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PERFORMANCE AUDIT REPORT

INDIA

**GUJARAT RURAL ROADS PROJECT
(CREDIT 1757-IN)**

**STATES' ROADS PROJECT
(LOAN 2994-IN-/CREDIT 1959-IN)**

June 30, 1999

*Sector and Thematic Evaluations Group
Operations Evaluation Department*

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Currency Equivalents (annual averages)

Currency Unit = Indian Rupee (Rs.)

1986	US\$1.00	Rs. 13.00
1988	US\$1.00	Rs. 13.50
1995	US\$1.00	Rs. 33.00
1997	US\$1.00	Rs. 37.20
1998	US\$1.00	Rs. 39.50

Abbreviations and Acronyms

ERR	Economic rate of return
FAO	United Nations Food and Agriculture Organization
GDP	Gross domestic product
GOB	Government of Bihar
GOI	Government of India
GOM	Government of Maharashtra
GOR	Government of Rajasthan
GOUP	Government of Uttar Pradesh
FIDIC	International Federation of Consulting Engineers
ICB	International competitive bidding
ICR	Implementation Completion Report
MOST	Ministry of Surface Transport
NDDB	National Dairy Development Board
PAR	Performance Audit Report
PMS	Pavement management system
PWD	Public Works Department
SAR	Staff Appraisal Report
SRP	States' Road Project

Government Fiscal Year

April 1 – March 31

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Operations Evaluation

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MEMORANDUM TO THE EXECUTIVE DIRECTORS AND THE PRESIDENT

**SUBJECT: Performance Audit Report on India
Gujarat Rural Roads Project (Credit 1757-IN)
States' Roads Project (Loan 2994-IN/Credit 1959-IN)**

Attached is the Performance Audit Report prepared by the Operations Evaluation Department on two India projects: Gujarat Rural Roads Project (Credit 1757-IN, approved in FY87) and States' Roads Project (Loan 2994-IN/Credit 1959-IN, approved in FY89). Both projects closed behind schedule: by one year the rural roads project and by three years the states' roads project. The two operations totaled about \$352 million, divided into \$170 million in loans and \$182 million in credits. \$66 million of the loan and \$35.3 million of the Gujarat credit was canceled.

The objectives of the projects were consistent with the Bank's assistance strategy for the transport sector to help improve planning and project execution, productivity, and resource allocation. The Gujarat project focused its physical investments on the provision of all-weather roads to the rural poor. This project comprised: (a) improvement, reconstruction, or construction of rural roads connecting 1,900 villages to main roads; (b) provision of equipment; and (c) training, a study on maintenance, and preparation of a road safety program. The states' project (covering Maharashtra, Rajasthan, Uttar Pradesh, and Bihar) was the first project intended to extend to the state level policy and institutional improvements begun under the National Highway Project (Loan 2534-IN), notably the promotion of modern maintenance management systems and the introduction of improved construction methods. This project comprised: (a) civil works, including a major bridge across the Ganges in Bihar, and strengthening and widening of roads in all four states totaling over 2,000 km; (b) equipment for monitoring road usage and promoting safety; and (c) training, introduction of a network management system, and a highway organization study in Maharashtra.

The rural roads project, due mainly to devaluation of the rupee, achieved substantially more than the original physical objectives, as 2,210 villages were connected (and 6,443 km were improved, or 75 percent more than the original target) to main roads. In the states' road project, achievement of physical targets varied widely from state to state: Maharashtra slightly exceeded the targets, Rajasthan achieved 74 percent, Uttar Pradesh achieved only 30 percent, and Bihar completed none of the works by project closing. The project's largest investment, the Ganges bridge, was about half built and its completion is now expected for December 2000, at a cost overrun close to 40 percent. Implementation delays and shortfalls in achievements resulted mainly from inadequate project readiness—especially land acquisition, removal of utility lines and tree cutting in the right-of-way of roads—poor

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performance of contractors, problems with supply of construction materials, and poor quality of engineering and supervision, especially in the case of the bridge. Pilots in each state of independent supervision by consultants were poorly organized and implemented and received little support from the states' highway administrations. The economic returns for both projects are over 12 percent (and substantially higher in some of the states' roads works). A stakeholders' workshop conducted in Gujarat confirmed the impact of the rural roads improvements in helping increase and transform agricultural output and in facilitating access to social services. The return on the bridge investment depends on how soon it is opened. Completion of the bridge appears to be economically justified.

On the institutional side, both projects achieved little. In the Gujarat project, economic analysis was introduced as expected, but practically no progress was made on improving maintenance planning and management and in preparing a safety program. The ambitious goal of the states' project to launch and establish a pavement management system (PMS) in all four states created a partial road database in each state that so far have proven of little utility. A highway organization study in the state of Maharashtra, which had attracted high interest as it would have been the first attempt to reorganize a highly agency since independence, lacked a modern perspective and did not cover important topics. Some progress was achieved in introducing more efficient contracting procedures for road works and in the modernization of local contractors.

The outcome is rated satisfactory in the Gujarat rural project, and unsatisfactory in the States' roads project. Institutional development impact is rated modest in both projects. Sustainability is rated (a) likely in the rural roads project, because roads remain in good condition after several years of service, reflecting overall good construction quality as well as adequate funding, since some of the older roads have been resurfaced, and (b) uncertain in the States' project, because key investments have not yet been completed, and the adequacy of road funding levels for maintenance in the various states is not assured. Bank performance is rated satisfactory in the rural roads project and unsatisfactory in the states' project. In the latter, the Bank is confronted with a major project investment (the bridge) left unfinished and should find a way, subject to appropriate conditions including rigorous technical supervision, to ensure financing for its completion. These ratings are broadly consistent with those of the implementation completion reports.

6.1 The following lessons emerge from these projects:

- *Project readiness needs to be better assessed at appraisal.* A project involving civil works should not be considered ready for implementation until the procedures for clearing land for the works are fully understood and workable administrative arrangements for land acquisition or timely removal of obstructions agreed at appraisal.
- *Methods for allocating road maintenance funds need to balance optimization aims with local capacity.* Modern, software-based, pavement management systems (PMS) are touted as being the best way to optimize resource allocation to maintain the large highway assets. Yet, PMS are institutionally and technical difficult to operate. Well functioning road maintenance operations should be a prior requirement. The challenge is to design PMS that are simple and affordable, and that catch the attention of the senior road management authorities.
- *Introducing independent supervision requires concerted efforts by (a) the client, who needs to accept the challenge to in-house supervision, (b) the consultant, who needs to be prepared to address obvious problems with introducing independent supervision, and (c) the Bank, that needs to follow the pilots closely, be flexible and expeditious in resolving problems, and help in designing appropriate client training in contract management.*
- *The general price index may be inadequate for price escalation in infrastructure contracts.* In places such as India that are in the process of decontrolling prices, and that are undergoing fast

expansion of infrastructure, the price of key construction materials is likely to rise much more rapidly than the general price index. Contracts need to use more specific reference prices to address this situation.

Attachment

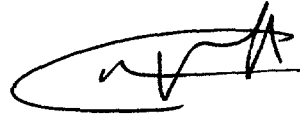
A handwritten signature in black ink, consisting of a large, sweeping oval shape on the left and several vertical and diagonal strokes on the right, resembling a stylized 'A' or 'R'.

Table of Contents

Principal Ratings	iii
Key Staff Responsible	iii
Preface	v
1. Background	1
2. Objectives	1
Preparation and Design.....	2
Borrower Ownership.....	3
3. Project Implementation	4
Physical Components.....	4
Local Contracting Capacity and Modernization.....	8
Institutional Components.....	9
Training.....	11
4. Achievement of Project Objectives	11
Rural Roads Project	11
States Road Project.....	13
Strengthening Maintenance Management	13
5. Performance Ratings	13
Outcome, Institutional Development and Sustainability.....	13
Bank Performance	15
Borrower Performance.....	15
6. Lessons	16
Annexes:	
A. Basic Data Sheet	18

This report was prepared by Mr. Hernan Levy (task manager), with a contribution by Mr. Ashok Kumar (Central Road Research Laboratory, India), who audited the projects in March 1999. Mr. William Hurlbut edited the report. Ms. Romyne Pereira provided administrative support.

Principal Ratings

Gujarat Rural Road Project (Cr. 1757-IN)

	ICR	EVM/ES ¹	PAR
Outcome	Satisfactory	Satisfactory	Satisfactory
Sustainability	Likely	Likely	Likely
Institutional Development	Partial	Substantial	Modest
Bank Performance	Satisfactory	Satisfactory	Satisfactory
Borrower Performance	Satisfactory	Satisfactory	Satisfactory

States' Roads Project (Ln.2994-IN/Cr.1959-IN)

	ICR	EVM/ES	PAR
Outcome	Unsatisfactory	Unsatisfactory	Unsatisfactory
Sustainability	Uncertain	Uncertain	Uncertain
Institutional Development	Partial	Modest	Modest
Bank Performance	Unsatisfactory	Unsatisfactory	Unsatisfactory
Borrower Performance	Unsatisfactory	Unsatisfactory	Unsatisfactory

Key Staff Responsible

Gujarat Rural Road Project (Cr. 1757-IN)

	Task Manager	Division Chief	Country Director
Appraisal	J. Lane	H. Brandreth	E. Lerdau
Completion	F. Galli	S. Barghouti	H. Vergin

States' Roads Project (Ln.2994-IN/Cr.1959-IN)

	Task Manager	Division Chief	Country Director
Appraisal	R. Mulligan	E. McCarthy	B. Alisbah
Completion	F. Galli	F. Humplick	E. Lim

1. OED's Evaluative Memorandum or Evaluation Summary of the ICR.

Preface

This Performance Audit Report (PAR) covers two projects in India: Gujarat Rural Roads (Credit 1757-IN) and States' Roads (Loan 2994-IN/Credit 1959-IN). The credits and loan for the two projects totaled US\$352 million, of which US\$66 million was canceled.

This report, prepared by the Operations Evaluation Department (OED), is based on a review of the President's Reports, Staff Appraisal Reports (SARs), completion reports, transcripts of Board proceedings, project correspondence files, Bank documents on other transport projects, and other Bank material. OED also consulted Bank staff in charge of the projects. In January/February 1999, an OED mission traveled to India where it held discussions with representatives of the central government and of the public works departments of the five states covered by the projects (Gujarat, Maharashtra, Rajasthan, Uttar Pradesh, and Bihar). The mission also carried out field visits in these states. OED is grateful to the authorities involved for their invaluable assistance to the mission.

In Gujarat, the OED mission, in collaboration with the highway authorities, conducted a stakeholders' workshop to assess project impact and to derive lessons regarding project design and implementation. State and local government officials, beneficiaries, and local governments officials participated in the workshop.

The PAR gives special attention to the impact of the rural roads project, and to project preparation and implementation issues and institutional development objectives of the states' roads project.

Following standard procedures, copies of the PAR were sent to the borrower and the executing agencies concerned for comments. No comments were received.

1. Background

1.1 The economy of India has grown impressively since its economic reforms of 1991. GDP grew at an annual rate of about 5 percent in the early years and at about 7.5 percent annually during the three-year period ending in 1997. Poverty incidence has substantially decreased, and was about 35 percent in 1993/94. The decline in poverty has been faster in the south than in the north, where Bihar ranks as the poorest state in India. Poverty is higher in the rural areas (37 percent, versus 31 percent in the urban areas), where 70 percent of the population lives. A key aspect of the Bank's assistance strategy is to support rural development, particularly policy reforms (cost recovery and privatization) and institutions (commercialization and re-orientation of public sector functions).

1.2 By constitution, the states of India, several of which have populations of more than 50 million, have major responsibility for development, notably in social sectors, agriculture, and road transport. In the past, the states tended to adopt common policies, largely because of the political dominance of the Congress party. This is now changing, and some states, Gujarat and Rajasthan among them, are beginning major economic reforms, and pursuing aggressive growth.

1.3 The transport sector in India has undergone three dramatic developments since the mid-1980s.² First, the rail-dominated economy of the 1950s has become a road-dominated economy in the 1990s. Second, during the same period, Indian Railways shifted from being primarily a freight carrier to being primarily a passenger operation. Third, the main links of the parallel road and rail networks have become saturated. At the same time, the road networks of the states have become increasingly congested, especially the roads serving the major state and interstate trade flows, as traffic has grown at an average of over 10 percent per year³ over the past 40 to 50 years, while road construction has been substantially below the needed increases in capacity. The rural roads serving the local populations have improved since the government made it a policy to increase access of villages to main roads, but a large proportion still are not passable during the rainy season.

1.4 The Bank currently is implementing two highway projects, one for the national highway system and one for Andhra Pradesh. In addition, projects under preparation are expected to cover highways in the states of Harayana and Gujarat. Several ongoing projects in rural development, agriculture, and irrigation include rural roads components.

2. Objectives

2.1 The two projects were part of the Bank's transport sector assistance strategy to India, which recommended a focus on improving planning and project execution, productivity, and resource allocation. The objectives of the projects (Table 1) were consistent with this strategy. The Gujarat project, while pursuing important institutional development objectives in road planning, construction, and maintenance management, focused its physical investments on the provision of all-weather roads to the rural poor, who were largely dependent on incomes from

2. This paragraph draws substantially on the Bank report: *India Transport Sector, Long Term Issues*, March 16, 1995.

3. Road transport grew at over 9.0 percent (9.6 for passengers, 9.3 for freight) during 1951-1987, according to the States' Road Project SAR. With the acceleration of GDP growth in the 1990s, traffic has certainly grown substantially above 10 percent annually in this decade.

milk production. This project was therefore expected to be an important vehicle for the Bank's poverty alleviation strategy. The project design took into account lessons from a similar project in Bihar, and on lessons learned from an irrigation project in Gujarat (Credit 1011-IN), which had rural roads within the irrigation command area.

2.2 The states' project was intended to be the first in a series that would extend to the state level policy and institutional improvements begun under the National Highway Project (Loan 2534-IN), notably regarding promotion of modern maintenance management systems and the introduction of improved construction methods through larger contracts designed to encourage local firms to mechanize and to attract international interest.

Table 1. Project Objectives and Description

GUJARAT RURAL ROADS PROJECT
<i>Objectives</i>
Provision of all weather roads to the rural poor
Improved road planning and programming through economic analysis
Improved rural road construction and management practices
Improved management of the state's road network
<i>Components</i>
A six-year program of improvement, reconstruction and or construction of roads connecting 1,900 villages
Provision of equipment and construction of offices
Training, a study on maintenance planning, and preparation of a road safety program
STATES' ROADS PROJECT
<i>Objectives</i>
Promote the use of modern maintenance management methods similar to those being instituted for the national highway system
Introduce improved construction methods through larger contracts to encourage local firms to mechanize and to attract (when grouped) international interest, and to introduce supervision by consultants
<i>Components</i>
Civil works in all four states, including, notably in Bihar, a major bridge across the Ganges; and, in all states, strengthening and widening of roads (100 km of roads in Bihar; 670 km in Maharashtra; 865 km in Rajasthan, and 600 km in Uttar Pradesh)
Specialized equipment for monitoring the condition and usage of their road networks and promoting road safety
Staff training, as well as technical assistance which would introduce in all four states a network management system and other improvements in states highway administration

Preparation and Design

2.3 The Gujarat rural roads project was appraised in 1986. By that time, the Bank had financed more than 20 credits or loans to the transport sector, the majority for railways. Only two projects were to assist the road subsector, one in support of rural roads in Bihar, and a national highway project (approved the year before and implemented by the Ministry of Surface Transport, MOST) that comprised physical investments in six states. The latter project had been the first after a long hiatus in lending for roads and ports and had been made possible by a recent GOI decision to allow international competitive bidding in these two sectors. The Bank, therefore, had comparatively little experience in the sector, especially considering the size of India and the fact that these projects covered specific parts of the territory. Conversely, the state public works authorities had no experience with Bank-financed road projects.

2.4 The states' project (appraised in 1988) was the first Bank-financed highway project at the state level. It covered four states' (Rajasthan, Maharashtra, Uttar Pradesh, and Bihar) selected using four criteria: (i) relative need based on per capita income and per capita road density; (ii) likely satisfactory economic returns; (iii) need to strengthen the state road authority; and (iv) capacity for demonstration—for future replication in other states—of institutional improvements and better construction methods in a variety of conditions.

2.5 The SAR contained no rationale for the design of a multi-state project. Implicit was the intention to take the opportunity of the project to have as wide a geographic scope as possible. However, it would have been important at the appraisal stage to analyze the potential impact of the widely different conditions—economic development, institutions, human resources—among the various states on the capacity to achieve common objectives. Also, the most technically difficult physical component of the SRP was in Bihar (the 4 km-long Bhagalpur bridge), the state with the fewest resources.

2.6 The criteria for subproject selection were not clear. For example, the road subprojects in Uttar Pradesh were concentrated in the poor part of the state. These roads were likely neither to be the most congested nor the ones that would have the highest investment return. They were therefore not obvious priorities for a project that focused on state-level roads.

2.7 Neither project contained performance indicators, other than vaguely defined standard borrower reporting. For example, the SAR for the states' project stated that in their quarterly progress reports borrowers should indicate “progress made, problems encountered, together with the remedial steps proposed, and proposed future program of activities.” The rural roads project was not much different. In this project, which had a poverty focus, a well thought out list of performance indicators, starting with baseline data, would have been essential to assess the socioeconomic performance and impact of the project. Under the ongoing Andhra Pradesh Economic Restructuring Project (approved in FY98), a comprehensive technical and socioeconomic database has been developed to identify investment priorities and to provide a baseline for assessing the impact of rural roads.

Borrower Ownership

2.8 Ownership was mixed.⁴ All five states enthusiastically supported the physical investments of the projects. But support for some of the institutional components of the projects, and for international competitive bidding (ICB) of civil works in the states' project, was weak. At the same time, GOI initially was reluctant to approve external funds for rural roads, on the premise that such works were labor-intensive and that funding from the Employment Guarantee programs⁵ was adequate.

2.9 The level of beneficiary ownership of the rural roads project was apparent during implementation. Initially short of counterpart funds, GOG obtained a loan from the National

4. There is little documentary evidence about borrower ownership. The statements here are mostly from opinions collected by the auditor.

5. Federally-financed programs that among other things financed labor-intensive, civil works such as roads.

Diary Development Board. The NDDDB considered the roads affected by the project to be of direct benefit to farmers producing milk and supported their construction.⁶

3. Project Implementation

Physical Components

Rural Roads Project

3.1 The project suffered substantial delays in the early years of implementation, mainly because of delays in transfer of special accounts funds from GOI to GOG, and due to a lack of counterpart funds that was eventually accommodated by the NDDDB loan. Despite this initial funding problem, the rural road construction program was successfully completed (including significant expansion in both length of roads and villages connected to major roads resulting from a major devaluation of the rupee) within the appraisal estimates for time and cost (Table 2).

Table 2. Targets for the Rural Roads Project:

	<i>Original</i>	<i>Revised/Actual</i>
No. of roads	909	1,565
Length (km)	3,694	6,443
No. of villages connected	1,338	2,210

3.2 Contractors for the road improvements performed well. They were mainly Gujarati private owners of hot-mix bitumen plants who became full contractors to take advantage of the financial benefits for the lead contractor. Implementation success was enhanced by a computerized project monitoring system designed by project-financed consultants. The system could also be used by GOG to monitor its own road programs.

3.3 Contract supervision was done in-house. The SAR justified this based on the small size of the contracts and their scattered locations. However, the audit mission found that many of the roads were interconnected or close-by, and would have been relatively easy to package into a single supervision contract.

3.4 Government officials complained that the Bank caused significant implementation delays. First by its slow response to requests for clearance and approval during the procurement process and then by a one-year delay in approving expansion of the project once it became clear that the rupee devaluation would make it possible to significantly augment project coverage. The officials attributed some of these difficulties to the Bank's repeated institutional reorganizations and shifting responsibility for rural roads between the infrastructure and agricultural divisions.⁷

6. This view was confirmed during a stakeholders' workshop conducted by audit mission, and held at a training center of the NDDDB.

7. Changes in institutional responsibilities for rural roads within the Bank happened mostly soon after the Bank's reorganization in 1987. Thereafter, rural roads projects have remained the responsibility of the transport of infrastructure division. However, some 10 rural development, irrigation or agriculture projects currently underway or under preparation for India contain significant components in rural roads.

States' Road Project

3.5 The credit was fully utilized, but the loan only partially. Implementation varied from state to state, and was best in Maharashtra, where physical targets were met or exceeded, and in Rajasthan, where 74 percent of the physical targets were achieved. Implementation was poor in Uttar Pradesh (30 percent). It was worst in Bihar, where, despite a project extension of two years for this state only (beyond other project extensions), the Bhagalpur bridge was still under construction and no other works had been completed by the time of the audit mission (Table 3). Physical objectives were substantially reduced, first with official revision of scope, then through implementation. Discussions during the audit mission revealed that the reduction in objectives and execution delays were due to a combination of factors:

- Changes in state government and new authorities not agreeing with project priorities (Uttar Pradesh and Rajasthan)
- Cancellation of several contracts due to poor contractor performance
- Inadequate project readiness, notably regarding land acquisition, removal of utility lines, and tree cutting from the right of way for roads
- Problems with supply of materials, especially inadequate quality and quantity of locally produced bitumen, and with import of cement (particularly during the Gulf War)
- Poor quality of engineering and supervision, especially for the Bhagalpur bridge.
- Inadequate price escalation clauses, since they were based on the general price index, which underestimated the price increases of road construction materials.

Table 3. SRP: Summary of Physical Implementation – Road Strengthening/Widening

	<i>Maharashtra</i>	<i>Rajasthan</i>	<i>Uttar Pradesh</i>	<i>Bihar</i>
Appraisal (km)	648	868	600	110
				Bhagalpur bridge
Actual (km)	659 ^a	641 ^b	198 ^c	
Completed (%)	102	74	30	

Source: ICR

a. 453 km substantially completed by 1996, and 204 km, dropped from the project due to poor contractor performance, completed with GOM's own funds.

b. One contract cancelled and another dropped from project due to poor contractor performance.

c. Three contracts not awarded due to high bid prices and canceled from project.

3.6 *SAR risk assessment.* The SAR identified three possible risks, and then dismissed them as being well taken care of in project preparation and design:

- Technical risks were expected to be small because the civil works involved proven technology and construction that was familiar to the executing agencies.
- Implementation risks were expected to be small as contracts were expected to be ready for award about the time of loan signature.
- Study and supervision risks would depend on the quality of consultants and rapport with state counterparts. Overall, risk of inadequate studies and contract supervision should be small in view of the preparation of an agreed short-list of experienced firms from whom to solicit proposals

The factors causing implementation delays and reduction in objectives described above show that the SAR did not anticipate the risks the projects would eventually face. The SAR also ignored the risks and costs related to implementing and supervising a multi-state project.

3.7 *Land acquisition.* The acquisition of land for road widening was the main delay factor for most project-financed roads.⁸ Land purchases are regulated by individual state laws, which are modeled on a national law that is more than 100 years old, the Land Acquisition Act, 1894. Such legislation is not appropriate for the frequent land acquisition required for upgrading and developing state road systems, and the state governments are not well equipped to deal with this situation:

- Land holdings over time have become smaller mainly through predial partition within families, increasing the number of owners involved.
- Compensation, which is based on the most recent recorded transaction, is too low, since the level of activity in land markets is low (except for irrigated areas), so transactions seldom are recent. Inflation further erodes the price of past transactions.⁹
- The appeals process is long, and may involve several appeals instances as permitted by current legislation.
- PWD personnel are little qualified in land acquisition issues and relevant legislation.
- A number of government agencies are involved in the land acquisition process, and direct responsibility for valuation and payment rests with the Revenue Department. These agencies were not connected with the project in any meaningful way.
- PWD budgets have little flexibility to allocate funds for land acquisition before a project is formally inscribed in the provincial budget. As a result, it is difficult to start processing land purchases in Bank-financed road construction before Bank approval of the project.

8. The SAR contained a section on land acquisition. After some discussion, and stating that 'there was little need to acquire new land for the project as the works proposed mainly comprise the improvement of existing roads within the existing right of way', the SAR concluded... 'Land acquisition is not, therefore, seen to be a factor which would delay project implementation'. Actual implementation experience proved the SAR prediction to be overly optimistic.

9. Source: Rajaraman, R and Lanjouw, P. 1999. *The Evolution of Poverty and Inequality in Indian Villages*. The World Bank Research Observer. Vol 14, Number 1. The article further states that most of the times land sales, when they occurred, often involved land from formerly well-endowed, but non-cultivating, households, to cultivating ones. In this case, land values and resistance to land expropriation would likely be higher.

The States need to take a proactive approach to address land acquisition problems.

In the short term, until new legislation is passed, the following approach would be helpful to ease the land acquisition problems in road improvements:

- Consider land acquisition as a systemic issue. This requires involving all relevant government departments under a single commission, starting by the Revenue Department that has main responsibility for land purchases, to address land acquisition for major road development programs, and/or externally financed projects
- Provide State budget flexibility to allocate funds for land acquisition, probably through the creation of a revolving fund
- Train PWD personnel in the land acquisition process

3.8 *Utilities.* Removal of utility lines from the right of way for roads took considerable time and contributed to implementation delays. According to senior officials interviewed by the audit, this problem was rooted in the lack of administrative capacity in PWD to negotiate and enforce agreements with the utility companies. The problem apparently could be greatly reduced if PWD had the same level of legal authority over the right-of-way as the railways, which have full powers to issue permits and enforce removals of utility lines on their right of way.

3.9 *Tree cutting.* While of less consequence than the problems with land and utilities, getting clearance from state Forestry Departments to cut trees to allow road widening was a burdensome process. The need and arrangements for tree cutting could have been foreseen and addressed if a thorough environmental analysis had been conducted. However, the section in the SAR on the environment was brief and contained no references to tree-clearing requirements.

3.10 *Procurement problems.* Procurement procedures were a constant source of friction during project implementation. Contracts were generally too large to attract local private contractors given the incipient condition of India's construction industry. At the same time, the contracts were too small to attract foreign contractors, which would have had to mobilize equipment and personnel. In these circumstances, PWD officials believed that ICB procedures were not warranted. They also believed that prequalification requirements were too stringent and left out many smaller firms. Others pointed out that prequalification procedures had the perverse effect of reducing competition as they allowed those companies that prequalified to enter into contracts and agree on a bid strategy that would yield higher prices. Prequalification has since been discontinued and replaced by postqualification in Bank-financed highway projects in India.

3.11 Contract management was difficult largely because the PWDs lacked training in the Bank's bidding and contract arrangements. At the time of project preparation, several PWDs were implementing Bank-financed irrigation projects. Procurement in these projects was under local competitive bidding¹⁰ agreed between the Central Water Commission of the GOI and the

10. National Competitive Bidding (NCB) in current Bank terminology.

Bank. That procurement only partially followed FIDIC¹¹ rules. For the SRP, the Bank required full compliance with FIDIC conditions. Neither PWD officials nor contractors were prepared to carry out contracts with conditions that were radically different from what they were used to.

3.12 The application of price escalation clauses was a recurrent problem. This was based on variations of the general price index. But individual materials and supplies essential for road construction sometimes went up in price at rates substantially higher than the general price index.

3.13 Bhagalpur bridge and the approach roads. Construction of Bhagalpur bridge was the project's most difficult implementation problem. The bridge was still only about half completed at the time of the audit mission. The component was plagued by deficient technical design, inadequate engineering surveys, poor contractor performance, large contractor claims requiring arbitration, and weak supervision. One technical mishap, the loss of two pillar foundations in a flood¹² has still not been fixed. The current estimated bridge completion date, assuming funding is found to continue works after closure of the project, is December 2000, that is six years behind schedule. The economic consequences of this delay are discussed in Chapter 5. Given the cost (estimated at US\$34.1 million in the SAR, and US\$39.4 m with the approach roads)¹³ and technical difficulty of this size component, it should have been selected independent supervision.¹⁴

3.14 The bridge approach roads which have also not been completed, were also a major implementation issue for cost and procurement reasons rather than technical ones. The contract, awarded to an Indian contractor after ICB procedures, turned out to have unit construction prices (in rupees, per kilometer) more than eight times the SAR estimate. Even considering the devaluation of the rupee, bid prices would still be more than twice (in constant money) the appraisal estimate. The difficult law and order situation in Bihar appears to have been the main factor behind the high prices. In addition, officials interviewed by the audit believed that a contributor factor may have been collusion among bidders, resulting from (i) ICB, which severely limited the number of bidders, and (ii) prequalification, which made public the names of the contractors interested in the project thus facilitating collusion. Officials also noted that a single contract for the two roads (lengths of 9 km and 1 km), one on each side of the bridge, was too large to attract Indian contractors, and that the logistics of works on the two sides of the bridge, requiring transport of materials and personnel by ferry further deterred potential bidders.

Local Contracting Capacity and Modernization

3.15 The two projects helped to significantly strengthen local contractors. As noted above, the rural roads project benefited Gujarati private contractors. The SRP's civil works were mostly

11. FIDIC is the French acronym for the International Federation of Consulting Engineers. Bank contract terms, although not identical to, largely follows the terms predicated by FIDIC.

12. The auditor received conflicting views on the flood. One view was that the flood was unusually big and could not have been predicted. In this sense, it would have been an 'act of God'. A different view was that flood was within normal levels, but inadequate design, insufficient soil borings, and inadequate precautions by the contractors were at fault. The audit finds this second view to be much more persuasive. For example, soils borings were one per kilometer, which is clearly insufficient for making proper engineering decisions for the bridge foundations. The issue is under arbitration.

13. Originally, according to the SAR, the single largest subcomponent was the Allahabad-Dorighat road (US\$ 34 million for 208 km) in U.P. This subcomponent was canceled when the project's scope was revised.

14. Bank operational staff noted that after long discussions, GOB agreed only to proof consultants (rather than independent supervision consultants) who could only mobilize two years after work had started.

implemented by state-owned contractors and some private contractors. The ICB's technical requirements for use of modern equipment and construction techniques detailed in the ICR forced local contractors to mechanize and adopt new techniques. The relatively large size of the contracts, and the prequalification requirements in several instances limited the number of bidders, which led to high prices. Sometimes, contractors awarded the bid had substantial civil works experience, but little or no experience in the kind of works being contracted. For example, a road works contract was won by a large and experienced bridge construction company that had no experience with roads.

3.16 Some private contractors and government officials told the audit mission that state government officials tended to favor state-owned construction companies (whether from the same state or not) over private contractors in both the bid evaluation and contract award, and to be more lenient with them during implementation. The explanation given was political pressure to employ state companies, and 'club' behavior among senior public works officials, whether in direct government service or as managers of state-owned construction companies. While the assertion is difficult to verify, it fits with hypotheses formulated by institutional economists.¹⁵

Institutional Components

Rural Roads Project

3.17 This project included two institutional development components: preparation of a maintenance planning program, and preparation of a safety program. Little was accomplished. The maintenance planning study had an objective similar to the pavement management system of the SRP, and suffered a similar fate (see below). The safety component was not implemented: the equipment for vehicle testing was not procured, and the safety program was not prepared.

States' Roads Project

3.18 The project had two major institutional components: the development and installation of a pavement management system (PMS) in each of the four states, and the study in Maharashtra of the role, objectives, and organization of the public works department.

3.19 The pavement management system (PMS). Only the initial steps of this component, intended for demonstration purposes were done: i) road condition in a sample of each state's network (some 8,000 km in each state), was surveyed using a single test vehicle; ii) the database obtained from the sample survey was computerized. As no further step was taken, the utility of the PMS component is negligible.

3.20 The conception and implementation of the PMS component was weak on several accounts:

- The same system was being proposed to states with vastly different road networks and technical, institutional, and financial capacities.

15. Buchanan, J.M. and Tullock, G. *The Calculus of Consent. Logical Foundation of Constitutional Democracy.* University of Michigan Press. 1962.

- Little if any ownership was developed for this complex activity among the PWDs. In one state a junior engineer told the audit mission that he was the only one dealing with the PMS consultants, and that more senior staff never asked about this activity.
- The roads surveyed were generally scattered throughout the networks of each state, giving the component little demonstration value. Rather than a sample, a comprehensive survey in a few maintenance districts would have allowed the application of PMS software and maintenance optimization algorithms to the whole network of these districts, providing a practical application of the system.
- Maharashtra already collected pavement information (roughness and structural strength) on a systematic basis, so the marginal benefit of the road survey under the PMS exercise was small. The only benefit to that state was the computerization of the database.
- The consultant-developed software was a 'black-box' that PWDs could not modify or customize without the consultant's assistance and approval. GOM, with the help of a local consultant, is currently adapting the software to its needs and has been required to obtain such approval.
- Lack of substantive training for PWD personnel, and lack of follow-on visits by the consultant after initial installation work (not included in the consultant's contract) made it practically impossible to test the system.
- The annual costs of operating the PMS, assuming full installation and operation, and the ability of the PWD budgets to cover those costs were not estimated or discussed with PWD officials.

The overriding perception of the audit is that the appraisal did not realize the technical and institutional complexity of the PMS. While in hindsight the issues are clearer, much could have been anticipated during project preparation.

3.21 *Maharashtra PWD organization study.* This study was intended to review the role and organization of the PWD, and to recommend changes that would have modernized the agency's organization. The SAR described the study and its goals in vague terms, conveying the impression that it was a routine activity.

3.22 In retrospect, this study should have been the institutional flagship of the SRP. Audit discussions revealed that this study attracted considerable attention not only in Maharashtra, but throughout India and in the Indian Road Congress (an active professional association and forum for highway professionals). The reason was that the organization of PWDs was still essentially the same as that inherited from the British. It was seen as evidence that the states needed to substantially reform the way they organized their highway activities.

3.23 Implementation of the study was deficient. Consultant selection was essentially based on cost rather than quality. This led to awarding the contract to a local consultant that, while reputable in many fields, had no experience in the modernization of highway agencies. In the perception of state highway officials, Bank personnel supervising the project were only vaguely aware of the importance of the study and did not follow its execution closely. The result was a study that lacked detailed analysis, had few practical recommendations, and missed key areas such as legal and environmental roles.

3.24 *Independent supervision.* The project aimed to introduce all four states to supervision by consultants, which had never been tried on a highway project. Under the SRP, the intention was to pilot the concept on one road subproject per state. The experience was unsatisfactory for a variety of reasons. In Maharashtra, PWD officials noted that the supervision engineer was unable to speak the local languages; more significantly was unable to explain the contracting rules that govern independent supervision (essentially those of FIDIC, the international federation of consulting engineers). In Rajasthan, due to poor scheduling, the supervision consultant arrived when over 50 percent of the works in the selected roads had been completed under the state PWD's supervision. In Uttar Pradesh, the chief supervision consultant was a chemical engineer not qualified for the job. In Bihar, the road selected for supervision was canceled, as was the supervision consultant. The audit does not interpret these experiences to mean that independent supervision failed but, rather, that preparation for the pilots, including the selection and requirement of supervision consultants and training of PWD staff to manage supervision consultants, was poorly done.¹⁶

Training

3.25 In both projects, there was opposition to training abroad by MOST and the Ministry of Finance. In the end, permits were granted only for the SRP. Under this project, 40 engineers (compared to a SAR target of 30) were trained abroad after initial training in India. The stay abroad was considerably shorter than envisaged at appraisal. Training under SRP also suffered from weak linkage between training and personnel development (e.g., trainees were selected from among those not involved in project activities) and from insufficient focus on the new roles of PWDs, such as managing contracts. Local training was done under the rural roads projects, but the number of trainees fell substantially short of SAR targets (293 actual versus 485 forecasted).

4. Achievement of Project Objectives

Rural Roads Project

4.1 The rural roads project surpassed its objectives in terms of kilometers, since the actual length built was 75 percent more than envisaged. However, it is more difficult to discern whether the project's intention to focus on the rural poor was achieved. In fact, with rare exceptions, Gujarat has no obvious pockets of rural poverty. Most areas contain a mix of the poor, mostly village laborers and the more affluent, mostly farmers or non-farming, higher caste, rural land owners.¹⁷ The more obviously poor areas are those inhabited by tribal people, and the project did include some roads (a minority though) that served such areas.

4.2 Both the poor and the non-poor benefited considerably from the project. The improved roads were blacktopped—an Indian expression for a light layer of bitumen used mainly as a binder for gravel. This helped make the roads passable year-round and the increased accessibility of markets encouraged farmers to shift land use to higher-income crops. Except in the dryer

16. Bank operational staff also noted that at the time of appraisal, and thereafter, considerable hostility existed in the four state PWDs towards the concept of independent supervision, in part due to cost, and in part due to its conflicting with traditional notion and organization for in-house supervision. Independent supervision gradually is getting accepted in current national as well as state highway projects.

17. See reference in footnote 7. According to that article, a significant trend in recent years is the purchase of land of land by peasants/farmers of lower castes for the purpose of commercial farming.

areas, however, the construction of cross-drainage was the single most important design feature to eliminate road closures due to rains or flooding. The crop shift is analyzed in detail in the ICR¹⁸ and was confirmed by field visits to several roads improved under the project. The better roads helped farmers increase revenues from milk production. This resulted mainly from shortening the time farmers required to carry the milk to the collection centers which reduced losses to spoilage.

4.3 Blacktopping, however, may be too sophisticated and expensive a solution for low - volume roads. The addition of bitumen makes it more expensive than gravel surface, or other unsealed surface. It is a capital-intensive technology that provides fewer employment opportunities than other road surfacing techniques. Yet, Gujarat PWD officials claim that conditions in that state make it especially economical to use blacktopping: scarce availability of gravel; wide accessibility to low-cost, locally made asphalt hot-mix plants; durability of the surface ; avoidance of periodic needs for grading required in non-paved roads. Given the extensive use of blacktopping in Gujarat, and the favor it is gaining in other states, it would be useful to further analyze its cost-effectiveness.

4.4 On the institutional side, economic analysis as anticipated was used extensively by GOG-PWD¹⁹. Management of the road network did not improve, mainly because of the problems with the road maintenance study. Road construction methods improved, and local contractors gained more experience and modernized their equipment, particularly for road paving.

4.5 *Stakeholders' workshop.* A stakeholders' workshop²⁰ organized by the GOG-PWD and the audit mission and comprising beneficiaries, local elected officials, and PWD staff corroborated the above findings. The stakeholders highlighted the following impacts of this project:

- Agricultural production and milk production increased substantially from the start of the project (increases were estimated at between two and five times the initial levels).
- Farmers increased use of modern equipment.
- Transparency in the labor market increased, giving village laborers an opportunity to search for alternative employment and improving their bargaining power.
- Frequency and travel times of public transport serving the project areas improved considerably.
- Milk collection started from previously inaccessible villages.
- Better health facilities and services (e.g., nurses and doctors) were made available to the rural population, and availability remains during the rainy season.
- Improved economic opportunities in the rural areas has reduced migration out of the villages.

18. The ICR's agricultural economics analysis was conducted by specialists from the U.N.'s Food and Agriculture Organization (FAO).

19. The Gujarat public works department actually is called Roads and Building Department. For simplicity, it is referred in this report generically as public works department (PWD).

20. The workshop was carried out in the training center of a milk cooperative in the city of Mensana.

- Improved road access increased access to, and enrollment in, primary and secondary education.

States' Road Project

4.6 Project objectives, as enunciated by the SAR, were ambitious and not adequately supported by the project components. Promotion of modern maintenance management systems rested largely on the development and implementation of a software-based pavement management system. However, as discussed earlier in this report, achieving the PMS objective required meeting a number of requirements – PWD interest and ownership, affordability, training of staff, recurrent funding – that, in hindsight, proved difficult to satisfy. The highway organization study fell well short of expectations.

4.7 The main measurable benefit of the physical investments to widen and strengthen state roads was a reduction in transport costs. The significant reduction in the amount of physical works actually completed under the states' project meant that achievement of this benefit was substantially below expectations. As in the Gujarat project, and even more so due to the higher technical standards required by bid documents in this project, contractors did modernize and mechanize.

Strengthening Maintenance Management

4.8 Both projects aimed to improve the efficiency of maintenance. To do so, they proposed to introduce complex management techniques. Neither project had adequate analysis of the PWD's institutional capabilities to absorb such techniques. Implementation showed that the expectations were unrealistic. A number of other institutional goals could have been considered during project preparation that were of higher priority and more likely to succeed, such as improving the capacity for competitive contracting, costing, and quality control.

5. Performance Ratings

Outcome, Institutional Development, and Sustainability

Outcome of Physical Components

5.1 The outcomes of the rural roads project are as follows:

- The quality of roads is generally good, even after serving traffic for 5-8 years, and better than comparable roads in their areas. This stems from a better initial design and better maintenance funding than for other roads.
- Pavements are well maintained, but maintenance of shoulders and other roadside features is neglected.
- Obstructions, such as trees and property, are very close to the roadway and become safety hazards, while roadside plantation has been only partially implemented.

- Frequency of local bus service has improved, but crowded jeeps remain the most popular public transport in rural areas.

5.2 The outcomes of the states' project are as follows:

- Roads are used intensively and have traffic levels substantially above the forecast.
- Multi-axle trucks and container traffic has started or increased on the upgraded roads.
- Quality of the road surface is generally good.
- Bhagalpur bridge has produced no benefits to date.
- Mechanized road construction has shown inconsistent results regarding speed and quality of construction, depending on contractor's competence.

5.3 In both projects:

- Safety features are lacking, there is uncontrolled congestion where roads pass through towns and villages; lane markings and protection barriers are lacking and there are few bus stops or other roadside facilities.
- Use of motorized vehicles (cars, motorcycles, tractors) has increased on improved rural roads, while bullock carts use has declined.

5.4 *Outcome and Impact of Institutional Components.* The institutional development objectives were not achieved and none of the components in either project resulted in a meaningful impact. The only significant achievement was the introduction of economic analysis, which Gujarat PWD used systematically under the rural roads project and appears to have adopted as a standard analytical tool for project selection and prioritizing investments.

5.5 *Economic return.* The FAO team that carried out the economic analysis for the rural roads project found the return to be satisfactory (28 percent weighted average return for a sample of 260 roads). This was mainly the result of farmers shifting output toward higher value-added crops – vegetables and fruits – and contrary to appraisal expectations that project benefits would largely stem from increased milk production and reduced milk wastage. Economic analysis of rural roads project remains highly speculative in the absence of detailed baseline data that would permit separation of the effects of the project from other factors.²¹ The ICR for the States' Roads project estimated the return for a sample of 18 roads (versus 23 at appraisal) and found the return to be higher than at appraisal (64 percent versus 36 percent) mainly because higher than expected traffic growth more than offset construction cost overruns. For Bhagalpur bridge, the ICR estimates a return of 19 percent (20 percent in the SAR), assuming a six-year delay in implementation and close to 40 percent higher cost. That the return would remain practically the same as at appraisal despite much higher costs and practically double the construction period is surprising, but could be explained by much higher traffic levels at bridge opening than originally estimated. The audit finds this assumption to be optimistic.

21. While the economic analysis remains speculative, a recent study (Fan, S. Hazell, P and Thorat, S. 1998. Government Spending, Growth and Poverty: An Analysis of Interlinkages in Rural India. EPTD Discussion Paper No33. International Food Policy Institute. Washington D.C.) concludes that investments in rural roads have the highest combined pay-off for poverty alleviation and growth.

5.6 *Ratings.* The audit concurs with the ICR in rating **outcome** of the Rural Roads Project as **satisfactory** and of the States' Roads Project as **unsatisfactory**, and in rating **institutional development impact** as **modest** in both projects.

5.7 **Sustainability** is rated as **likely** in the Rural Roads Project because of the good condition of the roads after several years of service, reflecting overall good construction quality and adequate funding for maintenance since some of the older roads have been resurfaced (while maintenance of shoulders and drainage should be improved, this does not require significant resources and it is not critical due to low traffic levels). **Sustainability** in the States' Roads Projects is rated as **uncertain**, mainly because key project investments are not yet completed, and road maintenance continues to be underfunded in the states covered by the project.

Bank Performance

5.8 The audit judges Bank performance as **satisfactory** in the Rural Roads Project, and **unsatisfactory** in the SRP. In the latter, Bank performance throughout the project cycle was poor, especially at appraisal, when it failed to assess risks during physical implementation and to take appropriate measures. The multi-state project design, aiming to achieve similar objectives in all states despite widely different institutional and financial capacities was likely to fail. Strong supervision could have prevented this, but supervision was weak especially for the institutional components. There is little doubt that the efforts and resources needed to properly supervise a multi-state project were seriously underestimated.

5.9 Given the many extensions and pending contractual issues, the Bank was probably right in closing the SRP project, thereby ending financing for continuing work on the Bhagalpur bridge. Because of Bihar's high poverty levels and low budgetary capacity, it is unlikely that the state can find the funds to complete the bridge any time soon. If it does, it would only be at great human cost, as it would need to divert funds from social programs. The central government played no role in financing this project. The Bank, as the only external financier in the SRP, should find a way to finance completion of this important bridge, but needs to decide how and under what conditions it will provide the funds. Ensuring that bridge construction is properly supervised, and that adequate safeguards are adopted to prevent mishaps, should be key conditions for the Bank to provide funding.

Borrower Performance

5.10 The Rural Roads Project was well executed and the audit consequently rates borrower performance as **satisfactory**.

5.11 Implementation of the SRP was generally **unsatisfactory**, although it varied from state to state. The performance of the Ministry of Surface Transport in the procurement of equipment, directly under its responsibility, and in coordinating training was mediocre at best, as noted by officials from all four states.

6. Lessons

6.1 The following lessons emerge from these projects:

- *Project readiness needs to be better assessed at appraisal.* Smooth project implementation is strongly dependent on good preparation. For civil works involving use of land, a project cannot be considered ready for implementation until the procedures for clearing land for the works, including removal of obstructions such as trees, structures and utilities, are fully understood and workable administrative arrangements made and agreed at appraisal. When current legislation on land acquisition is not suitable for multiple acquisitions required by road improvements, such arrangements need to be worked out in considerable detail. Detailed planning for removal of utilities and clearing trees also is required.
- *Technological requirements in bidding process can help modernize contractors, but large state-owned contractors hamper development of private companies.* Strict requirements for modern technology in civil works bids (as the states road project demanded) forces public works departments and local contractors to adopt new technology and methods, thus ensuring better quality of works under the project and in the future. At the same time, a roads work market consisting of state-owned companies (which are mostly large ones) as well as private companies is unhealthy because (i) state-owned companies are not financially autonomous and receive or may be protected by government subsidies, and (ii) public works officials managing contracts may give privileged treatment to State-owned contractors. Barriers to development of the construction industry may seriously hamper efforts to launch major programs of highway development that India desperately needs to serve growing domestic and international trade, and to reduce their high logistics cost
- *Methods for allocating road maintenance funds need to balance optimization aims with local capacity.* The value of highway assets is large. Allocating maintenance budgets for these assets by eyeballing is inefficient. Modern, software-based programs, under the label of pavement management systems (PMS) are touted as being the better alternative. Yet, PMS are both institutionally and technically difficult. PMS systems have been a challenge to make operational in many countries. They require specialized equipment and personnel for field data collection, expert software developers and operators, training, resources for launching and maintaining the system, institutional ownership and commitment at the right levels. These conditions rarely obtain. Well functioning road maintenance operations should be a prior requirement. The challenge is to design PMS that are simple and affordable, and that catch the attention of the senior road management authorities.
- *Introducing independent supervision requires concerted efforts by client, consultant and the Bank.* Introduction of independent supervision requires first, an attitude on the client's part to try a new method that challenges the tradition of in-house supervision. It also requires the independent supervision consultant to be proactive in addressing the difficulties likely to face the borrower of comprehending independent supervision rules that it has not tried before. The Bank, on its part, need to take all necessary measures to ensure that independent supervision can work, by following the pilots closely, identifying problems, and being flexible and expeditious in resolving the problems. Training of the client staff in contract management , should include an initial formal training done prior to experimenting with independent supervision, and should ideally be complemented by on-the-job training.

- *The general price index may be inadequate for price escalation in road contracts.* In places such as India that are in the process of decontrolling prices, and that are undergoing fast expansion of infrastructure, the price of key construction materials is likely to rise much more rapidly than the general price index. Contracts need to use more specific reference prices to face this situation.

Basic Data Sheet

GUJARAT RURAL ROADS PROJECT (CREDIT-1757-IN)

Key Project Data (amounts in US\$ million)

	Appraisal estimate	Actual or current estimate	Actual as % of appraisal estimate
Total project costs	170.8	126.6	74
Credit amount	119.6	119.6	100
Cofinancing	-	-	-
Cancellation	-	-	-
Economic rate of return	28	16	

Cumulative Estimated and Actual Disbursements

	FY88	FY89	FY90	FY91	FY92	FY93	FY94	FY95
Appraisal estimate (US\$M)	8.2	26.0	49.7	73.4	93.5	107.7	117.2	119.6
Actual (US\$M)	6.0	9.9	14.9	29.5	44.8	58.0	77.5	89.8
Actual as % of estimate	73	38	30	40	48	54	66	7
Date of final disbursement:	5/21/1996							

Project Dates

	Original	Actual
Initial Exec. Proj. Summary	09/15/88	09/15/88
Appraisal	11/14/88	11/14/88
Negotiations	12/19/88	12/19/88
Board presentation	02/21/89	02/21/89
Signature	03/10/89	03/10/89
Effectiveness	11/08/89	11/08/89
Credit closing	12/31/92	12/31/95

Staff Inputs (staff weeks)

Stage of Project Cycle	Actual	
	Weeks	US\$
Preparation to appraisal	14.13	27,997
Appraisal	45.35	81,251
Negotiations through Board approval	17.49	28,729
Supervision	163.63 ^{a/}	159,691
Completion ^{b/}	253.52	345,817
TOTAL	253.52	345,817

^{a/} Source: Email dated 11 April 1996 from SA2A Division, WB

^{b/} Actual includes 10 staff weeks (US\$39,000) for FAO/CP).

Mission Data

Stage of Proj. Cycle	No. of (Month/year) persons	Days in field	Specialized staff skills represented	Performance rating		Types of problems
				Implement. status	Develop. objectives	
Through Appraisal	June 83 ^a					
	July 83	2	6	E		
	Mar 84	1	3	E		
Pre-appraisal	Sep 84	1		Ec		
Appraisal	Nov-Dec 84	3	16	E, Ec		
Supervision	Feb 87		7	E		
	April 87	1	3	E		
	May 87	2	7	E	1	1 (Initiating Form 590)
	July 87	1	2	E		
	Jan 88	1	3	E		
	May 88	1	4	E		
	Nov 88	3	6	E	3	2 M
	Feb-Mar 89	2	5	E	2	2
	Aug 89 ^b	1		E	3	2 Fu, T, Fi, M
Jan 90	Jun 90	3	5	E	3	2 Fu, T, Fi, P, M
May 90	1	2	T			
Aug-Sep 90	1	9	E			
Reformulation	Mar 91	2	16	E, Ec		
	Dec 91	2	12	E, Ag	2	1
	June July 92	2	11	E		
	Mar 93	1 ^c	6	E	1	1
	Feb 94	1	8	E	1	1
	June-July 94	1	9	E		
	Oct 94	2	5	E, F	S	HS
	Feb-Mar 95	1	9	E	S	HS
	July 95	1	10	E		
	Nov-Dec 95	2	4	E, F	S	HS
Completion	Mar	4	14	E, Ec		

^a E = Engineer; EC = Economist; F = Financial analyst; Ag = Agriculturist; T = Training specialist

^b Fu = Funding; Fi=Finance; T = Training; Pd = Procurement; M = Project Management

^c According to para 3.01 of SAR. No other record of this mission has been found.

Basic Data Sheet

STATES' ROAD PROJECT (LOAN 2994-IN/CREDIT 1959-IN)

Key Project Data (amounts in US\$ million)

	Appraisal estimate	Actual or current estimate	Actual as % of appraisal estimate
Total project costs	450.2	225.6	50
Loan and credit amount	250	188	75
Cofinancing	-	66	
Cancellation (loan only)			
Economic rate of return	27	10	

Cumulative Estimated and Actual Disbursements

	FY89	FY90	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99
Appraisal estimate (US\$M)	7.50	10.00	37.50	50.00	60.00	47.50	37.50				
Appraisal Cumulative	7.50	17.50	55.00	105.00	165.00	212.50	250.00				
Actual	17.98	0.00	6.99	14.15	33.19	33.23	35.76	28.88	13.75	4.69	0.05
Actual Cumulative	17.98	17.98	24.97	39.12	72.31	105.54	141.30	170.18	183.93	188.62	188.67
Actual as % of estimate (for each year)	240	0	19	28	55	70	95	-	-	-	-
Date of final disbursement:	December 28, 1998										

Project Dates

	Date Planned	Actual Date
Identification (Executive project summary)		June 1987
Preparation		1987/1988
Appraisal		Feb. 1988
Negotiation		Sept.13-20, 1988
Board Presentation		Oct. 20, 1988
Signing		Nov. 17, 1988
Effectiveness		March 2, 1989
Project Completion		June 30, 1998
Loan/Credit Closing	June 30, 1995	June 30, 1998 ^a

Staff Inputs (staff weeks)

Stage of Project Cycle	Planned		Final	
	Weeks	US\$	Weeks	US\$
Preparation to appraisal			45.3	106,600
Appraisal			35.2	70,100
Negotiations through Board approval			17.3	38,900
Supervision ^b			259.4	623,500
Completion			19.9	56,400
TOTAL			377.0	895,500

^a Bihar components (Bhagalpur Bridge, Approach road, and consultancy service) closed on June, 30, 1998. All other components were closed on 30 June, 1996.

^b This was multi-state project therefore the supervision costs need to be looked at in the context of a multi-state project. Also the supervision missions were often combined with other projects such as the National Highway Project.

Mission Data

Stage of Proj. Cycle	(Month/year)	No. of persons	Staff days in field	Specializations skills represented ^c	Performance rating ^d		Types of problems ^e
					Implem. Status	Devlp.Object.	
Through appraisal	6/87	2	19	E			
	Oct-Nov/87	4	18	E, EC, DC			
Appraisal	Feb/88	6	22	E, EC, DC			
Supervision	Feb-Mar/89	2	30	E			
	Oct-Nov/89	3	23	E, EC	2	1	
	Jan-Feb/90	4	19	E, EC	2	1	
	May/90	6	19	E, EC	2	1	
	Nov-Dec/90	2	18	E	2	1	
	Mar/91	4	19	E	2	1	
	Sep-Oct/91	5	17	E, EC	2	1	
	Feb-Mar/92	3	25	E	2	2	
	Jul/92	2	21	E, EC	3	2	M, P
	Sep-Oct/92	3	19	E	3	2	M, P
Restructure	Jan/93	6	37	E	3	2	M, P
	Jul/93	5	26	E, O, I	3	2	M, P
	Oct-Nov/93	3	21	E, O	3	3	M, P
	Mar/94	3	25	E	3	3	M, P
	Jul/94	3	17	E, O	U	U	M, P
	Feb/95	4	-	FA, E, I	U	U	M, P
	Jul-Aug/95	4	1	FA, E	U	U	M, P
	Jul/96	2	7	FA, E	U	U	M, LC, En
	Mar/97	1	1	FA	-	-	M, En
	May/97	3	6	FA, E	S	S	Fi, M, LC, En
	Dec/97	2	4	E	-	-	M, LC, En
	Jan/98	1	1	FA	-	-	M, LC, En
Supervision/ Completion	Jun/98	3	5	FA, E	U	S	M
	Nov/98	1	5	E	-	-	

^c Fu=Funding; Fi=Finance, T= Training; P=Procurement; M=Project Management; LC = Legal Covenant; En-Engineering.

^d E=Engineer, EC = Economist; FA=Financial Analyst; O=Operation Officer

^e HS or 1= Highly satisfactory; S or 2 = Satisfactory; U or 3 = unsatisfactory; HU or 4 = Highly Unsatisfactory.