impacts, prepared an action plan suggesting the remedial measures in accordance with policy provisions and accordingly extended the assistance to these affected people.

3.16 A resettlement impact assessment study conducted by MDP Consultants Private Limited, New Delhi, in partnership with DHV consultants, a Netherlands based firm, showed that 86 percent of resettled households had improved their incomes and the proportion of families living below the poverty line had declined by 12 percent. The resettled households now have larger and improved housing, and access to electricity and drinking water. Adult workers among the resettled households have been successful in finding alternative employment opportunities and raising their incomes. The impact assessment considers the quality of housing provided to the resettled families to be superior to the housing offered under general Government programs for poorer families (Box 2).

Box 2. Social Safeguards at a Resettlement Camp at Ariginimara

The IEG mission visited a resettlement colony at Ariginamara, where 124 families (nearly 1000 persons) were resettled under the project's Kalmala to Sindhanur section[a] in 2004. The beneficiaries were originally living on the other side of the road and engaged in miscellaneous service activities and informal employment. The families have been provided independent homes constructed by Nirmiti Kendra, an autonomous government-sponsored agency. The colony is laid out quite spaciously with electricity, nearby water supply, and adequate drainage. A metalled road built under the central government's rural roads program[b] connects the colony to the highway. A community hall, a three-room school, and a crèche have been provided. A municipal ward member has been elected from the colony to represent the interests of the residents. A cross-section of men and women from the colony selected by the mission for feedback expressed satisfaction with the living facilities and commended the work done by Public Works Department. The residents also reported that in the seven years since the camp has been established, the land property prices have gone up significantly. Public Works Department officials consider this a model rehabilitation initiative.

a. U-1 contract under the project. b. Prime Ministers' Gram Sadak Yojana (PMGSY)

FINANCIAL MANAGEMENT

3.17 A computerized project financial management system was developed during project preparation for accounting and reporting on expenditures, and was rolled out to Public Works Department headquarters, sixteen Public Works Division Offices, five Circle Offices and three Zonal Offices by 2004. However, the project financial management system was eventually dropped after several glitches were experienced with the software. The function is now managed by Karnataka's e-governance Department which has since undertaken a state-wide exercise for implementing contract management and e-procurement. It was agreed that the new software would be in line with the requirements of the project financial management system. The e-procurement system is being piloted in 6 departments, including the project unit managing the follow-on project. At project completion, no qualified audits were reported.

3.18 Procurement of works, goods, and services was carried out in accordance with Bank guidelines, and the bidding processes were conducted in a fair and transparent manner. In 2005 the Bank's supervision mission requested that the Public Works Department apply more rigorous monitoring to pending cases. Overall, delays in the award of contracts resulted in one loan closing date extension that could have been avoided with more efficient procurement. Revised standard bid documents and procurement procedures were prepared, disseminated, and implemented in two pilot divisions of the Department.

Achievement of the Objectives

3.19 Based on the outcomes that were indicated in the discussion of the objectives in the project appraisal document, the achievements against the project development objective are discussed below in terms of: (i) enhancing the capacity and quality of the core state highway network; (ii) more efficient and effective network management and delivery of road infrastructure services; and (iii) improving road safety. The first outcome was the most important in terms of making gains in the quality of prioritized roads. The second outcome underpinned both short term improvements in institutional capacity as well as laying the foundation for medium to long-term improvements. The third outcome was geared to some quick gains in road safety while building the institutional basis for a larger road safety program.

ENHANCING THE CAPACITY AND QUALITY OF THE CORE STATE HIGHWAY NETWORK ***Rated Substantial***.

3.20 ***Outputs.*** In terms of physical outputs, the project achieved more than 90 percent of the targeted physical road works at project completion. About 874 kilometers out of the planned 884 kilometers of roads were upgraded and widened and 1,400 kilometers out of a targeted 1,575 kilometers were rehabilitated.

3.21 Road upgrading was implemented in two phases. In Phase I, roads totaling 394 kilometers were earmarked for upgrading, but a contract for Bennethora Bridge was dropped and taken up separately after project completion. Phase II of upgrading comprised six road contracts and two bypasses, totaling 598 km. Work was, however, still ongoing in the two by-passes and three contracts at project completion. Phases I and II experienced average delays of 14 months and 6 months and cost escalations of 12 percent and 3 percent, respectively. All remaining works were taken to completion by the Public Works Department after the project closed.

3.22 Road rehabilitation was carried out in two Phases, comprising 34 contract packages. All 10 contracts in Phase I were completed. In Phase II, four packages (M15, M25, M26, and M27) were ongoing at project completion and subsequently completed by the Public Works Department. The total implementation period for the rehabilitation component was significantly delayed and the cost escalation was 18 percent at project completion.

The mission visited eight road segments that were rehabilitated or upgraded.[30] They were selected by the mission to provide a reasonably balanced assessment of the project roads covering districts with different levels of economic development. The mission found that some segments of the rehabilitated roads had already developed potholes, rutting, sinking, and other signs of distress. It was learnt that no maintenance funds had been spent on these roads since improvements were made under the project. The mission also found that some stretches of the upgraded roads have started showing signs of distress. Unless immediate maintenance is taken up on these roads, they may soon require rehabilitation, which will cost many times more than regular maintenance. Signs and markings had faded in several road segments. Shoulder maintenance was also poor in several places, with unmanaged growth of vegetation, which may interfere with drainage.

3.23 Maintenance expenditure: Maintenance expenditures have increased since project completion. Actual state funded expenditures for routine maintenance and periodic maintenance increased between 2008 and 2012, by 62 percent and 98percent respectively at current prices. The share of maintenance expenditure in overall road sector increased from 23percent in 2008-2009 to 50percent in 2011-2012, and allocations for 2012-2013 set this share at 41percent of total road expenditures. Actual maintenance expenditures were close to budgeted maintenance expenditure during 2008-2011.

3.24 The public works department continues to project the requirements for maintenance funds based on blanket norms (a fixed amount per kilometer) rather than on the basis of road condition data, which is only partially available. Even the relatively low allocation of maintenance grants was not used based on the demonstrated need. The Public Works Department had planned to undertake the maintenance of 30 roads totaling 1,790 kilometers through long-term performance-based contracts. There is, however, little progress on this front, apparently due to insufficient commitment on part of the borrower as well as lack of preparatory work required to raise awareness amongst both Public Works Department officials and prospective contractors.[31]

3.25 ***Outcomes.*** The share of state highways in good condition (<4m/km IRI) increased from 5 percent at the beginning of the project in 2001 to 37 percent by the end of the project. At the same time, the percentage in bad condition (>7m/km IRI) decreased from 90 percent to 52 percent against a target of 70 percent. According to a later road condition survey (Public Works Department: Road Condition Survey, 2008), the percentage of state highways in good condition remained more or less unchanged at 35 percent.

3.26 However, 50 percent of the State Highways were reported to be in good condition as of 2008.[32] Road condition data for 2010-11 for project roads provided by the Public Works Department show that IRI for three highways, segments of which were visited by the mission (shaded rows in Table 7 below) , is below 4 meters/kilometer, which meets

[30] Upgrading: U1 (Kalmala-Sindhanur); U11 (Hiriyur-Bellary); Rehabilitation: M8 (Kibbanahalli Cross-Huliyar); M9 (Huliyar-Hiriyur); M11 (Tekkalakote-Sindhanur); M12 (Sindhanur-Lingasur); M30 (Kalmala-Kavital); M31 (Kavital-Mudgal)

[31] This effort is to be renewed under the follow-up Second Karnataka State Highway Improvement Project..

[32] World Bank 2011.

the benchmark for being in good condition.[33] Of the remaining project roads, IRI values (meters/kilometer) are below 4 for SH12, SH25 and SH93; between 4 and 5 for SH34 and SH45; between 5 and 6 for SH30and SH33; and between 6 and 7 for SH50. None of the roads are in the range for 'poor condition', which is an IRI value 7 or greater. (Table 7).

Table 7. Road Condition data (IRI in m/km) for segments improved and rehabilitated under KSHIP-I (from FY 2008-2009 to FY2010-2011)

State Highway #	2003 04	2004 05	2005 06	2006 07	2007 08	2008 09	2009 10	2010 11	Package*
12	4.13	6.96	6.95	-	5.80	3.26	3.36	3.84	U4, M2, M3, M4
19	-	-	-	-	4.83	3.90	2.62	2.93	U11, U3, M5 to M13
20	-	-	-	-	-	2.71	2.75	2.84	U8, U5, M1, M30, M31
23	-	-	-	-	-	4.55	2.89	3.04	U1, U2
25	-	-	-	-	-	5.47	3.01	3.77	M14, M15, M16, M17
30	6.33	7.55	8.07	-	3.92	4.85	3.83	5.31	M34, M33
33	-	-	-	-	-	-	3.73	5.65	M32
34	5.40	10.33	11.08	-	7.32	4.52	4.13	4.35	U7A, U7B, M27, M28
45	-	-	-	-	-	4.68	3.84	4.50	U10, M29
50	-	-	-	-	-	4.12	4.46	6.42	M26
57	-	-	-	-	-	4.53	3.55	5.39	M18, M19
93	-	-	-	-	-	3.98	2.43	3.39	U9, M25, M26

* Work on the Road Packages was commenced in different years during the project

3.27 At project completion, the percentage of state highway road links with a volume-to-capacity ratio greater than one declined by 13 percentage points against a target of 10 percentage points. Travel time on project roads decreased by 30-35 percent, depending on the particular road link, against an overall target of 20 percent. No data were available for more recent years.

MORE EFFICIENT AND EFFECTIVE NETWORK MANAGEMENT AND DELIVERY OF ROAD INFRASTRUCTURE SERVICES *Rated Modest.*

3.28 There was mixed progress across the different elements of the Institutional Development Strengthening Action Plan for improving the state's capacity for road sector management. Overall, the capacity of Project Implementation Unit has increased substantially, but the improved capacity has yet to percolate significantly into the rest of the Public Works Department, which manages the rest of the network. The Department has yet to improve its maintenance planning and programming.

[33] In terms of the International Road Index (IRI) expressed in meter per kilometer, road condition is rated as follows: 0-4: Good; between 4 and 7: Fair; greater than 7: Poor.

3.29 ***Outputs*** Officers from the Project Implementation Unit as well as other divisions of the Public Works Department were trained in contract and project management, including procurement. This has resulted in enhancing the capacity of engineers in the Department as well as in Karnataka Road Development Corporation to a reasonable level in managing both national competitive bidding and international competitive bidding contracts. The Public Works Department staff also gained experience from external experts through Project Coordination Consultancy services for project preparation, detailed engineering designs and support for project management throughout the implementation period. However, Public Works Department engineers need additional training to manage and monitor the engineering consultants who are engaged for project preparation and construction supervision of the works contracts. At present, land acquisition and the shifting of utilities account for the major portion of activities for engineers in the Project Implementation Unit.

3.30 Revised standard bidding documents and procurement procedures were prepared, disseminated and piloted in two divisions of the Public Works Department. The state government also initiated a pilot e-procurement platform through software of six modules of which one provides contract management and financial management systems related to works contracts. The e-procurement system was piloted in six departments, including that of Public Works.

3.31 A Road Information System and IT-based tools for systematic road sector management were initiated, including an annual maintenance plan prioritized on the basis of road condition data. However, maintenance planning is weak in the Public Works Department. Road data are being collected and the state's road network has been mapped digitally with nodes and links. Road condition data for the core state highway network are now available for 2008-2009. In 2005, the Public Works Department procured Road Measurement Data Acquisition System vehicles capable of automatically recording road roughness and other road parameters, and also carrying out video-logging of the road conditions. However, collection of road condition data through this system is at an early stage and cannot yet be used as a basis for estimating and prioritizing the application of maintenance funds. The Department is trying to ensure that appropriately trained contractors are assigned to operate the vehicles. Its 'ownership' of the data has also to be clearly established by suitably involving the department's staff in the process. Public Works officials felt that the local contractors are not yet sophisticated enough to use IRI data. This has implications for the need to provide information and training for contractors. The introduction of a pavement management system and a bridge management system is overdue.

3.32 A needs assessment report and a Human Resource policy and improvement/learning plan were developed and are being cleared for further processing by the state Cabinet.[34]

[34] A review of evolving Public Works Department functions, organization and staffing relative to road sector challenges, and identification of future institutional development strategy and options has been taken up in the Second Karnataka State Highway Improvement Project.

3.33 The study on the establishment of a Road Fund was completed and the Cabinet is considering its recommendations. A Public-private Infrastructure Advisory Facility (PPIAF) grant has recently been obtained to set up the Road Fund whose mandate will be to support maintenance and operation and service domestic debt.

3.34 The Departmental Code, which specifies the roles, powers and responsibilities of each officer in addition to many other aspects, was being revised at the time project completion. The mission was informed that the revisions, including responsibilities for environmental and social safeguards, have been made and clearance is expected from the finance ministry by mid-2012.

3.35 Traffic data are being collected every year (7 day traffic count) at specified traffic count stations. But most of these stations are said to be near built-up areas which gives only partial picture of the traffic intensity. The transport department is planning to better locate the traffic count stations to reflect the conditions in real-time.

3.36 ***Outcomes.*** There were no specific outcome indicators for measuring the efficient and effective network management and delivery of road infrastructure services. However, gains were made in capacity for procurement, technical engineering design, and contractor management. Following project completion, there has been some progress on the Road Information System, though much needs to be done before it can aid the planning and decision-making process for road maintenance. The revised Departmental Code is now pending approval from the finance ministry.

IMPROVING ROAD SAFETY ***Rated modest***

3.37 ***Outputs.*** This component disbursed only 16 percent of the appraised amount. It financed civil works for the (i) implementation of engineering and traffic management measures to enhance road safety and (ii) mitigation of traffic accidents at selected black spot locations along the project corridor through the Blackspot[35] Improvement Program. All 25 identified blackspots were improved. The contract concerning engineering and traffic management measures was terminated because the consulting firm, which was appointed to develop and deliver an accident analysis system, did not make progress. The component also supported the development and implementation of a Road safety Action Plan. An NGO undertook a road safety awareness campaign in two districts where there was substantial length of project roads – Belgaum and Raichur – using street plays, street singing and impromptu focus group discussions to disseminate messages relating to road safety. Eventually, the Public Works Department re-bid the consultancy services for installation of the accident analysis system before the closure of the project, which together with road safety audits are being supported in the follow-up project.[36] A Road Safety Council (for coordinating the road safety initiative) was created as planned, but it has not been activated, due to lack of resources or follow-up by the administration. The Public Works Department reports that under the followup project, a Road Safety Cell is

[35] A Blackspot is a hazardous place in a road where accidents frequently occur.

[36] Karnataka State Highways Improvement Project II

being established in the Department, while the Karnataka State Highway Transport and Traffic Authority is being set as the Road Safety lead agency.

3.38 ***Outcomes.*** A Road User Satisfaction Survey carried out in Karnataka in 2002 showed 53 percent of respondents felt unsafe on national highways, and 66 percent on state highways, while in 2007 this number declined to 39 percent and 30 percent for national and state highways, respectively. Nearly 30 percent of the identified blackspots did not have any accidents at all by the end of the project, and the rest saw a decline in the range of 35 percent-88 percent. The annual accident data collected on project roads showed an increase from 4,596 accidents in 2004 to 7,755 in 2006 and 5,830 in the first seven months 2007. Similarly the number of fatal accidents also increased from 350 in 2004 to 615 in 2006 and 461 in the first seven months of 2007. However, the absolute increase in accidents and deaths may be due to greater traffic volume. State-wide road accident fatalities per 10,000 registered vehicles declined from 16.0 in 2007 to 14.2 in 2008 and further to 12.5 in 2009. The lone intermediate outcome indicator for the share of the state highways network using the accident analysis system did not show any progress during the project.

Table 7. Trends in Vehicle Growth and Road Fatalities: India; Karnataka

Year	***Fatalities per 100,000 population***		***Fatalities per 10,000 vehicles***		***Registered Motor Vehicles ('000)***	
	INDIA	***KARNATAKA***	***INDIA***	***KARNATAKA***	***INDIA***	***KARNATAKA***
2007	10.1	15.4	11.8	16.0	96,707	5,512
2008	10.5	15.3	11.4	14.2	105,353	6,215
2009	10.8	15.0	10.9	12.5	114,951	6,897

Source: Ministry of Road Transport and Highways, Government of India 2010

3.39 ***Other Outcomes***: Quality control. ISO 14001[37] certification was obtained for the project implementation unit, Karnataka Roads Development Corporation Limited, and a few divisions of the Public Works Department during the project. This is planned to be extended across the Department in a phased manner. Officials told the mission that the state government is keen on improving quality in their road works. With this view, the follow-up project has engaged outside experts to conduct quality audit at frequent intervals while work is in progress.

Efficiency

3.40 ***Efficiency of the project is rated Substantial***. The overall weighted-average Economic Rate of Return (ERR) for the upgrading and rehabilitation components were 36 percent and 18 percent respectively, though they were somewhat lower than the

[37] ISO 14001 belongs to the family of standards related to environmental management administered by the International Institute for Sustainable Development (IISD), Canada. ISO 14001 is voluntary, with its main aim being to assist companies in continually improving their environmental performance, whilst complying with any applicable legislation. Organizations are responsible for setting their own targets and performance measures, with the standard serving to assist them in meeting objectives and goals and the subsequent monitoring and measurement of these (IISD 2010).

estimates at appraisal: 50 percent and 29 percent respectively. The ERRs incorporated the increase in traffic volume and increase in benefits from reduction of vehicle operating costs, especially savings from fuel costs. The ex-post economic analysis was carried out using the Version 1.3, and followed the same methodology used at appraisal.

3.41 The final ERRs reflect the cost overruns experienced in upgrading (15 percent) and in rehabilitation works (18 percent), as well as the overall delay of ten months in project completion. The reasons for cost overruns included increases in construction material prices, slow mobilization of some contractors, changes in engineering design in some cases, re-bidding of five contracts, delays in obtaining forestry clearances and work disruptions due to heavier than normal monsoon rains during 2005-2006.

3.42 The final cost of the institutional component was US$19.2 million against the planned cost of US$17.0 million, representing an increase of 13 percent. All the planned activities relating to consultant services, technical assistance and training programs to facilitate the implementation of the Institutional Development Strengthening Action Plan were carried out during the project period. Activities relating to the short- and medium-term training activities of Public Works Department managers and staff, and procuring office equipment for implementing an e-governance program within the Department, laboratory modernization, and development of road management systems were also completed during the project period. Feasibility studies for 4,900 km were completed by the end of the project and detailed project reports for the remaining 2,400 km of roads were completed after project completion.

Ratings

OUTCOME

3.43 The relevance of the project development objective is rated *substantial* given that it could have been stated more explicitly in terms of the three individual objectives of enhancing the quality of the road network, effective roads management and improved road safety. The relevance of project design is also rated *substantial* based on the clear linkages of each objective and component to specific outcomes. The outcomes from the physical improvements were substantially realized, and therefore the efficacy of enhancing the quality of the road network during the project is rated *substantial*. However, the outcomes were *modest* overall in respect of the institutional development efforts, in spite of improved capacity in some areas of planning and management. Outcomes for improving road safety were *modest*. Efficiency is rated *substantial*. Based on ratings for *relevance, efficacy and efficiency,* overall outcome of the project is rated *moderately satisfactory*.

RISK TO DEVELOPMENT OUTCOME

3.44 ***Risk to the condition of the improved core road network in Karnataka is Moderate.*** Much of the enhancement in capacity has remained within the project implementation unit and has not spread sufficiently to the rest of the Public Works Department which is a concern for the sustainability of the gains made in road quality. The mission was informed that as of November 2011, project roads have not had any

significant maintenance performed on them since the end of the project in 2007. The mission observed potholes, rutting, and other signs of distress in some segments of project roads during site visits that covered a small sample of project roads. A full assessment of road condition and quick remedial action is required for the affected segments to avoid more expensive rehabilitation in the future. Discussions with officials following the site visit confirmed that these actions are being initiated. Non-plan expenditure for roads, which covers routine activities, declined or stayed flat in nominal terms between 2007 and 2011, and is likely to have declined in real terms. The budgeted expenditure for non-plan expenditure shows an increase of nearly 50 percent for 2011-2012. The Public Works Department reports that maintenance expenditures have increased since project completion. Actual state funded expenditures for routine maintenance and periodic maintenance increased between 2008 and 2012, by 62 percent and 98percent respectively at current prices.

Table 8. Government of Karnataka: Expenditure for Roads and Bridges

Year	***Plan expenditure* (INR million/ US$ million)***	***Non-Plan Expenditure* (INR million/ US$ million)***
2007-2008	5,800 (140)	5,090 (123)
2008-2009	8,040 (185)	4,580 (105)
2009-2010	4,650 (96)	4,500 (93)
2010-2011**	4,680 (105)	4,780 (107)
2011-2012***	3,530 (67)	8,360 (158)
*Plan expenditure is the provision made in the central government budget for the state. Non-plan expenditure is provided in the state budget for routine normal activities of the government ** Revised Estimates ***Budgeted Expenditure		

Source: Government of Karnataka. 2012. Accounts Ready Reckoner (2002-2011). Finance Department.

3.45 The responsibility for road safety is diffused across departments and there is no single lead agency that has the ownership and mandate to address road safety across Karnataka in a multi-sector or holistic fashion. More recently, The mission was informed that under the follow-on project – which includes a major component for road safety – a Traffic and Road Safety Cell has been established in the Transport Department, which has been assigned a lead agency role for road safety management.

3.46 The follow-up project includes consulting services for implementation of civil works to support the establishment and operation of the Planning and Road Asset Management Center[38] of the Public Works Department, which is being chaired by a state level Minister. The Project will help to continue implement a new Institutional Development and Strengthening Action Plan.

3.47 Once finalized, the documents will be used across the Public Works Department. Overall, procurement processes have improved in the Project Implementation Unit as well as more broadly across the Public Works Department due to the project experience.

[38] PRAM-C is being financed under the Asian Development Bank funded project of the same name, Karnataka State Highway Improvement Project.

As of now, the Public Works Department is using a uniform bid document. In the follow up project, the latest harmonized FIDIC[39] document is being followed.

3.48 Though the Project Implementation Unit has engaged third parties to audit the quality and other aspects of road works, it is necessary for the Public Works Department to develop skills to monitor and manage the consultants engaged in construction supervision. Overall, it is crucial to carry out a training needs assessment that identifies requirements for junior, middle-level and senior management, as well as at the headquarters and district levels. So far, training has taken place mainly from project funds because no specific budget provision has yet been made for training.

3.49 The Public Works Department has improved its planning and project preparation capacity. This is demonstrated in manner in which they organized the process for land acquisition and shifting of utilities. Following this project experience, the state government has revised the Resettlement and Land Acquisition Policy principles and provisions of the new national rehabilitation and resettlement policy. This improvement has already been demonstrated in the follow-up project Karnataka State Highways Project II, for which land acquisition and shifting of utilities have proceeded more efficiently.

3.50 Post-Project Developments: In 2011, the Public Works Department launched a State Highway Development Program that will upgrade and rehabilitate 10,000 km of the Core Road Network under item-rate contracts with a stipulation of two-year maintenance periods. A dedicated Project Implementation Unit has been set up for this purpose in the Public Works Department, and the implementation of the State Highway Development Program will follow procurement and safeguard practices similar to those used in this project. The Public Works Department considers this as a potential spillover of the capacity built in the project to the rest of the Department.[40]

3.51 In 2009, the Karnataka Transport Secretariat issued a Road Development Policy which (a) mandates the Karnataka Highway Traffic and Transport Authority "as an executive entity and the nodal road sector planning and regulatory body of the Government of Karnataka"; (b) commits to establish a Karnataka Road Fund based on the study completed under the Karnataka State Highways project; (c) launches a "comprehensive Toll policy" for the entire core network (d) promotes Public Private Partnerships for construction and long-term operation and maintenance contracts, through Viability Gap funding support, annuity modes, and the use of Special Purpose Vehicles and (c) redefines the respective areas of competences of the Public Works Department, , the Project implementation and the to ensure a consistent development and management of Core Road Network. In July 2010, a tolling policy allowed the Karnataka Roads Development Corporation Limited and private concessionaires to toll State Highways and major district roads.

[39] Multilateral Development Banks (MDB) Harmonised guidelines of FIDIC (Fédération Internationale des Ingénieurs-Conseils) or International Federation of Consulting Engineers.

[40] Region's comments: email dated June 21, 2012 from Binyam Reja, Acting Manager, South Asia Transport Division, World Bank.

BANK PERFORMANCE

3.52 ***Quality at entry is rated Moderately Satisfactory.*** The Bank's team undertook detailed project preparation and had a constructive policy dialogue with the state government to address the most critical areas for institutional reform in the roads sector that would complement investments to improve the quality of the road network. In retrospect, the institutional capacity building component could have been simplified by focusing on a few critical areas rather than attempting a comprehensive sector reform. This was particularly so because the Public Works Department was implementing for the first time a project of this size, client capacity was known to be relatively weak, and the level of commitment for completing the agreed reforms was difficult to ascertain in the absence of any conditionality or monitorable triggers. However, a Quality at Entry Assessment for the project carried out by the Bank's Quality Assurance Group rated quality at entry as "Satisfactory" and cited the following strengths: (i) a sound strategy to build external pressure for change within the Public Works Department through the promotion of user surveys and stakeholder forums; (ii) coordination of institutional development in the provincial sector with the broader state level public resource management framework, (iii) a procurement strategy in terms of sizing of contracts and pre-qualification to promote modernization of private construction industry; and (iv) the state's and the Public Works Department's commitment to support e-governance and a financial management system.

3.53 The project's design appropriately addressed the state's priority needs for rehabilitating and upgrading its core highway network. The project's design took into account lessons learned from previous Bank road sector projects in India and other countries. In particular, these lessons related to ensuring implementation readiness; adequate institutional capacities for project management; client ownership for implementing institutional development measures; and timely land acquisition and implementation of social safeguard policies. A participatory approach was adopted during project preparation through formal and informal consultations and meetings with all relevant stakeholders. Their views were incorporated in the project design and in some cases led to improvements in the engineering design and safety measures, betterment in alignments, and extension of compensation to vulnerable squatters. The monitoring and evaluation design included appropriate outcome and output indicators.

3.54 Several risks to project outcomes were identified at appraisal that included lack of political endorsement and pressure as well as senior management leadership to implement actions in the Institutional Development Strengthening (IDS) Action Plan; delays in the clearance of construction sites prior to award of civil works contracts; collaboration with other state government departments; ineffective supervision of works by the Public Works Department including enforcement of environmental clauses; inability of the state government to manage project fund flows effectively; the government's commitment to steadily and substantially increase maintenance funding; and delays in tender evaluation and award of civil works contracts. In retrospect, more attention could have been paid to the existing level of capacity in the Public Works Department, and the pace at which it could absorb new institutional capacity-building measures.

3.55 ***Quality of supervision is rated Satisfactory***. The Bank's team was proactive in its supervision, and focused on finding ways to overcome the factors that hindered progress in implementation. A total of 15 supervision missions were conducted over the project period and the teams maintained a good balance of technical, institutional and safeguards-related skills. In the last three years, the Bank's supervision efforts focused much more on ensuring that the project's institutional strengthening activities went hand-in-hand with the progress on civil works. Nevertheless, greater emphasis should have been given to periodic supervision of project's fiduciary aspects in order to implement satisfactory financial management systems and arrangements. Safeguard requirements were adequately supervised. After project completion, the Bank continued to monitor implementation of the remaining contracts as part of the preparation of the follow-on project. The Bank as part of its fiduciary responsibility also continued to supervise the implementation of the safeguard issues related to environment and social safeguards.

3.56 Despite measures to mitigate them, some risks identified at project design materialized to different extents, especially those relating to supervision of works by the Public Works Department and collaboration with the police, forestry department, and local governments. During project implementation, the Bank and project team developed new mitigation measures, including a Memorandum of Understanding between the Public Works Department and the Forestry Department, to minimize the impact of these risks.

3.57 **Overall Bank performance is rated *moderately satisfactory***.

BORROWER PERFORMANCE

3.58 ***Government of Karnataka performance is rated moderately satisfactory***. The state government demonstrated a commitment to the project and reform in the road sector through a series of actions relating to the transport sector as well as the state administration as a whole. The Chief Minister established a task force on roads improvement in the state [41] during 1999-2000 to identify road sector institutional constraints and recommend solutions. The Karnataka Transparency in Public Procurements Act, 2000, was adopted making tendering compulsory and aiming at streamlining the procedures for inviting, processing, and accepting tenders. An information technology strategy was developed by the Public Works Department in January 2001, which laid the basis for an e-governance program and development of a Geographic Information System (GIS)-based road information system.

3.59 Through most of the project period, the allocation of funds for maintenance fell short of planned expenditures by 20 percent (2001-02) to about 50 percent in 2005-2006. This variance was reduced sharply to 1 percent during the last year of implementation. In 2011, it was reported[42] that about 30 percent of the budget allocation for roads was being spent on maintenance in comparison to the norm[43] of 60 percent. However, there is an overall increase in the "non-plan" expenditure on roads and bridges in the state from the

[41] Task Force Committee for Roads Improvement Requirement in Karnataka, Government of Karnataka 1999-2000.

[42] Government of Karnataka. 2011. Third Report of the Expenditure Reforms Commission.

[43] Indian Roads Congress. www.irc.org.in.

year 2009 to 2011. (Table 8). The Public Works Department reports that maintenance expenditures have increased since project completion. Actual state government funded expenditures for routine maintenance and periodic maintenance increased between 2008 and 2012, by 62 % and 98% respectively at current prices. The share of maintenance expenditure in overall road sector increased from 23% in 2008-2009 to 50% in 2011-2012, and allocations for 2012-2013 set this share at 41% of total road expenditures. Actual maintenance expenditures were close to actual maintenance expenditure during 2008-2011. For the fincial year 2012-13, allocations from the state (US$40.9 million) and from the central government (US$31.9 million) together cover the budgeted requirement of US$72 million. There was little support for making a beginning with pilot performance-based maintenance contracts as planned. A Karnataka State Road Safety Council was established along with many District Safety Councils but they were not activated. In terms of actions taken after project completion, the Public Works Department reports that under the follow-up project, a Road Safety Cell is being established in the Department, while the Karnataka State Highway Transport and Traffic Authority is being set as the Road Safety lead agency.

3.60 ***Implementation agency performance is rated moderately satisfactory***. Throughout the entire preparation and implementation of the project, the project implementation unit provided full cooperation and support to the Bank as well as to other state agencies. In respect of monitoring and evaluation, the implementing agency performed adequately in collecting data on outcome indicators throughout the implementation period as well as conducting roads user surveys at the start and completion of the project. While the supervision of contracts by the Public Works Department in the first part of the project was not adequate, it improved later as the Public Works Department built its capacity through training, and on-the-job experience with the project coordination consultancy services. However, much of the enhancement in capacity has remained within the project implementation unit and has not spread sufficiently to the rest of the Public Works Department which is a concern for the sustainability of the gains made in road quality. Further, the Public Works Department needs to make headway in several of the institutional goals that it set for itself at the beginning of the project. These include systematic maintenance planning based on a functioning road information system, and provisions for improving road safety.

3.61 **Overall Borrower performance is rated *moderately satisfactory***.

MONITORING AND EVALUATION

3.62 **M&E Implementation**. Baseline data for indicators were gathered during the first year of implementation. Data were collected periodically. The Public Works Department undertook monitoring and evaluation of black spots improvement and worked with the police department to obtain accident casualty numbers. Road Users' surveys that were carried out towards the end of the project As the M&E design did not provide adequately for measuring elements of capacity-building, it proved difficult to estimate progress in this regard.

3.63 **M&E Utilization**. From the project documentation and discussions with project staff, it appears that the data were not utilized adequately as a feedback mechanism for

taking corrective actions during implementation. Road Users' surveys were useful to the Public Works Department in gauging perceptions of its performance and areas for improvement. Overall, the Quality of M&E is rated *Substantial.*

4. India Road Transport Service Efficiency Study

Context

4.1 The Bank has had a long involvement in financing road infrastructure in India (Appendix B Table 1), but by the early 2000s had not yet closely examined government policies governing the road trucking transport industry, policies that can have a major impact on economic returns on the huge investments made in the roads sector. This study was intended to complement the Bank's substantial lending program in India's road sector and fill this gap.

Process

4.2 The study objectives evolved in a Concept Note (Aug 2001) and were clearly defined after review within the Bank and in a workshop with important stakeholders in New Delhi held on January 8, 2003. The objectives of the study according to the study inception note were to (i) achieve a better understanding of the non-infrastructure factors that impair the efficiency of the road public carrier industry in India and thereby reduce the return on infrastructure investments; (ii) establish quantitative measures of the economic losses due to the major constraining factors; (iii) review the experience of other countries that have faced similar problems, identify their solutions, and assess the transferability of that experience to India; and (iv) engage the Government of India and respective state governments, the transport operators, the shippers, and the passengers in a dialogue in search of an appropriate set of policy solutions for India. The study was completed in 2005 after a delay of two years. This delay was necessitated due to the extra time required for completion of policy notes that formed inputs to the final study. Despite the delay, the study was completed within the budgeted amount – US$326,000 against a planned US$366,000. The study was co-financed to the extent of US$54,000 through trust funds.[44]

4.3 The study obtained the inputs of various stakeholders (road transport suppliers and their regulators, ultimate road users, shippers and passengers) through sample surveys and interviews, to get a clearer picture of the quality, costs and efficiency of road transport services.[45] In this context, and in order to contain the study to manageable limits, three states were selected for in-depth review of road transport issues – two (Maharashtra and Karnataka) which have more advanced road transport administrations, and the other (Uttar Pradesh) with a less advanced administration. The task was closely linked to reform objectives and to underpin the Bank lending program through policy

[44] TF051481-UK-DFID.

[45] The study draws heavily on a number of studies that were carried out by Clell Harral, Ian Jenkin, John Terry, Richard Sharp, Eugene Gurenko, the firm Consulting Engineering Services, Inc.(CES), and the Asian Institute of Transport Development (AITD).

dialogue with the Government of India and the respective state governments on the identified issues. Special attention was given to examine the serious problem of overloading of trucks which damage roads for lack of axle load control, and to the problem of subsidies for inter-city and rural bus services.

4.4 A Quality Assurance Group review of the study carried out in 2006 noted that the progress of report preparation was closely monitored by the Bank's management. Discussions with the task team confirm that Bank management was actively involved in guiding the task from inception by providing adequate resources and by ensuring a good skills mix. There was close collaboration between the field and headquarters staff. Peer reviewers were well selected and competent, and their suggestions and technical advice were taken into account.[46]

4.5 Interviews conducted by the mission suggest that the original schedule for the study was optimistic, considering the complexity of the tasks. Even though it took about two years more than estimated, the time taken to complete the study was reasonable, given that the activities leading up to the report required a stakeholders sample survey, an in-depth study of the road transport situation in three selected states, preparation of policy notes, and organizing two workshops and two seminars to discuss issues of importance in the sector. Additional time also became necessary to cover another important aspect of the public policy failure, the failure in trucking insurance which was one of the factors for the existing low level of safety. The preparation of the Policy Note on another crucial issue – axle overloading and lack of enforcement of controls – in collaboration with the Asian Institute of Transport Development in New Delhi also took significantly more time than anticipated. Yet, there was no cost overrun in spite of the delays.

4.6 The criteria for rating each of the four elements of analytical and advisory activities used in this review – strategic relevance and ownership, quality, dialogue and dissemination, and results – are presented in Annex C, and a detailed assessment of the Road Transport Service Efficiency Study is presented in Annex D.

Strategic Relevance and Ownership

4.7 The Indian Government had been using the landmark "Sundar Committee report"[47] on the trucking Industry in India (Asian Institute of Transport Development for the Ministry of Surface Transport 1999) as a primary reference for the development of the trucking industry policy (Box 3). However, as explained by the task team, the Bank sought to convince the Indian Government that it was necessary to take a fresh look at the policy regime and identify measures to improve the efficiency of the road transport sector. The value-added was expected to come from identifying measures for potential improvements in trucking industry policy through sample surveys of and interviews with key stakeholders (government officials, road transport suppliers and their regulators, ultimate road users, shippers, and passengers), in-depth study of selected states, and comparison of the Indian road situation with comparator countries (China and Pakistan),

[46] Paul Amos, Asif Faiz and Graham Smith.– transport specialists with wide experience in the World Bank and other organizations.

[47] Sanjivi Sundar, former Secretary of the Ministry of Shipping and Transport, Government of India.

and drawing relevant lessons. The study team also wished to open a window of opportunity for reforms in the sector in the context of future Bank lending. The Bank intended to use the transport projects in the pipeline as a trigger to bring about policy reforms to improve efficiency in the road transport sector.

Box 3. "Sundar Committee" Report (1999): Methodology and Findings

The "Sundar Committee" Report analyzed a wide range of issues affecting road freight, to identify priorities for policy action. For this purpose, it carried out surveys on the Mumbai - Delhi, Delhi-Kolkata, and Kolkata-Chennai corridors. These corridors carry a major share of inter-state and inter-regional goods traffic in the country. The surveys involved observers travelling on a sample of trucks and recording times and reasons for all events (starting and stopping, loading/unloading, fuelling and maintenance, resting), including any delays attributable to administrative detentions at or between state borders. Supplementary information about the vehicle, crew and load, and about the road environment, was used to interpret these results. Additional information about expenses incurred (for official or unofficial payments) was also recorded to estimate overall trip costs.

The Report identified, inter alia, the following major problems: excessive administrative detention of trucks; outdated vehicle technology; air pollution; axle overloading; exceptionally high accident costs; asymmetric coverage of labor hours regulation (small firms exempted); and lack of adequate cargo insurance facilities.

4.8 The study chose to focus on three areas that were considered the most relevant to investments in highway infrastructure – the trucking industry, inter-city bus services, and, because of its important but largely underserved role in enhancing road safety, the motor insurance industry. The decision to thus narrow the focus of the study was appropriate because a more comprehensive approach might have resulted in spreading attention over too many issues.

4.9 The subject matter of the study was in line with the emphasis on road transport infrastructure and services and their impact on India's economy in the CAS documents of 2001 and 2004 and the Country Partnership Strategy (CPS) for India for 2009-2012. It was also in line with the priorities for road infrastructure and services laid out in India's 11th Five Year Plan document (2006-2011), which include addressing policy issues for improving efficiency of road transport and the functioning of State Road Transport Undertakings/Corporations.[48] However it is doubtful, given the lack of progress on the subject to date, whether there was any political will to move forward in this area.

4.10 Overall, s**trategic relevance and ownership** of the study is rated ***moderately satisfactory*****.**

[48] www.planning.commission.nic.in

Quality

4.11 The study added value and credibility by directly obtaining the views of the most important stakeholders – ultimate road users, shippers, and passengers. In the course of the study, sample surveys were carried out to get a clearer understanding of the quality, costs and regulation of road transport services and also to assess the role played, and value added, by different actors. (such as truck operators, brokers, agents, and insurance companies). The study went beyond studying the central government's role to analyze issues at the state level in some depth, particularly since many of the problems relating to road use efficiency were seen to arise because of the variation in regulations and sales/octroi[49] taxes across different states. The experience of the two comparator countries – China and Pakistan – in dealing with road transportation issues to improve efficiency in the sector constituted new learning for the study's audience. This experience was gleaned from secondary information rather than surveys.

4.12 The report provides convincing empirical evidence, and uses quantitative data well. It adds value by providing primary survey data, derived estimates from existing data, as well as projections of costs for different policy scenarios. Examples include survey data on truck driving labor and its conditions; truckload freight charges in various countries; compilation of long-distance freight rates in India; estimated freight operating cost of large and small truck operators; annual economic costs of administrative truck delays; projections of road freight costs with increasing tractor trailer use; estimates of annual unofficial payments made by truck operators; and estimated savings in economic costs as a result of reforms.

4.13 The recommendations from the study are clear and actionable and are provided separately under the heads of (1) trucking industry, (2) inter-city bus services, and (3) motor insurance industry (Box 4). Recommendations for the trucking industry include encouraging use of the multi-axle vehicles and tractor-trailer combinations, thereby reducing transport costs and road pavement damage; and investment in permanent weigh stations at strategic locations on the National Highway network to enable random checks. Recommendations for inter-city buses included deregulation of tariffs, restructuring and commercialization of State Transport Undertakings, elimination of their monopoly rights, changes in the tax regime to achieve uniformity of tax treatment for all buses operating in the inter-city markets, and creation of an independent agency to establish, monitor and enforce competition rules and ensure access to common user infrastructure. For the motor insurance industry, the study recommends switching to a system where experience-rated premiums attach to the owner and the driver, rather than the vehicle.

4.14 Overall, the **quality** of the study is rated ***satisfactory***.

[49] Octroi is a local tax collected on various articles brought into a state for consumption.

Box 4. India Road Transport Service Efficiency Study - Main Recommendations

Trucking Industry

- To reduce delays at border crossings, particularly for high value or time-sensitive goods, consider a system to permit sealed trucks which elect to use the system to operate without en-route inspections on the basis of a certificate issued at origin by a duly authorized and bonded issuing entity.
- Encourage use of multi-axle vehicles and tractor-trailer combinations, thereby reducing transport costs and road pavement damage, it is recommended that incentives be put in place such as tax rates favoring such vehicles and reduced tolls on highways to reward their reduced impact on pavements.
- Since a significant portion of the driver population is illiterate, develop audio-visual driver training materials.
- To prevent excessive hours of driving, trucks operating outside their home state should be required to carry two licensed drivers at all times.
- To improve axle load controls, changes recommended are: expand enforcement authority beyond officials of the Motor Vehicles Department; distinguish between minor (up to 5 percent of gross vehicle weight) and more excessive overloading for which there would be extreme penalties; and make abetment an offence to enable action against the broker or transporter arranging the load.
- Invest in permanent weigh stations at strategic locations on the National Highway network to enable random checks of trucks passing the weigh station when the station is open. Require trucks found to be over-loaded to unload the excess load at their own cost and risk.

Inter-City Bus Services

- Review the strategy for State Transport Undertakings (STU) reforms advanced by Association of State Road transport Undertakings.
- Reforms in the Inter-City Bus services sector should include deregulation of tariffs, restructuring and commercialization of STUs, elimination of STU monopoly rights, changes in the tax regime to achieve uniformity of tax treatment of all buses operating in the inter-city markets, and creation of an independent agency to establish, monitor and enforce competition rules and ensure access to common user infrastructure (terminals, bus stops).
- The appropriate public policy for the inter-city bus services sector would be to remove quantitative regulations restricting entry into the inter-city bus transport markets, and to allow market forces to determine both tariffs and the types of services offered.

Motor Insurance Industry

- Switch to a system where experience-rated premiums attach to the owner and the driver, not to the vehicle; be taken up as a matter of high priority by the Insurance Regulatory and Development Authority (IRDA).
- IRDA should initiate the development of an integrated claims database.
- IRDA should also explore the creation o f a motor insurance pool for bad drivers who have been denied cover by the insurance industry.
- Finally, the report recommends amendment of the Motor Vehicle Act of 1988 to remedy deficiencies with respect to motor insurance such as the lack of provisions regarding a statute of limitations, liability limits and thresholds for claims adjudication.

Dialogue and Dissemination

4.15 The team discussed the Concept Note with the stakeholders in a workshop at the inception of the study (New Delhi, January 2003). The findings of the study were presented at seminars held in New Delhi the context of the "Convention of Reforms in the Road Transport Sector" organized by the All India Confederation of Goods Vehicles Owners Organizations and the All India Bus Operators Confederation in February 2005 and the "Global Infrastructure Summit" organized by the Federation of Indian Chambers of Commerce and Industry (FICCI) in March 2005 and Participants included senior officials of Central and State Government agencies, NGOs, and various private sector organizations involved in the road transport sector. The feedback from these seminars was incorporated in finalizing the report which came out November 1, 2005. The Bank was able to get the media and public interest groups involved in the seminars and this helped to add to the awareness of the issues in the sector. However, these events did not result in any specific commitments on the part of the government representatives and others to follow up on the recommendations of the study.

4.16 The study is referred to in technical papers as well as popular publications, confirming that the study's recommendations still have currency. A partial internet search reveals that the study has been referred to by reports/papers from the Indian Council for Research on International Economic Relations, the Journal of Asian Public Policy, and the New Zealand Transport Agency (Postigoa 2008, Neon and de Pont 2009, Ganguli and Mukherjee 2009). The main recommendations of the report are referred to at length in the popular publication, "India – the Emerging Giant" (Panagariya 2008).

4.17 Overall, the **Dialogue and Dissemination** of the study is rated ***moderately satisfactory*****.**

Results

4.18 While the *Road Transport Service Efficiency Study* for India has received broad support and a wide audience among transport users through various workshops and conferences, there is little evidence of the government's willingness to act on the study's recommendations. Where there has been some significant action (on axle load controls), it was the result of public interest litigation by a transporters association and a consequent Supreme Court ruling.[50] From discussions with the task team it is learnt that the Bank has continued to try to impress upon the Ministry for Road Transport and Highways and the Insurance regulator (IRDA), the importance of some of the issues for improvements in road safety and road transport efficiency. However, the response in this respect has been low.

[50] In a significant judgment on November 9, 2005, the Supreme Court of India has quashed the issuance of Gold Card/ Tokens by the State Governments permitting overloading of trucks in excess of prescribed weight limit. The Court has mandated that the trucks found on roads carrying illegal excess load will have to offload the cargo crossing the legal weight limit. This judgment is expected to have multiple impact on various stakeholders in the trucking and automobile industry.
(Source:http://indiatransportportal.com/2011/12/overloaded-vehicles-face-strict-scrutiny/)

4.19 According to the task team, the Bank expected to include some of the recommendations from the study as conditionalities in proposed transport projects. An examination of the Bank's lending portfolio after FY2005 does not reveal any specific components or sub-components that are focused directly on the subject matter of the study. The follow-on Karnataka State Highways Improvement Project II and the proposed follow-on project in Gujarat (under preparation) have significant safety components that overlap with some of the study's considerations. However, second Karnataka project appraisal document does not make any direct reference to the study. Discussions with the project's task team suggest that the study did not specifically figure in the course of project appraisal document preparation, though it was considered broadly with other relevant economic and sector work

4.20 Respondents from private sector, research institutions as well as government officials told this mission that it is not politically easy to get remedial actions by State governments in India which have varying regulations and tax regimes regarding sales and octroi taxes affecting road transport. Professional competence and knowledge are not the problem; the various institutions dealing with road transport in India have the capacity to implement the necessary reforms. What is at a premium is the political will at the central and State government levels to tackle serious issues affecting the sector.

4.21 However, judging from the feedback obtained from all categories of respondents, where complex issues with multiple stakeholder issues are involved, a focused and high quality knowledge product such as this study can serve to keep the dialogue going between stakeholders. While there has not been much identifiable action on the issues covered by the *Road Transport Service Efficiency Study* since it was disseminated, the recurring references to the actionable recommendations of the study in research and popular publications help to keep the issues alive. The study also can serve as a valuable reference point for decision-makers as well as other stakeholders when the issues raised by the study are followed up in policy and project activities.

4.22 Discussions with government officials, representatives of the trucking industry, and researchers confirm that the additional value from the study comes from its quantitative and qualitative analysis, extensive interaction with all stakeholders, and highlighting parallels with other comparator countries, and the particular focus on the three main issues of the study. At the same time, the overall view of the respondents is that many of these issues and solutions have been separately raised and examined by different studies by the government, research institutes as well as other stakeholder organizations. The respondents generally felt that most of the recommendations of the study remain valid today since there has been limited progress on the issues over the past 5-6 years. Some respondents felt that the recommendations could potentially translate into time-bound targets for national and state governments.

4.23 Overall, the **results** of the study are rated ***moderately satisfactory*****.**

5. Lessons

5.1 The following main lessons are drawn from this report:

- **The physical and financial sustainability of a road network hinges on the road agency's capacity to undertake needs-based and timely implementation of road improvement and maintenance works. This enables optimal use of available funds, and avoids greater costs of repair in the future.** Beyond project completion, Gujarat has worked to consolidate its capacity for and progress in monitoring road condition data and prioritizing road works on that basis. Data from selected state highway segments indicate that road condition (roughness) has been kept within acceptable limits. Karnataka has more work to do in building similar capacity, and this is reflected in signs of distress that are noted in project roads, five to seven years after improvement. Failure to take timely remedial action will result in far greater rehabilitation costs in the future.

- **Institutional and administrative capacity-building should be carried out in step with the readiness of the target agency to internalize it.** The ability to improve capacity on multiple fronts such as planning, procurement, contract management, and environmental and social safeguards may differ from one road agency to another, and may take more than one project cycle to materialize. In retrospect, institutional reforms in the Karnataka project could have been attempted in a phased and incremental manner, allowing time for them to be integrated with wider operations, and obtaining the support of key government departments and their leadership.

- **As road agencies evolve from being providers of roads services to 'managers' of increasingly outsourced functions, it is essential that core competencies are retained and strengthened to ensure sustainable management of the road network.** The core competencies relating to planning, technical design, road management systems, procurement, contract management and environmental and social safeguards have been impacted to different extents in Gujarat and Karnataka due to outsourcing to consulting firms, staff turnover, staff depletion and lack of follow-up training. A credible mechanism for human resource management must be put in place to fill these gaps.

- **The roads agency should lead the way in creating a productive working relationship with other entities involved in the implementation of roads projects.** A culture of partnership and cooperation was demonstrated in Gujarat between the Roads and Buildings Department, road works contractors and supervising engineers which minimized disputes and speeded up implementation. The Roads and Building Department worked to earn the confidence of other parties through responding in a credible and consistent manner to issues that arose during project activities.

- **Decentralization of the Bank's project leadership and supervision does not appear to confer any significant advantage over the task leadership based at headquarters.** Feedback from the road agencies in Gujarat and Karnataka suggests that the locus of Bank task management did not make a significant difference in terms

of response time and attention span. In practice, both the Karnataka project, which was managed from the Bank's country office, and the Gujarat project, which was managed from the Bank headquarters, were able to conduct a similar number of supervision missions (KSHIP: 15; GSHP: 17). However, lending and supervision costs were significantly higher for the Gujarat project.

- **A knowledge product that seeks to cover a subject that has already been well studied must provide clear justification of its likely added value.** The *Road Transport Service Efficiency Study* covered subject matter that had been covered by other prominent reports within India. The new study was justified by highlighting the added value from surveys and interviews of stakeholders and gathering the experience of comparator countries. The study served to renew policymakers' attention to politically challenging issues facing operators of freight trucks and passenger bus services, and the motor insurance sector.

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Annex A. Basic Data Sheet

GUJARAT STATE HIGHWAYS PROJECT (LOAN 4577)

Key Project Data (amounts in US$ million)

	Appraisal estimate	*Actual or current estimate*	*Actual as % of appraisal estimate*
Total project costs	533.0	408.3	78
Loan amount	381.0	280.0	74
Cancellation	-	101.0	-

Cumulative Estimated and Actual Disbursements

	FY01	*FY02*	*FY03*	*FY04*	*FY05*	*FY06*	*FY07*	*FY08*	*FY09*
Appraisal estimate (US$M)	55.0	138.0	228.0	303.0	356.0	381.0	381.0	381.0	381.0
Actual (US$M)	40.9	49.4	85.6	129.9	188.9	241.2	266.9	280.0	280.0
Actual as % of appraisal	74.3	35.8	37.5	42.8	53.0	63.3	70.0	73.5	73.5
Date of final disbursement: June 2009									

Project Dates

	Original	*Actual*
Initiating memorandum	10/15/1997	10/15/1997
Negotiations	05/18/1998	05/18/1998
Board approval	09/05/2000	09/05/2000
Signing	10/18/2000	10/18/2000
Effectiveness	11/28/2000	11/28/2000
Closing date	12/31/2005	12/31/2007

Staff Inputs (staff weeks)

Stage of Project Cycle	*Staff Time and Cost (Bank Budget only)*	
	No. of staff weeks	**$ 000 (including travel and consultant costs)**
Lending		
FY94	(Data not available)	1.57
FY95	(Data not available)	6.95
FY96	(Data not available)	39.42
FY97	(Data not available)	186.81
FY98	(Data not available)	228.63
FY99	(Data not available)	41.68
FY00	(Data not available)	12.78
FY01	(Data not available)	0.00
FY02	(Data not available)	0.42
Total:		518.26
Supervisor/ICR		
FY97	(Data not available)	2.61
FY98	(Data not available)	2.59
FY99	(Data not available)	3.44
FY00	(Data not available)	71.75
FY01	18	96.70
FY02	20	82.83
FY03	23	105.32
FY04	23	90.18
FY05	19	108.43
FY06	26	140.03
FY07	26	107.26
FY08	52	73.12
Total:	207	884.26

Task Team Members

Names	*Title*	*Unit*	*Responsibility/ Speciality*
Fabio Galli	Financial Analyst	SA2EI	Team Leader
Douglas Gray	Program Assistant	SA2EI	Program Assistant
Guang Z. Chen	Transport Economist	SA2EI	Economic Analysis
Sujit Das	Highway Engineer	SA2RS	Engineering
Ernst Huning	Consultant	SA2EI	Institutional Devt.
Moncef Chaabouni	Consultant	SA2EI	Engineer

Hiroko Imamura	Legal Counsel	Legal	Lawyer
Reidar Kvam	Social Development Officer	ASTHR	Social Safeguards
I.U.B. Reddy	Social Development Officer	ASTHR	Social Safeguards
Anil Somani	Environmental Specialist	SA2RS	Team Leader/Environment
Rajat Narula	Finance and Accounting Specialist	-	Financial Management
Sanjay Vani	Finance and Accounting Specialist	-	Financial Management
Cecil Perera	Disbursement Officer	SA2RS	Procurement
N. Raman	Procurement Specialist	SA2RS	Procurement
Irene Christy	Program Assistant	SA2EI	Program Assistant
Antonio Cittati	Highway Engineer	-	Engineering
Peter Long	-	-	Peer Reviewer
Dieter Havlicek	-	-	Peer Reviewer
Manuel Rosini	Consultant	-	
Sonia Kapoor	Environment Specialist	SASEN	Environment
Syed Ahmed	Legal Counsel	-	Lawyer
Blanchard Marke	Disbursement Officer	-	Disbursement
Supervision/ICR			
Sita Ramakrishna Addepalli	Environmental Specialist	SASDN	Environment
Debabrata Chakraborti	Sr. Procurement Specialist	SARPS	Procurement
Jaswant S. Channe	Consultant	SASDT	Procurement
Sujit Das	Sr. Transport Engineer	SASDT	Engineering
Atul Bhalchandra Deshpande	Financial Management Specialist	SARFM	Financial Management
Rajesh B.S. Dongol	Program Assistant	SASDO	Program Assistant
Ke Fang	Sr. Urban Transport Specialist	SASDT	Task Team Leader
Fabio Galli	Sr. Financial Analyst	AFTTR	Task Team Leader
Ernst Huning	Consultant	SASDT	Institutional Dev.
Manoj Jain	Sr. Financial Management Specialist	SARFM	Financial Mgmt.
Ritu Sharma	Program Assistant	SASDO	Program Assistant
Anil H. Somani	Consultant	EASTE	Environment
Mitsuyoshi Asada	Sr. Transport Specialist	SASDT	ICR Team Leader
Natalya Stankevich	Operations Analyst	SASDT	ICR Team Member
Reefat Sultana	Project Analyst	SASDT	ICR Team Member

KARNATAKA STATE HIGHWAYS (LOAN 4606)

Key Project Data (amounts in US$ million)

	Appraisal estimate	*Actual or current estimate*	*Actual as % of appraisal estimate*
Total project costs	447.00	538.39	120
Loan amount	360.00	360.00	100
Cancellation	-	0	-

Cumulative Estimated and Actual Disbursements

	FY02	*FY03*	*FY04*	*FY05*	*FY06*	*FY07*	*FY08*
Appraisal estimate (US$M)	33.18	101.44	187.81	276.37	360.00	360.00	360.00
Actual (US$M)	24.4	40.6	87.5	174.5	270.7	350.2	360.00
Actual as % of appraisal	73.6	40.0	46.6	63.2	75.1	97.2	100.0
Date of final disbursement: January 2008							

Project Dates

	Original	*Actual*
Initiating memorandum	01/11/2001	01/11/2001
Negotiations	04/16/2001	04/16/2001
Board approval	05/24/2001	05/24/2001
Signing	08/08/2001	08/08/2001
Effectiveness	08/28/2001	08/28/2001
Closing date	12/31/2006	10/31/2007

Staff Inputs (staff weeks)

Stage of Project Cycle	Staff Time and Cost (Bank Budget only)	
	No. of staff weeks	$ 000(including travel and consultant costs)
Lending		
FY00	10	39.13
FY01	34	114.67
Total:	44	153.80
Supervision/ICR		
FY02	32	109.78
FY03	37	101.84
FY04	43	104.47
FY05	40	93.39
FY06	26	91.36
FY07	13	66.71
FY08	13	40.83
Total:	204	608.38

Task Team Members

Names	Title	Unit	Responsibility/Speciality
Lending			
Anil Somani	Environmental Specialist	EASES	Environment
Arnab Bandyopadhyay	Consultant	SASIN	Highway Engineer
A.K. Swaminathan	Highway Engineer	SASIN	Highway Engineer
Alberto Nogales	Transport Consultant	SASDE	Transport Economics
Alok Bansal	Transport Planner	SASIN	Transport Planning
Binyam Reja	Transport Economist	OEDST	Transport Economics
Ernst Huning	Consultant	SASEI	Institutional Strengthening
Geeta Shivdasani	Procurement Assistant	SARPS	Procurement
Gladys Stevens	Program Assistant	SASEI	Assistant
Guang Zhe Chen	Sr. Transport Economist	SASIN	Task Team Leader
I.U.B. Reddy	Social Development Specialist	SASSD	Social Development
Irene L. Dubill	Program Assistant	SASEI	Assistant
N.S. Srinivas	Team Assistant	SASIN	Assistant

Natarajan Raman	Consultant	SACIF	Procurement
Piers Vickers	Transport Specialist	SASIN	Transport Planning
Rajat Narula	Financial Management Specialist	SACIF	Financial Management
Sujit Das	Sr. Highway Engineer	SASEI	Highway Engineer
Supervision/ICR			
Alok Nath Bansal	Sr. Transport Planner	SASDT	Task Team Leader from December 2006 till October 2007
Arnab Bandyopadhyay	Sr. Transport Engineer	SASDT	Highway Engineer
Andreas Schliessler	Senior Transport Economist	ECSSD	Transport Economics
Andrew Downing	Consultant	SASDE	Road Safety
Anil Somani	Environmental Specialist	EASES	Environment
Aniruddha V. Patil	Transport Specialist	SASDE	Environment
Ashish Bhateja	Sr. Procurement Specialist	SARPS	Procurement
Clell Harrall	Consultant	SASEI	Institutional Development
Damanjit Singh Minhas	Consultant	SASES	Environment
Devesh Chandra Mishra	Lead Procurement Specialist	SARPS	Procurement
Dhirendra Kumar	Consultant	SARPS	Procurement
Gaurav D. Joshi	ET Consultant	SASDN	Environment
I.U.B. Reddy	Sr. Social Development Specialist	SASDS	Social Development
Kalkunte N. Venkataraman	Consultant	SASDE	Procurement
Krishnamurthy Sankaranarayanan	Financial Management Specialist	SARFM	Financial Management
Kumaraswamy Sankaravadivelu	Procurement Specialist	SARPS	Procurement
Manmohan Singh Bajaj	Procurement Specialist	SARPS	Procurement
Manoj Jain	Sr. Financial Management Specialist	SARFM	Financial Management
Natarajan Raman	Consultant	SACIF	Procurement
N.S. Srinivas	Team Assistant	SASDO	Assistant

Piers Vickers	Transport Specialist	SASIN	Task Team Leader from December 2006
Priya Goel	Sr. Financial Management Spec.	SARFM	Financial Management
Rajesh Rohatgi	Transport Specialist	SASDT	Transport Planning
Sankaravadivelu	Disbursement Analyst	SARFM	Disbursement
Santhanam Krishnan	Lead Procurement Specialist	SARPS	Procurement
Stephen Howes	Economist	SASPR	Transport Economics
Terje Wolden	Transport Specialist	SASEI	Transport Planning
Venkata Rao Bayana	Consultant	SASES	Environment
Isabel Chatterton	Sr. Infrastructure Specialist	CSFSD	ICR Task Team Leader
Natalya Stankevich	Operations Analyst	SASDT	Primary Author

Other Project Data

Borrower/Executing Agency: Government of India/Karnataka Public Works Department

Follow-on Operations

Operation	***Loan no.***	***Amount (US$ million)***	***Board date***
Karnataka State Highways Improvement Project (KSHIP) II	IBRD-80220	350	March 24, 2011

Annex B. Other Tables

Table 1. IBRD/IDA Commitments in Gujarat and Karnataka States since FY2000			
Project Name	IBRD/IDA commitment (US$ million)	Approval FY	Closing FY
Gujarat State Highways	381	2001	2008
Gujarat District Primary Education	16	2002	2005
Gujarat Emergency Earthquake Reconstruction	443	2002	2009
Karnataka Rural Water Sanitation and Environmental Situation	92	1993	2001
Karnataka State Highways Improvement	360	2001	2008
Karnataka First Economic Restructuring Loan/Credit	150	2002	2001
Karnataka Rural Water Supply and Sanitation II	152	2002	2013
Karnataka Structural Adjustment Loan II	100	2001	2002
Karnataka State Health Systems Development (02)	350	1996	2004
Karnataka Urban Water Supply Improvement	40	2004	2011
Karnataka Municipal Reform	216	2006	2012
Karnataka Panchayats Strengthening	120	2006	2012
Karnataka Health Systems	142	2007	2012
Karnataka Watershed Development	100	2001	2009
Karnataka Wind Power	13	2010	2014
Karnataka State Highway Improvement II	350	2011	2017

Table 2. Gujarat State Highways Project: List of corridors/sections that enhance connectivity to Ports			
Contract	**Corridor**	**Port**	**Remarks**
GSHP-1	Sarkhej-Viramgam	Kandla	Sarkhej-Vataman, Phase I
GSHP-12	Viramgam-Halvad		Viramgam-Halvad Phase II B
GSHP-3	Rajkot-Falla	Bedi	Rajkot-Falla, Phase I
GSHP-11	Jamnagar-Khambhaliya		Falla-Jamnagar (to Khambhaliya), Phase II B
GSHP-9B	Bharuch-Dahej	Dahej	-
GSHP-13	Bagodra-Dholka	Dholera	-
	Wataman-Pipli		-
GSHP-14	Surat-Olpad	Magdalla	-
	Sachin-Magdllla		-
Road Maintenance Component (RMC)			
RMC - 7	Dholera - Bhavnagar	Bhavnagar, Dholera	-
RMC - 8	Mahuva - Rajula	Pipavav	-
RMC - 10	Pipli - Dholera	Dholera	-
RMC - 15	Vapi - Daman	Daman	-
RMC - 17	Bhavnagar - Trapaj	Bhavnagar	-

Source: Roads and Buildings Department, Government of Gujarat.

Annex C. Criteria for Rating Analytic and Advisory Activities

Rating	*Results*	*Strategic Relevance and Ownership*	*Quality*	*Dialogue and Dissemination*
HS	Meets to a high extent to a high extent **both** of the following criteria: • Impact on government programs and/or the broader development dialogue in the country • Impact on the design of the Bank's program and/or the subsequent CAS.	Meets to a high extent **all** of the following three criteria: • Addresses a key development constraint and is coherent with the country assistance program • Delivered at the right time in relation to key decisions • Evidence of strong interest by government, development partners, or civil society and/or evidence of active engagement of government agencies or local institutions in conducting the work	Meets to a high extent **all** of the following six criteria • Use of appropriate knowledge and analytic techniques. • Analysis of existing and/or new local data • Effective use of cross-country comparisons and global experience[a] • Evidence of clear understanding of local institutions and context. • Clear and actionable recommendations. • Subjected to adequate peer review and client feedback	Meets to a high extent **all** of the following three criteria: • Evidence of appropriate dissemination • Report reaches effectively the right audiences through appropriate targeted distribution and events. • Evidence of sustained engagement
S	• Substantial impact on both of the criteria OR substantial impact on one and high impact on the other	• No more than minor shortcomings in any of the three criteria	• No more than minor shortcomings in any of the six criteria.	• No more than minor shortcomings in any of the above areas.
MS	• Substantial or higher impact on one criterion, modest or no impact on the other.	• Moderate shortcomings in no more than 2 criteria and no more than minor shortcomings in the third OR major shortcomings in one criterion but no more than minor shortcomings in the other two.	• Moderate shortcomings in no more than 2 criteria and no more than minor shortcomings on the remainder OR major shortcomings in one but no more than minor shortcomings in others	• Moderate shortcomings in no more than two of the above criteria and no more than minor in the third OR major shortcomings in one criterion but no more than minor shortcomings in the other two
MU	• At least modest impact on one criterion, modest or no impact on the other	• Moderate shortcomings in all 3 criteria OR major shortcomings in 1-2 criteria and no worse than moderate shortcomings in the remaining criteria	• Moderate shortcomings in half or more of the criteria with no more than minor shortcomings in the others OR major shortcomings in fewer than half of the criteria with no more than moderate shortcomings in the others	• Moderate shortcomings in all 3 criteria OR major shortcomings in 1-2 criteria and no worse than moderate shortcomings in the remaining criteria.
U	• No impact on either criterion.	• Major shortcomings in all three criteria	• Major shortcomings in majority of above criteria	• Major shortcomings in all three criteria.
HU	• Negative impact on one or both of the criteria	• Severe shortcomings 2 or more of the criteria	• Severe shortcomings in half or more of the criteria	• Severe shortcomings in 2 or more of the criteria

Note: HS – Highly Satisfactory; S – Satisfactory; MS – Moderately Satisfactory; MU – Moderately Unsatisfactory; and U – Unsatisfactory, HU – Highly Unsatisfactory /a As appropriate, contingent on the nature of the analytic work.

Annex D. Assessment of the Road Transport Service Efficiency Study

FY/Project ID/Report No.	*Country Director*	*Sector Manager*	*Task Manager*	Cost (US$)	Format
FY2006 P075079; No. 34220	*Michael F. Carter*	*Guang Z. Chen*	*At initiation: Zhi Liu* *At completion: George C. Tharakan*	*Concept Paper indicates an estimated cost of US$366,000, of which US$54,000 was financed by TF051481-UK-DFID.	Sector Study Issued on November 1, 2006 84 pages Downloadable from World Bank external website

Background

The Bank has produced several important Economic and Sector work (ESW) products in the transport sector in India during the last ten to fifteen years with several clustered around FY2005. These products were intended to complement the substantial lending program commitments for the sector in the country (about US$1.2 billion since FY2000, see Annex B Table 1). The transport sector ESW products in India served several objectives: to stimulate thinking in policymaking circles at the center as well as the states; to fill gaps in data and knowledge in sectoral and sub-sectoral issues of importance; to promote interchange of ideas between different stakeholder groups; to bring in international experience; and to improve the relevance and design of the Bank's lending program. A list of the Bank's major ESW products for the transport sector in India in the last fifteen years is given below.

Transport Sector: Long Term Issues ; FY1995; Report No. 13192
India - Financing Highways; FY2005; Report No.30363
***Road Transport Service Efficiency Study*; FY2005; Report no. 34220**
Towards A Discussion of Support to Urban Transport Development in India: FY2005; Report No. 62610
Highway and Railway Development: FY2005; Report No. 62609
Indian Road Construction Industry : Capacity Issues, Constraints And Recommendations; FY2009; Report No. 46326
Ports and Shipping. (Ongoing Study)

The *Road Transport Service Efficiency Study* looked at the long-distance road transport industry in India, to identify inefficiencies that could reduce the benefits from the large investments being made by the Government in the nation's highway infrastructure. The study sought to assess the existing policy regime in the road transport sector in India, and identify measures to improve the functioning of road transport, in particular long-distance road transport, and to enhance its already enormous contribution (3.9 percent of GDP in 2005) to the workings of the Indian economy.

The Roads Transport Service Efficiency Study was initiated through a concept paper dated August 1, 2001. An initial workshop was held on January 8, 2003 in New Delhi, which brought together representatives from the central and state governments, state transport undertakings, trucker associations and user groups. The report was delivered to the client on December 29, 2004, fourteen months later than originally planned. The findings of the report were discussed in two workshops in February and March 2005, which brought together relevant stakeholders. The final report was issued as a sector study and is available to the public as report no. 34220 through the Bank's external website www.worldbank.org.

Overall Assessment

This study focused on three issues of importance to investments in highway infrastructure - the trucking industry, inter-city buses, and in view of its very important but largely unfulfilled role in enhancing road safety, the motor insurance industry. Indian Government was already working on some of these issues, most notably through the landmark Sundar Committee report of 1999 on the "Trucking Industry" in India. However, the Bank's study was expected to add value by identifying the scope for improvements in trucking industry policy through sample surveys of and interviews with key stakeholders, in-depth study of selected states, and comparison of the Indian road situation with that of China and Pakistan to draw relevant lessons. The designers of the study made a strong attempt to ensure client ownership. Based on the feedback obtained by this mission from respondents in the central and state governments, private sector, research institutions and industry associations, the study has served a useful purpose in raising awareness and serving as a credible input to policymaking in the three priority areas. However, there has not been much follow-up to the recommendations either by way of new government policy initiatives or as components of Bank projects. The study continues to be referred to and quoted by prominent journals and publications, underlining the continued relevance and validity of its recommendations.

A list of persons who were interviewed in assessing this study is given in Annex E

Ratings Summary (see Annex C for explanation of criteria)

Criterion	Rating	Comments
(A) Results	***Moderately Satisfactory***	Feedback from respondents suggests that the study added value by raising awareness of the issues and the required remedial measures in the media and among public interest groups, including NGOs. The study remains current in that it is referenced by recent research work and at least one prominent publication (*India: the Emerging Giant* by economist Arvind Panagariya) that has quoted and endorsed some of the study's recommendations at length. The study is only one – but significant – source of ideas for planners and policymakers. The findings of the study have the potential to be reflected in components and policy areas of Bank projects, but very little has been accomplished in this regard. In terms of influencing government policy, the main constraint is political will at the central and state government levels to take tough decisions to tackle the issues at hand.
(B) Strategic relevance and ownership	***Moderately Satisfactory***	At the inception of the study, the Bank had not previously examined government policies that govern the organization and functioning of the road transport carrier industry – policies that have a major impact on economic returns to huge investments in the sector. Given the Bank's continued heavy involvement in financing road infrastructure in the country, the study was relevant and timely. It was well-aligned with the Country Assistance Strategy (CAS) documents of 2001 and 2004 and the India Policy Review Document entitled "India: The Challenges Ahead" (2002). It continues to be relevant in terms of the Country Partnership Strategy (CPS) for India for 2009-2012 as well as the government's 11th Five Year Plan document (2006-2011), which gives priority to addressing policy issues for improving efficiency of road transport and the functioning of State Road Transport Undertakings/Corporations. The importance of the study was also underlined by the active participation of the central and State governments and other key stakeholders (such as organizations representing representatives of truck and bus operators, booking agents, brokers, and transport users) at the inception workshop. The Indian Government was already working on these issues, and had been using the landmark Sundar Committee report of 1999 on "Trucking Industry" as a primary guiding force in the development of trucking industry policy. The task team was able to convince the government of the study's relevance, especially in terms of the value-added from interviews and sample surveys of stakeholders and a comparative analysis with respect to China and Pakistan.
(C) Quality	***Satisfactory***	The study resulted in an in-depth examination of priority issues related to the low efficiency of the road transport sector in India. Special attention was given to the serious problem of overloading trucks, which damages roads for lack of axle load control, and to the problem of high subsidies for inter-city and rural bus services. The report came up with appropriate and actionable recommendations under each issue. It provides empirical evidence, and uses quantitative data (some of which was gathered by the study as well as new analyses and projections on existing data) to underpin its arguments. Significant value has been added from getting the views of the most important stakeholders – ultimate road users, shippers and passengers, and also in assessing the role played and value added by different actors (such as truck operators, brokers, agents, and insurance companies). In addition to examining issues relating to the central government's role, three representative states (Maharashtra, Karnataka and Uttar Pradesh) were chosen for the study, since many of the problems were seen to arise from the variation of regulations and sales/octroi taxes across different states. Moreover, two comparator countries were selected – China and Pakistan – to review how those countries have fared in dealing with the efficiency of the road transportation sector and to examine the lessons learned of relevance to India. The above features of the study provide evidence of efforts to provide a credible study supported by appropriate quantitative and qualitative analysis.
(D) Dissemination and sustained dialogue	***Moderately Satisfactory***	The team discussed the Concept Note with relevant stakeholders in a workshop at the inception of the study. The findings of the study were presented at seminars held in the context of the "Convention of Reforms in the Road Transport Sector" organized by the All India Confederation of Goods Vehicles Owners Organizations (ACOGOA) and the All India Bus Operators Confederation in February 2005 and the "Global Infrastructure Summit" organized by Federation of Chambers of Commerce and Industry (FICCI), in March 2005. Participants included Central and State Government agencies, NGOs, and various private sector organizations involved in the road transport sector. The feedback

		from these seminars was incorporated in finalizing the report which came out November 1, 2005. The Bank was able to get the media and public interest groups involved in the seminars and this has helped to add to the awareness of the issues in the sector. The study is referred to in technical papers as well as popular publications, confirming that the study's recommendations remain valid. A partial web search reveals that the study has been referred to by reports/papers from the Indian Council For Research on International Economic Relations (ICRIER), the Journal of Asian Public Policy, and the New Zealand Transport Agency . The main recommendations of the report are referred to at length in the 2008 popular publication, "India – the Emerging Giant".
CRITERION	(A) RESULTS	
	RESULTS INDICATORS	
Did the product have…		
…results objectives defined at inception?	**Yes.** The task was based on a clear Concept Note (August 1, 2001) discussed within the Bank and in a workshop organized in New Delhi (January 8, 2003), with the participation of stakeholders in relevant public and private sector organizations. The main objectives were defined as to (i) achieve a better understanding of the non-infrastructure factors that impair the efficiency of the road public carrier industry in India and thereby reduce the return on infrastructure investments; (ii) establish quantitative measures of the economic losses due to the major constraining factors; (iii) review the experience of other countries that have faced similar problems, identify their solutions, and assess the transferability of that experience to India; (iv) engage the Government of India and respective state governments, the transport operators, the shippers, and the passengers in a dialogue in search of an appropriate set of policy solutions.	
…indicators defined at inception?	**No.** There were no results indicators specified in the concept note. It can be reasonably concluded that the indicators implicitly were to inform policy decisions; mainstream road usage efficiency measures in Bank operations; and improve standards and procedures in state roads administrations, ultimately resulting in outcomes of improved road usage efficiency and vehicle usage efficiency. In retrospect, such a results chain could have been specified and indicators could have been defined, but attribution at every link of the results chain would have been difficult, given the multiple efforts in the government directed at the same issues as were examined by the study.	
…strategy to achieve results?	**Yes.** In terms of execution there was a clear strategy to obtain the views of the most important stakeholders – ultimate road users, shippers and passengers, as well as truck operators, brokers, agents, and insurance companies. Apart from the central government, three representative states (Maharashtra, Karnataka, Uttar Pradesh) were selected for dialogue; and two comparator countries – China and Pakistan – were selected for analysis. The study expected to translate the recommendations into policy actions, through stakeholder workshops and further dialogue with the government.	
	RESULTS ACHIEVED	
Did the country use the findings…		
…in policy, law, regulation or implementation?	**Perhaps.** In a significant judgment on November 9, 2005, the Supreme Court of India quashed the issuance of Gold Card/ Tokens by the State Governments permitting overloading of trucks in excess of prescribed weight limit. The Court mandated that the trucks found on roads carrying illegal excess load will have to offload the cargo crossing the legal weight limit. This judgment is expected to have multiple impacts on stakeholders in the trucking and automobile industry. (http://indiatransportportal.com/2011/12/overloaded-vehicles-face-strict-scrutiny/). Some respondents felt that the discussions during the study between stakeholders may have directly or indirectly affected this decision, though no specific evidence is offered.	
…in design of public expenditure?	**No.**	
…to raise stakeholder awareness?	**No.** Based on feedback from non-systematic interviews from the mission, there has been no discernible followup on the part of the country's institutions to further raise stakeholder awareness on the subject matter of the study.	
…to build a coalition for change?	**No.** There has been no discernible followup in this regard.	
…to build in-country capacity?	**No.** There has been no discernible followup in this regard.	
…to influence the donor community?	**No.** There has been no discernible followup in this regard.	

…to change institutions?	**No.** There has been no discernible followup in this regard.
Did the Bank use the findings…	
…in the design of development policy lending?	**No.**
…in the design of Bank lending products?	**No.** An examination of the Bank's lending portfolio after FY2005 does not reveal any specific components or sub-components that are focused directly on the subject matter of the study. Karnataka State Highways Project II and the proposed Gujarat State Highways Project II project (under preparation) have significant safety components that overlap with some of the study's considerations. However, the KSHIP II project appraisal document does not make any direct allusion to the study. Discussions with the task team suggest that the study did not specifically figure in the course of the Project Appraisal Document preparation, though it was considered broadly with other relevant economic and sector work.
…in Bank strategy formulation?	**No.** Discussions with members of the task team and a review of bank strategy documents did not reveal any specific impact on Bank strategy formulation.
…in subsequent knowledge products?	**To some extent outside the Bank.** A non-comprehensive web search shows that the study is referenced in other research output produced within the country. (e.g. September 2008. Ganguli, Debjani. *Logistics Services Under Indo-EU TIA* External Consultant, ICRIER Project Coordinator Arpita Mukherjee Senior Fellow, ICRIER Final Report, Indian Council For Research on International Economic Relations.)
…to inform country strategy?	**No.** Discussions with members of the task team and a review of bank strategy documents do not show any evidence that the study informed the Bank's country strategy.
Is there evidence that results are sustainable?	Not clear in this context.
Did the Bank or client assess the product's impact on results?	**No.**
Discussion of Results: The study added value by raising awareness of the issues and the required remedial measures in the media and among public interest groups, including NGOs. But the study has not had a significant impact on policy makers in the key relevant Ministry (Shipping, Roads, Transport, and Highways). According to members of the task team, the Bank's intention was to translate the study's recommendations into triggers for tranche releases in proposed future transport projects, but his has not yet been done. Political and government commitment are necessary to move things forward in a situation where State governments in India have varying regulations and tax regimes regarding sales and octroi taxes affecting road transport.	
CRITERION	***(B) STRATEGIC RELEVANCE AND OWNERSHIP***
	RELEVANCE
Did delivery of the product come in time to affect relevant government policy or Bank decisions?	**Yes.** However, this study was not alone in addressing the issues at hand. Several other studies or working groups had taken up one or more of the issues covered by the study, notably the 1999 Sundar Committee Report on the "Trucking Industry" in India.
Was the topic identified as "development constraint or opportunity" in…	
…the relevant Country Assistance Strategy?	The subject matter of the study was relevant to the emphasis on infrastructure services in the CAS documents of 2001 and 2004 and the Country Partnership Strategy (CPS) for India for 2009-2012.
…previous Analytic and Advisory Activity work?	**No.**
…particular projects?	**No.**
…particular	**No.**

evaluations?	
...policy dialogue with clients?	**Yes.** The subject matter of the study was actively perceived as being of importance by all stakeholders.
…donor coordination?	**Possibly Yes.** No specific evidence forthcoming from discussions with member of the task team or with respondents.
Under conditions of difficult dialogue, did the product…	
…focus on long-term issues for better receptivity to Bank input?	**Not Applicable.** There were no difficulties in pursuing the dialogue with the government. Rather the issue was with followup action which has been slow for a variety of reasons including inherent administrative complexities and insufficient political will.
…address sector issues in areas where there is more receptivity to Bank input?	**No.**
…address country issues in a regional or global context?	**Yes.** The study looked at the relevant experience of China and Pakistan as comparator countries, though this was not under conditions of difficult dialogue.
	OWNERSHIP
Is product part of overall Analytic and Advisory Activity program to which the authorities have contributed or agreed?	**Yes.** The Study is covered as part of the work program in the CAS (2004), though it is not mentioned in the 2001 CAS.
Did the client request or commission the specific product?	**No.** The client did not take the initiative for this product perhaps because a number of previous studies by the government as well as the Asian Development Bank and other organizations within and outside the country had addressed the same issues previously. However, task team members suggest that client interest increased as the study got underway following the attempt to get the participation of all stakeholders for the study, focusing on three specific areas in the road transport sector, and making a comparative study of China and Pakistan in these matters.
Did the client cover some or all of the costs?	**No.** The possibility of co-financing with the Government of India or state governments was never entertained as an option.
Did the key decision makers (as distinct from technical specialists) collaborate with, discuss or provide feedback on the product?	**Yes.** Members of the task team received collaboration from key decision-makers. They also gave feedback through several meetings and discussions as well as the stakeholder workshops organized at the start and end of the study.
Did a local institute, academy, consulting firm or government agency help to…	
…define the scope of the work?	**Yes**. To support a fully participatory process, assist in problem identification, and encourage consensus building throughout the study, the first of two workshops engaged all the key players (transport users, government, truck and bus operators, booking agents and brokers through their respective associations, the automotive manufacturers, and, of special importance, representatives of the shippers.
…plan and design the work?	**No**. Planning and design of the project was carried out primarily by the task team based on the inputs at the initial consultation.
…carry out the work?	**Yes.** The study draws on a number of background papers prepared by Clell Harral, Ian Jenkin, John Terry, Richard Sharp, Eugene Gurenko, Consulting Engineering Services, Inc.(CES), and the Asian Institute of Transport Development (AITD) for axle overloading and lack of enforcement of controls. It also relies on two complementary studies carried out for China by Jianfei Zhang, currently Director General of the Ministry of Communications China and for Pakistan by Sardar M.Humayun Khan, for international comparisons. Asian Institute of Transport Development, Delhi.
...analyze the results and write the report?	**No.** The analysis and write-up was mainly carried out by task team.
…formulate	**No.** The analysis and write-up was mainly carried out by task team.

conclusions and recommendations?	
…provide peer review or comments on the draft report?	**No.**
…organize workshops or discussions about the findings?	**Yes.** The findings of the study were presented at seminars held in the context of the "Global Infrastructure Summit" organized by FICCI in March 2005 and the "Convention of Reforms in the Road Transport Sector" organized by the All India Confederation of Goods Vehicles Owners Organizations (ACOGOA) and the All India Bus Operators Confederation in February 2005. The feedback from these seminars was incorporated in finalizing the report.
Discussion of Strategic Relevance and Ownership: Given the Bank's continued heavy involvement in financing road infrastructure in the country, the study was relevant and timely. It was well-aligned with the Banks strategies for India as outlined in its CAS (2001 and 2004) and CPS (2009-12), as well as India's Five Year Plan document (2006-2011). The importance of the study was also underlined by the active participation of the central and State governments, and other key stakeholders (organizations representing representatives of truck and bus operators, booking agents, brokers and transport users, etc.) at the inception workshop. The Government of India was already working on these issues, and had been using the landmark Sundar Committee report of 1999 on "Trucking Industry" as a primary guiding force in the development of trucking industry policy. Yet, the task team was able to convince the Government of India of the study's relevance, especially in terms of the value-added from interviews and sample surveys of stakeholders, and a comparative analysis with respect to China and Pakistan.	
CRITERION	***(C) QUALITY***
	QUALITY OF CONTENT
Did the product…	
…include appropriate knowledge (i.e. make use of current and relevant knowledge from both inside and outside of the Bank)?	**Yes.** The study drew heavily upon a number of studies that have been carried out by the Bank and Government of India that have been listed in the references section of the study. Prominent among them are the Report of the Sundar Committee on Trucking Operations (2009) and B. Debroy and P.D. Kaushik, *Barriers to Inter-State Trade and Commerce—The Case of Road Transport*, Report Prepared by the Rajiv Gandhi Institute for Contemporary Studies for the National Committee to Review the Working of the Constitution (c.2001).
…cite relevant examples of practice or research from other countries in the region?	**Yes.** The study drew upon lessons from a review of road transport development in Pakistan.
…cite relevant examples of practice or research from other regions?	**Yes.** The study drew upon lessons from a review of road transport development in China.
…discuss the specific institutional and policy context for the issue in this country?	**Yes.** Much of the initial portion of the study is devoted to the specific institutional and policy context for the issues covered by the study for the country.
…collect and analyze existing local data?	**Yes.** The study draws upon existing data including that related to variation of regulations and sales/octroi taxes across the three states selected for the study.
…generate new evidence?	**Yes.** In the course of the study, sample surveys were carried out to get a clearer understanding of the quality, costs, and regulation of road transport services and also to assess the role played, and value added, by different actors such as truck operators, brokers, agents, and insurance companies.
…include recommendations?	**Yes.** The study came up with several findings/recommendations for the Trucking Industry (12 findings; 6 recommendations), Inter-City Bus Services (7; 3), and Motor Insurance (4; 4)
Do the recommendations include specified actions to be taken by specified actors (including non-	**Yes.** Each of the recommendations is aimed at one or more of the central government, state governments, bus and truck operators and their associations and the motor insurance industry.

Bank)?	
Was the product team staffed with the appropriate expertise (including consultants)?	**Yes.** The study team was staffed with experienced technical transport staff and transport economists at the senior and lead level. Reputed consultants were engaged for preparation of background papers and for conducting surveys.
Did the product receive appropriate managerial attention?	**Yes.** The concept note review meeting was chaired by the Transport Sector Manager for South Asia. The Country Director did not participate in the meeting. Participation from the Country Director might have given the study a higher profile.
Did the product receive sufficient budget?	**Yes.** The management had made available adequate resources for the study and it was carried out within the budget (actual expenditure was US$326,109 against a budgeted amount of US$366,300, in spite of the two-year delay in completing the study.)
	REVIEW OF CONTENT
Was the draft peer reviewed by appropriate experts?	**Yes.** The peer reviewers – Paul Amos, Asif Faiz and Graham Smith, all highly experienced transport specialists - were well selected and provided perceptive comments on the draft.
Were the peer review comments taken into account as appropriate?	**Yes.** The peer reviewers' comments were taken into account in by the task team as evidenced by the minutes of the decision meeting.
Was the feedback from the client about the product incorporated into the final version?	**Yes.** Client feedback was amply to the extent of participation of government representatives in two dissemination workshops and the feedback was incorporated into the report.
Discussion of Quality: The report provides empirical evidence, (some of which was gathered by the study as well as new analyses and projections based on existing data) to underpin its arguments. Significant value was added by getting the views of the most important stakeholders; examining issues relating to the central government's role and three representative states (Maharashtra, Karnataka and Uttar Pradesh) ; and drawing lessons from comparator countries (China and Pakistan). The report came up with appropriate and actionable recommendations under each issue. Overall the result was a credible study backed by well-researched evidence and supported by appropriate quantitative and qualitative analysis.	
CRITERION	***(D) DISSEMINATION AND SUSTAINED DIALOGUE***
	INITIAL DISSEMINATION
Was the product…	
…made available in the local language?	**No.** Given the main audience for the study, his may not have been crucial.
…made available on a website?	**Yes.** The original report can be downloaded for free from the Bank's external site.
…discussed with senior policy makers?	**Yes.** The draft report was discussed with senior officials from the Ministry of through two dissemination workshops.
…presented at a workshop, conference, seminar or on-line discussion?	**Yes.** The findings of the study were presented at seminars held in the context of the "Global Infrastructure Summit" organized by the Federation of Chambers of commerce an Industry (FICCI) in March 2005 and the "Convention of Reforms in the Road Transport Sector" organized by the All India Confederation of Goods Vehicles Owners Organizations (ACOGOA) and the All India Bus Operators Confederation in February 2005.
…covered in the general or specialized media?	**Yes.** The report received wide coverage in the media at the time of dissemination. The report is cited in some detail in the popular publication "India: The Emerging Giant" by Arvind Panagariya (2008),
	SUSTAINED DIALOGUE
Did the product serve as an input to a sustained engagement with the client through…	
…policy dialogue?	**Partly.** There is evidence of follow-up dialogue on issues relating to overloading of trucks as part of prominent safety components being included in projects that have been recently approved (Karnataka State Highway Improvement Project II) and a project under preparation (Gujarat State Highway Project II).
…sustained workshops and	**No.** There were no sustained dedicated workshops and discussions with stakeholders on the issues raised by the study, beyond initial dissemination.

discussions with stakeholders beyond initial dissemination?	
…lending products (Bank and non-Bank)?	**Partly.** Addressing the overloading of trucks is expected to form part of prominent safety components being included in projects that have been recently approved (Karnataka State Highway Improvement Project II) and a project under preparation (Gujarat State Highway Project II).
…technical assistance (formal or informal)?	**Partly.** Addressing the overloading of trucks is/is expected to be included in the recently approved Karnataka State Highway Improvement Project II and Gujarat State Highway Project II which is under preparation.
…programmatic instruments?	**No.**
…other means?	**No.**
Discussion of Dissemination and Sustained Dialogue: The team discussed the Concept Note with relevant stakeholders in a workshop at the inception of the study. The findings of the study were presented at seminars held in the context of the "Convention of Reforms in the Road Transport Sector" organized by the All India Confederation of Goods Vehicles Owners Organizations (ACOGOA) and the All India Bus Operators Confederation in February 2005 and the "Global Infrastructure Summit" organized by FICCI in March 2005 and Participants included Central and State Government agencies, NGOs, and various private sector organizations involved in the road transport sector. The feedback from these seminars was incorporated in finalizing the report which came out November 1, 2005. The Bank was able to get the media and public interest groups involved in the seminars and this has helped to add to the awareness of the issues in the sector. The study is referred to in technical papers as well as popular publications, confirming that the study's recommendations remain valid.	

Annex E. List of Persons Met

(in alphabetical order of first name)

Gujarat State Highways Project

Roads and Buildings Department, Government of Gujarat

D.K. Solanki, Superintendent Engineer, Project Implementation Unit (World Bank)
H.D. Vala, Chief Engineer (Roads and Buildings) and Additional Secretary
P.P. Vakharia, Chief Engineer (World Bank)
R.K. Chauhan, Officer on Special Duty(SP)
S. Pandya, Executive Engineer, Roads and Buildings Department
Samir Raval, Deputy Executive Engineer
Sandeep Vasava, Chief Engineer (Panchayat) and Additional Secretary
Satyanarayansingh S. Rathore, Principal Secretary

Contractors, Design and Information Technology Consulting Firm Representatives

Abhilash Singh, Regional representative (West), EGIS India Consulting Engineers Private Limited Gandhinagar 382 001
Kishor Viramgama, Chairman and MD, Backbone Enterprises Limited
Neeraj Kumar, Project Manager, Larsen and Toubro Ltd.
Sagar Deshmukh, Chief General Manager, LEA Associates South Asia Private Limited, Consulting Engineers and Planners, Gandhinagar

Project Affected Persons - Various

Karnataka State Highways Improvement Project

B. Ravish, Assistant Engineer, KSHIP Sub-Division, Tumkur
B.H. Anil Kumar, I.A.S, Managing Director, Karnataka Road Development Corporation Ltd. (KRDC), Bengaluru and Chief Project Officer, KSHIP II.
H.S. Prakash Kumar, Chief Engineer and Project Director, KSHIP II.
K.S. Krishna Reddy, Chief Engineer, National Highway Zone, Bengaluru
M.D. Nadaf, Executive Engineer (Environment), Karnataka State Highways Improvement Project, Bengaluru.
N.C. Solanki, Director (Projects-I), National Rural Roads Development Agency (NRRDA), Ministry of Rural Development, Government of India, New Delhi
R. Prasad, Superintending Engineer, Bengaluru
Rajendra Kumar, Executive Engineer, KSHIP Division, Tumkur,
Ramesh, Assistant Engineer, KSHIP Sub-Division, Raichur
Ravi Betta, Assistance Executive Engineer, Information Technology Cell, KPWD, Bengaluru,
S. Kinni, Executive Engineer, Bengaluru
Sadashiva Reddy B. Patil, Chief Engineer, C&B South, Bengaluru
Syed Kamaluddin, Assistant Executive Engineer, KSHIP Sub-Division, Deodurg
V. Srinivas, Executive Engineer, KSHIP Sub-Division, Raichur

Contractors, Consulting Firms

K. Srinivasa, Business Development Manager, Pixel Softek Private Limited, Bengaluru
Naveen R. Shetty, Managing Director and CEO, RNS Infrastructure Limited, Hubli, Karnataka

Project Affected Persons at the the Ariginamara rehabilitation camp - various

Economic and Sector Work- "Road Transport Service Efficiency Study"

Arpita Mukherjee, Professor, Indian Council for Research on International Economic Relations (ICRIER), New Delhi
B.N. Puri, Member Secretary, National Transport Development Policy Committee (NTDPC), Planning Commission and Principal Advisor(Transport), Planning Commission, New Delhi
Bakul Dholakia, Director, Adani Institute of Infrastructure Management, Ahmedabad
C. Kandasamy, Additional Secretary General, Ministry of Road Transport and Highways, Government of India, New Delhi
Chittranjan Das, Secretary-General, All India Confederation of Goods Vehicles Owners' Associations and General Secretary All India Bus Operators' Confederation, New Delhi
H.M. Shivanand Swamy, Professor and Associate Director, Centre for Environmental Planning and Technology (CEPT), Ahmedabad
Parvesh Minocha, Director, Feedback Infrastructure services Private Limited, Feedback Infrastructure Services Private Limited, Gurgaon, National Capital region of Delhi
Raghav Chandra, I.A.S, Joint Secretary, Ministry of Road Transport and Highways, Government of India, New Delhi
Rajiv Yadav, I.A.S., Member (Administration), National Highways Authority of India, Ministry of Road Transport and Highways, Government of India, New Delhi
Vinayak Chatterjee, Chairman, Feedback Infrastructure Services Private Limited, Gurgaon, National Capital region of Delhi

World Bank

Alok Nath Bansal, Senior Transport Economist (retired), New Delhi Office
Arnab Bandyopadhyay, Senior Transport Engineer, SASDT, New Delhi Office
Ben Eijbergen, Lead Transport Specialist, SASDT, Washington D.C.
Binyam Reja, Senior Urban Transport Specialist, SASDT, Washington D.C.
G. George Tharakan, Lead Transport Specialist (retired)
I.U.B Reddy, Senior Social Development Specialist, SASDT, New Delhi Office