

Document of
The World Bank

Report No: ICR0000511

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(IDA-34780)

ON A

CREDIT

IN THE AMOUNT OF SDR 26.4 MILLION
(US\$ 34 MILLION EQUIVALENT)

TO

MONGOLIA

FOR A

TRANSPORT DEVELOPMENT PROJECT

June 27 2008

Transport, Energy and Mining Sector
Sustainable Development Department
East Asia and Pacific Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective May 30, 2008)

Currency Unit = MNT
MNT 1.00 = US\$.0008587
US\$ 1.00 = MNT 1,164.50

FISCAL YEAR
January 1–December 31

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
CAS	Country Assistance Strategy
DoR	Department of Roads
EMP	Environmental Management Plan
EIRR	Economic Internal Rate of Return
ENPV	Economic Net Present Value
ICR	Implementation Completion and Results Report
MIS	Management Information System
MoF	Ministry of Finance
MoI	Ministry of Infrastructure
MR	Mongolian Railways
MRTT	Ministry of Roads, Transport and Tourism
M&E	Monitoring and Evaluation
NDF	Nordic Development Fund
PAD	Project Appraisal Document
PIU	Project Implementation Unit
PDO	Project Development Objectives
SIDA	Swedish International Development Agency
VIS	Vehicle Inspection System

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MONGOLIA
Transport Development Project

CONTENTS

Data Sheet

- A. Basic Information
- B. Key Dates
- C. Ratings Summary
- D. Sector and Theme Codes
- E. Bank Staff
- F. Results Framework Analysis
- G. Ratings of Project Performance in ISRs
- H. Restructuring
- I. Disbursement Graph

1. Project Context, Development Objectives and Design.....	1
2. Key Factors Affecting Implementation and Outcomes	4
3. Assessment of Outcomes	8
4. Assessment of Risk to Development Outcome.....	12
5. Assessment of Bank and Borrower Performance	12
6. Lessons Learned	15
7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners	16
Annex 1. Project Costs and Financing.....	17
Annex 2. Outputs by Component	18
Annex 3. Economic and Financial Analysis.....	19
Annex 4. Bank Lending and Implementation Support/Supervision Processes	20
Annex 5. Beneficiary Survey Results	22
Annex 6. Stakeholder Workshop Report and Results.....	23
Annex 7. Summary of Borrower's ICR and/or Comments on Draft ICR.....	24
Annex 8. Comments of Cofinanciers and Other Partners/Stakeholders	25
Annex 9. List of Supporting Documents	26
MAP	

A. Basic Information			
Country:	Mongolia	Project Name:	Transport Development Project
Project ID:	P056200	L/C/TF Number(s):	IDA-34780
ICR Date:	06/27/2008	ICR Type:	Core ICR
Lending Instrument:	SIL	Borrower:	MONGOLIA
Original Total Commitment:	XDR 26.4M	Disbursed Amount:	XDR 24.4M
Environmental Category: B			
Implementing Agencies: Ministry of Roads, Transportation and Tourism			
Cofinanciers and Other External Partners: Nordic Development Fund; Swedish International Development Fund; Asian Development Bank			

B. Key Dates				
Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	03/09/2000	Effectiveness:	08/29/2001	08/29/2001
Appraisal:	10/30/2000	Restructuring(s):		11/01/2005
Approval:	03/22/2001	Mid-term Review:		
		Closing:	12/31/2005	12/31/2007

C. Ratings Summary	
C.1 Performance Rating by ICR	
Outcomes:	Moderately Satisfactory
Risk to Development Outcome:	Significant
Bank Performance:	Moderately Satisfactory
Borrower Performance:	Moderately Satisfactory

C.2 Detailed Ratings of Bank and Borrower Performance (by ICR)			
Bank	Ratings	Borrower	Ratings
Quality at Entry:	Moderately Satisfactory	Government:	Moderately Satisfactory
Quality of Supervision:	Satisfactory	Implementing Agency/Agencies:	Satisfactory
Overall Bank Performance:	Moderately Satisfactory	Overall Borrower Performance:	Moderately Satisfactory

C.3 Quality at Entry and Implementation Performance Indicators			
Implementation Performance	Indicators	QAG Assessments (if any)	Rating
Potential Problem Project at any time (Yes/No):	No	Quality at Entry (QEA):	None
Problem Project at any time (Yes/No):	Yes	Quality of Supervision (QSA):	None
DO rating before Closing/Inactive status:	Moderately Satisfactory		

D. Sector and Theme Codes		
	Original	Actual
Sector Code (as % of total Bank financing)		
Central government administration	4	4
Railways	1	1
Roads and highways	95	95
Theme Code (Primary/Secondary)		
Pollution management and environmental health	Secondary	Secondary
Rural services and infrastructure	Primary	Primary

E. Bank Staff		
Positions	At ICR	At Approval
Vice President:	James W. Adams	Jemal-ud-din Kassum
Country Director:	David R. Dollar	Ian C. Porter
Sector Manager:	Junhui Wu	Jitendra N. Bajpai
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F. Results Framework Analysis

Project Development Objectives (from Project Appraisal Document)

Improve the accessibility of the isolated and remote central and western regions of Mongolia, increase transport capacity for rail-borne export trade and reduce the number of fatalities resulting from road accidents.

Revised Project Development Objectives (as approved by original approving authority)

(a) PDO Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Increased number of days of road access to Khovd, Arvaikheer, Bayanhongor, Altai, Tosontsengel and Erdenesant.			
Value quantitative or Qualitative)	Days open - 250 days	Days Open - 365 days		Days Open - 365 days
Date achieved	09/15/2001	12/31/2005		12/31/2005
Comments (incl. % achievement)	Target met			
Indicator 2 :	Length of earth and gravel roads receiving one and two maintenance interventions (gradings) increased each year to reach 1500 km and 500 km, respectively			
Value quantitative or Qualitative)	165 km (gravel)	500 km (gravel) 1,500 km (earth)		592 km (gravel) 829 km (earth)
Date achieved	12/31/2001	12/31/2005		12/31/2006
Comments (incl. % achievement)	Target met for gravel roads; completion for earth roads was 55%. No baseline information could be established for earth roads.			
Indicator 3 :	Reduce proportion of annual road fatalities attributable to vehicle conditions			
Value quantitative or Qualitative)	Not available Only data available are absolute number of road fatalities (all causes)			Not available
Date achieved	12/31/2001			12/31/2006
Comments (incl. % achievement)	This indicator was not measured due to the difficulty in determining the fatalities caused by poor vehicle conditions. An alternative indicator, total road fatalities per 10,000 vehicles was monitored, and showed a 16 percent improvement from 2001 to 2006.			
Indicator 4 :	Increased volume of international and transit rail traffic (thousand ton)			
Value quantitative or Qualitative)	International: 4,994 Transit: 3,086			International: 8,007 Transit: 5,388
Date achieved	12/31/2001			12/31/2005
Comments (incl. % achievement)	Targets were not defined. Growth in international and transit rail traffic were 60% and 75% respectively.			

(b) Intermediate Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	At least 215 km of the roads reconstructed and at least 179 km of earth roads upgraded to gravel by end 2004			
Value (quantitative or Qualitative)	Not Applicable	215 km reconstructed, 179 km upgraded		245 km reconstructed, 179 km upgraded
Date achieved		12/31/2005		12/12/2006
Comments (incl. % achievement)	Targets met.			
Indicator 2 :	At least 200 man-months of training to staff of Departments of Roads and Transport completed by end 2003			
Value (quantitative or Qualitative)	28 man-months	200 man-months		145 man-months
Date achieved	12/31/2001	12/31/2003		12/31/2006
Comments (incl. % achievement)	Completion was 72.5% of the target but the achieved level was more than five times the amount of training in 2001.			
Indicator 3 :	Reduce national proportion of annual road fatalities attributable to vehicle condition			
Value (quantitative or Qualitative)	Not available These data were to be collected by the government once the traffic safety study got under way	Overall 33% reduction; (50% in aimags)		Not available
Date achieved	12/31/2001	12/31/2006		12/31/2006
Comments (incl. % achievement)	See (a) PDO, Indicator 3 above.			
Indicator 4 :	At least 3 stationary and 3 other vehicle testing stations are operational.			
Value (quantitative or Qualitative)	None	3 stationary stations and 3 mobile stations	24 stationary units: 3 in UB and 21 elsewhere	24 stationary units: 3 in UB and 21 elsewhere
Date achieved	12/31/2002	12/31/2005	12/31/2005	12/31/2005
Comments (incl. % achievement)	The plan for three mobile units was replaced by one for 21 stationary units based on a cost effectiveness analysis. Revised targets were met.			
Indicator 5 :	At least 40,000 vehicles tested and passed during 2003 and 60,000 during 2004.			
Value (quantitative)	vehicles tested: 42,362 vehicles failed: 679 (6%)	60,000 vehicles		60,000 vehicles 10% of which

or Qualitative)				failed
Date achieved	12/31/2002	12/31/2005		12/31/2005
Comments (incl. % achievement)	Targets were met and exceeded. About 85% of the total vehicle fleet was tested in 2006 and is expected to reach 100% by 2008.			
Indicator 6 :	Gravel roads included in the project receive at least one regrading in 2003, 2004 and 2005			
Value (quantitative or Qualitative)	89 km	179 km		179 km
Date achieved	12/31/2002	12/31/2005		12/31/2005
Comments (incl. % achievement)	Targets were met.			
Indicator 7 :	Agreement on restructuring railway financial accounting system by 2004			
Value (quantitative or Qualitative)	Not applicable	Agreement signed		See comments
Date achieved	12/31/2002	12/31/2004		12/31/2007
Comments (incl. % achievement)	Mongolian Railways modernized its financial accounting system in accordance with international accounting standards without Bank support and the component was cancelled.			

G. Ratings of Project Performance in ISRs

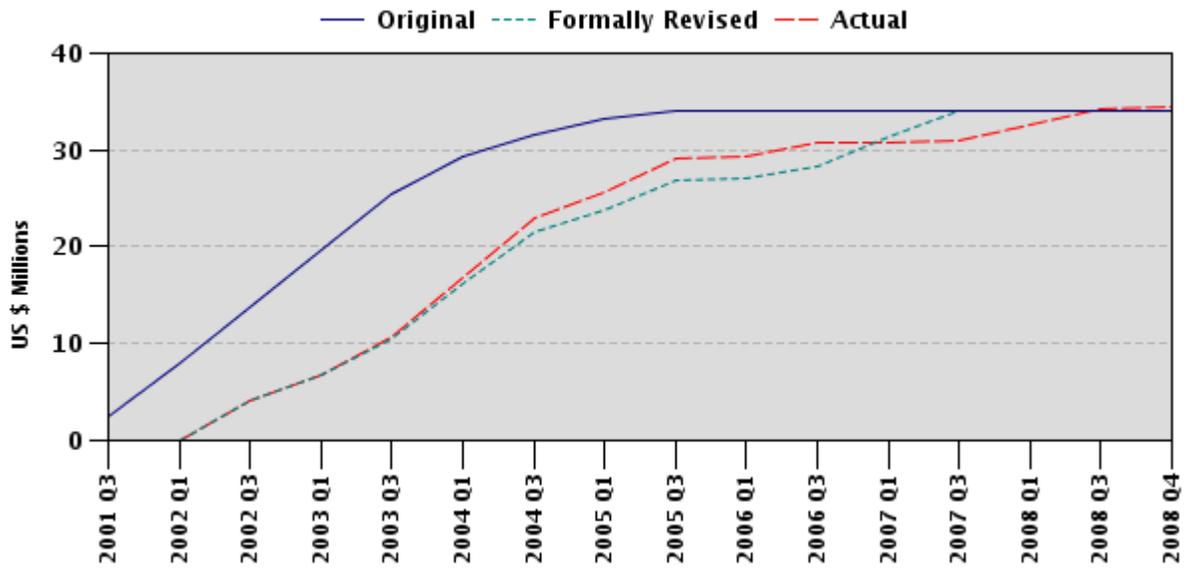
No.	Date ISR Archived	DO	IP	Actual Disbursements (USD millions)
1	06/28/2001	Satisfactory	Satisfactory	0.00
2	12/28/2001	Satisfactory	Satisfactory	3.66
3	04/10/2002	Satisfactory	Satisfactory	4.39
4	12/10/2002	Satisfactory	Satisfactory	9.31
5	05/21/2003	Satisfactory	Satisfactory	12.11
6	11/10/2003	Satisfactory	Satisfactory	19.14
7	11/18/2003	Satisfactory	Satisfactory	19.70
8	06/29/2004	Satisfactory	Satisfactory	23.72
9	12/23/2004	Satisfactory	Satisfactory	28.62
10	06/20/2005	Satisfactory	Satisfactory	29.20
11	04/12/2006	Satisfactory	Satisfactory	30.68
12	07/31/2006	Moderately Satisfactory	Moderately Unsatisfactory	30.68
13	11/06/2006	Moderately Satisfactory	Moderately Satisfactory	30.68

* Actual disbursements as of June 1, 2008 are US\$39.89 million.

H. Restructuring (if any)

Restructuring Date(s)	Board Approved PDO Change	ISR Ratings at Restructuring		Amount Disbursed at Restructuring in USD millions	Reason for Restructuring & Key Changes Made
		DO	IP		

I. Disbursement Profile



1. Project Context, Development Objectives and Design

1.1 Context at Appraisal

Poverty and growth. The incidence of poverty in Mongolia increased substantially in the 1990s, that is, in the early years since changes took place in the political system and the market economy was introduced. About one third of the population lived below the national poverty line of \$17 per month. In the provincial (aimags) centers, 48 percent of the population was officially poor. Social services had degenerated, job opportunities limited and growth prospects constrained by weak infrastructure, remote location and highly dispersed population. Employment rates, numbers of unemployed and social indicators suggested that poverty was more widespread in the western than in the eastern regions.

Rural accessibility. While overall the road network in Mongolia is small and in poor condition, the situation was most critical in the western regions, which had no all weather-roads serving them. This was one of the strongest barriers preventing its people, and particularly the herdsmen, from entering the market economy, and thereby helping alleviate the chronic poverty of the region. Road access constraints also posed a major barrier hampering access to social services, particularly those related to health and education, which were available in the aimag capitals and in Ulaanbaatar. Poor accessibility also directly affected the economic livelihood, as the prices of consumer goods were higher in the rural centers than in the aimag centers.

Management of the road network. A low proportion of paved roads (13 percent of the national network and three percent of the country's total road network), harsh climatic conditions, and, above all, grossly inadequate funding allocated for road maintenance, combined to result in a road network in poor condition. Due to the bad condition of earth and gravel roads, drivers preferred to avoid them, preferring to create alternative tracks across steppes, leading to the degradation of valuable pasture land. Slow progress with the privatization of the road maintenance industry, inadequate road maintenance planning, and lack of maintenance equipment, further added to the problems with road maintenance.

Road safety. The fatality rate in road accidents was about double of what would be expected for a country of similar income. The proportion of accidents (and of fatalities) attributable to vehicle condition was much higher than in most comparable countries, and in part stems from an old vehicle fleet, with most vehicles imported to the country being second-hand, a lack of vehicle maintenance industry, and a lack of spare parts and the means to pay for them.

International transport. Mongolia's ability to integrate with the global economy is dependent on easy access and efficient transport links to seaports and gateways through China and Russia. Such integration has been vital since the opening of the economy in the mid-1990s. The railway, linking Mongolia's two big neighbors, is strategically located to provide transit services between these two countries, in addition to carrying Mongolia's own foreign trade.

Country strategy. The project was designed to support the Country Assistance Strategy (CAS) objectives to: (a) develop infrastructure to support private sector growth and market development, contribute to increased foreign investment and global integration; and (b) promote equity in development through direct poverty alleviation assistance to ensure continued support for the most vulnerable groups. Among the vulnerable groups are the populations resident in the regions

of the country most remote from Ulaanbaatar and its services. These would benefit most from the project. As well as supporting the CAS, the project was consistent with the IDA 1999 Transport Strategy and the IDA 1998 Rural Development Strategy. The project also complemented actions being taken under the then ongoing Transport Rehabilitation Project and Poverty Alleviation for Vulnerable Groups Project, by putting a high priority on reducing the isolation of remote regions and integrating them into the national economy.

1.2 Original Project Development Objectives (PDO) and Key Indicators (as approved)

The project development objectives were to improve the accessibility of the isolated and remote central and western regions of Mongolia, increase transport capacity for rail-borne export trade and reduce the number of fatalities resulting from road accidents.

Outcome Indicators

- Increased number of days of road access (to the locations covered by the project).
- Increase in length of earth and gravel roads receiving one and two maintenance interventions (gradings) per year.
- Reduction in proportion of road fatalities attributable to vehicle condition.
- Increased volume of international and transit rail traffic.

Output Indicators

- Length (kilometers) of roads reconstructed and earth roads upgraded to gravel roads
- Training of staff of Department of Roads (DoR) and Department of Road Transport
- Vehicle inspection stations made operational
- Number of vehicles tested
- Agreement to restructure railway financing system

1.3 Revised PDO (as approved by original approving authority) and Key Indicators, and reasons/justification

The PDOs were not revised.

1.4 Main Beneficiaries,

The principal beneficiaries of the project comprise the population of the central and western regions living within 100 kilometers of the roads to be improved. This population is about 30 percent of the total that lives outside of the national capital. The project would make their towns accessible by road throughout the year and reduce transport costs and delivery times. About 60 percent of the people killed and injured in road accidents in Mongolia are either children or pedestrians (often both) and these would form a large target population to benefit from the project as the severe winter conditions make the effects of mechanical failure of a vehicle in rural Mongolia potentially life threatening.

1.5 Original Components (as approved)

The project included the components described below. The Nordic Development Bank cofinanced the first three components.

(i) *Reconstruction and improvement of roads* (US\$38.20 million). Improvement works for three roads: (a) reconstruction of the paved road from Erdenesant to Arvaikheer (177 kilometers out of a total length of about 240 kilometers) ; (b) 18 short section upgrading of the earth road from Arvaikheer to Khovd (93 km out of the total length of about 1040 km) to provide an all weather gravel surface, and (c) nine additional short section improvements of the road from Kharkorin to Tosontsengel (86 km out of a total road length of about 450 km) with an all weather gravel surface. The NDF allocated US\$0.92 million to finance supervision of the road works.

(ii) *Technical assistance and training* (US\$2.37 million). This component was intended to finance consulting services and training in several areas, and to support activities initially launched by other donors active in Mongolia's road sector. Areas to be covered included contract management, environmental work related to civil works, maintenance management and finance. The NDF allocated US\$1.5 million to finance technical assistance, excluding support to the project implementation unit.

(iii) *Road safety* (US\$6.20 million). The main investment was supply and installation of vehicle inspection facilities to allow testing of the vehicles' mechanical condition and emissions levels. This investment would be complemented by safety-related consulting services and training. The NDF allocated US\$4.14 million for road safety, excluding civil works associated with the inspection stations.

(iv) *Road maintenance* (US\$2.31 million). Provision of six sets of road maintenance equipment (each including a grader, a pneumatic roller and a backhoe loader) to ensure that the earth and gravel networks can be adequately maintained.

(v) *Railway financial accounting system (FAS)* (US\$0.46 million). Technical assistance to Mongolian Railways for implementation of an off-the-shelf comprehensive FAS to be used together with components of a railway management information system already in place.

1.6 Revised Components

Changes in project components/subcomponents were:

(i) two road sections were added, first 47 kilometers of road improvement were added to fill in gaps between reconstructed sections of the Kharkorin – Tseterleg road, and then rehabilitation of 30 kilometers from Erdenesant eastwards towards Lun;

(ii) stationary vehicle inspection stations were provided for all 21 aimags, instead of the original three mobile and three stationary inspection stations that were planned;

(iii) trial sections to test pavement structures were added in various locations, to help identify pavement structures and specifications suitable for Mongolian environmental and traffic conditions, since the prevailing designs that dated back to the Soviet era, were not adequate;

(iv) preparation of a Road Master Plan was added, expected to reinforce a transport strategy being prepared with Asian Development Bank financing; and

(v) the railway financial accounting system component was cancelled.

1.7 Other significant changes

Project schedule/closing date. The project closing date was extended twice, each time for one year, the first through December 31, 2006 and the second through December 31, 2007. The first extension was intended to allow completion of the remaining civil works that were added to the project as a result of available, unallocated funds, and to give time to prepare and implement a road master plan as well for the trial of roads section testing alternative technologies. The second extension resulted from implementation delays due to the fact that the works to be carried out during the first extension proved too small to attract international contractors, but too large to be carried out by local contractors in one single season, thus a second year was necessary.

Road safety study. In addition to the changes described under 1.6 above, the Road Safety study, expected to be financed by the NDF, was not carried out since the start of the study was substantially delayed due to slow procurement. The study intended to strengthen road safety in Mongolia by improving the management and legal environment for road safety and by helping build capacity in the concerned ministries and departments. Moreover the study was to design an improved system for collecting, and analyzing accident information. The study was finally ready to be started about three months prior to the December 31, 2007 closing date, and it was judged that it would not be possible to satisfactorily carry out such a study in the time remaining for the project.

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry

Lessons reflected in project design. The biggest problem experienced in infrastructure projects supported by IDA and other donors in Mongolia had been delays in implementation, generally caused by inexperience in the competitive bidding process or management deficiencies in the implementing agencies. Most of the civil works' contractors expected to bid under the project were expected to have learned from their experiences in the precedent Transport Rehabilitation Project and from training on contract management provided under a SwedeRoad program. At the same time, DoR was to receive training under the project's technical assistance training to be better prepared to manage the contracts. In addition, institutional arrangements for project implementation were kept simple, by the early establishment of a PIU with staff experienced in project implementation, as the focal point for all project-related activities.

Risks. Several risks were acknowledged. They were considered to be modest, and risk mitigation measures were identified. Risks impacting the achievement of the project's objectives were (i) insufficient counterpart funding, (ii) lack of maintenance for roads improved under the project and (iii) the continued use of small trucks hence reducing the potential benefits of road improvements. The first risk would be mitigated through support under a parallel ADB project of the Road Fund that would help finance the project investments. The Road Fund together with project-financed maintenance equipment would mitigate the second risk by helping ensure proper maintenance is carried out. Planned and ongoing road development, together with strong competition in the trucking industry, would create incentives to use larger trucks. Risks potentially endangering outputs were the performance of the PIU, quality of construction, implementation delays, inadequate availability of resources and unsuccessful training. Mitigation included, respectively, experienced staff in the PIU, selection of competent contractors coupled with adequate supervision, close monitoring by MRTT (formerly Ministry of Infrastructure--MoI) and the Bank, central and provincial government commitment to the project, and trainee selected

under strict criteria with the understanding that they would be given the opportunity to apply their acquired skills.

2.2 Implementation

Early implementation. By the end of 2003, or two years after the project was declared effective, all road contracts had been awarded, and works were underway, signaling good preparation of the civil works procurement.

Capital investments. As noted in Section 1, as a result of unallocated funds (largely due to the appreciation of the SDR), some subcomponents were added to the project during implementation. The road sections added to the project were consistent with the project's objectives in that they improve roads in poor condition that limited access to the areas served by the project roads. The substitution of fixed vehicle inspection stations in the aimags for portable stations originally included in the project was decided on the basis of cost effectiveness analysis, which showed that it was more economically efficient to invest in fixed stations than to move around mobile stations in a country with long distances and poor roads.

Contract price adjustment. Civil works contracts did not have a cost escalation clause as it was expected that all contracts would be small enough that they could be completed during the construction season in a single year. In practice, though, this did not happen as execution of the works often needed more than one season to be completed. Contracts had to be amended since rapid increases in the price of fuel and bitumen required corresponding adjustments under the civil works' contracts.

MoF position. MoF was fully supportive during the initial stages of the project. This was reflected in the award of road contracts during the first two years of the project's implementation. This, however, changed with MoF refusing in some instances to approve new, or extend existing, contracts of international consultants resulting in various delays in starting the civil works and technical assistance. Specifically, MoF initially refused to renew the contract for the supervision consultants for the new road sections. These were NDF financed contracts and consultants had to be selected from NDF member countries. MoF believed the services were too expensive. The delays in starting works resulted in some of the works not being completed in one construction season and having to be completed in the following year's season. Delays in approving the road safety study lead to its ultimate cancellation. In addition, delays in approving a grant from SIDA (about US\$700,000) to strengthen transport economics and maintenance management led to SIDA's cancellation of the grant in 2007.

Quality of Contractors' work. Quality varied depending on the contractor. Initial construction, ranged from very good for the work on the Erdenesant-Lun road to poor on some of the contract sections in the Erdenesant-Arvaikheer road. Problems, however, were rectified by the responsible contractors during the defects liability period.

Technical issues related to road design. Issues arose regarding the type of surface on three roads: (i) Erdenesant-Arvaikheer, where the government requested to replace single surface dressing with a slurry seal for a 35 kilometer section. This was agreed following a consultant report that recommended the change; (ii) Arvaikheer-Khovd road: one section initially considered as a trial to test penetration macadam was subsequently changed to test double surface treatment instead of penetration macadam; and (iii) *Kharkorin-Tsetserleg*: the DoR initially requested that in view of deterioration of gravel surface in neighboring road sections, the surface in the added road sections

be made of asphalt concrete. An economic analysis showed that vehicle operating costs savings would justify the upgrading. However, the DoR later dropped the proposal to upgrade mainly on grounds that there would not be enough domestic resources to complete the roads to the proposed upgraded standards.

Vehicle inspection stations. Delivery of equipment was not well coordinated with the readiness of buildings to receive such equipment. This complicated the installation and testing of equipment to ensure that it was in good operating condition. However, the problems were resolved and did not affect the proper operation of the inspection stations.

Road Maintenance Plan. A draft of this plan was received by the Bank in 2004, and was commented on by the supervision team. While this Plan represented a significant progress for planning road maintenance, it had a number of weaknesses, some of which were deemed easy to fix, and others more difficult requiring more resources. One of the problems identified related to the use of HDM4 (a computer-based highway development and management model), that does not have a winter module, and therefore cannot accurately model deterioration progression caused by traffic when a road is frozen, during a thaw period, or during severe climatic conditions. Preparation and implementation of the Plan suffered from two main problems. The first was underfunding, which hindered the conduct of the road condition survey, an essential input for the plan, and made the survey take much longer than anticipated. The second was a drop in MRTT's capacity, as key staff who could run the model left MRTT. The plan was completed in 2004.

Road Master Plan. Preparation of a roads master plan, which was an addition to the project's original components, was complicated because this study originally was conceived as a mix of a road master plan and a feasibility study of roads in Mongolia's Western region. The consultant's initial draft focused on the analysis of individual roads rather than on the master plan part. This was corrected in subsequent drafts and the master plan was completed.

Project at Risk Status. While at various times there were implementation delays or quality issues that ultimately resulted in the classification of the project as a "problem project" in July 2006, such issues were not of a magnitude to affect the overall project risk rating. For five months in 2006, implementation exceedingly slow and implementation progress was rated moderately unsatisfactory before changing to being moderately satisfactory.

Railway financial accounting component. Changes in Mongolian Railway management and regulatory oversight, and discussion about possible MR restructuring (which would have required the component to be re-designed in the context of MR restructuring) delayed launching MR's Financial Accounting System. Finally MR modernized its financial accounting system in accordance with international accounting standards without Bank support and the component was cancelled.

2.3 Monitoring and Evaluation (M&E) Design, Implementation and Utilization

Design. The outcome indicators for the road improvements, the largest component of the project, were well selected and practical to monitor. Considering the poor condition of existing roads, the country's harsh weather and the sparseness of the population in Mongolia, improving accessibility is certainly the most significant outcome for the population using the roads. The outcome measure related to road safety, "the proportion of road fatalities attributable to vehicle conditions", was conceptually ideal, but it was too ambitious, given the level of development of

Mongolia's road accident statistics. Relating fatalities to vehicle condition is a complex association that would have been difficult to establish, even taking into account that the project intended to support an improvement of the country's road safety analysis and statistics. The outcome measure related to the rail component, traffic increase caused by an improved financial accounting, was based on the notion that with a better financial accounting system, the railway management would have been in a better position to structure tariffs in a way that would provide sufficient incentives to attract more traffic to the railways. While the hypothesis may be correct, a direct association of traffic levels to the existence and utilization of a financial accounting system is tenuous.

The outputs indicators were all appropriate, and simple to monitor.

Implementation and Utilization. Outcome and output indicators were monitored, and values tracked as shown in the data sheet. As noted above, an exception was the outcome indicator for road safety which could not be monitored. However, a simpler statistic, the number of road fatalities, was monitored and annual values were published by Mongolia's traffic police department. The outcome and outputs values were generally reported in a timely and satisfactory manner by the PIU.

2.4 Safeguard and Fiduciary Compliance

Safeguards. The project was category B and no major safeguards issues were encountered during implementation. During the works on the Kharkhorin-Tsetserleg road, archaeological artifacts were found. The PIU reported that when this happened, road works were immediately stopped, the site was cleared, and construction resumed only after excavation was completed following strict government procedures. In the case of the Erdenesant-Arvaikheer road, works were expedited to prevent further damage due to multitracking (i.e. vehicles riding on adjacent earth tracks along the road corridors). Overall, the Environmental Management Plan (EMP) was followed as expected. Compliance with the EMP was included in the supervision consultant's Quarterly Report.

The financial management system during implementation had no significant changes from appraisal. The project continued to maintain the financial management system that was acceptable to the Bank and provided reasonable assurance that the proceeds of the loan were used for the purposes for which the loan was granted. For audit compliance, the implementing agency complied with the legal agreement to submit annual audit reports to the Bank before deadlines. All the audit reports were reviewed by the Bank and were deemed to be acceptable. While some financial management issues were noted during project implementation, the PIU implemented the recommended measures to remedy any weaknesses.

2.5 Post-completion Operation/Next Phase

Roads. The roads improved under the project are under the administrative responsibility of the DoR of MRTT and therefore DoR will continue to be responsible for the roads' management and maintenance. The roads' recurrent expenditures are approved by the MoF and financed from the national budget. Allocations for road maintenance have increased significantly from MNT5.0 million in 2004 to MNT6.5 million in 2006. Despite the increase, the allocations remain short of the level required to ensure adequate maintenance of the road assets (estimated at MNT10.0 for 2005).

Vehicle Inspection System. The VIS is the responsibility of the Transport Service Center (TSC) of MRTT. Some of the inspection stations have been in operation for about three years. According to TSC's financial statements, the inspection stations are financially self sustaining, covering the operating costs from the fees charged for inspection.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

Country and Bank assistance strategies have confirmed the relevance of the project's objectives, especially the project's main objective, improving accessibility of the isolated and remote central and western regions of Mongolia, which account for some three quarters of the project cost. Such strategies emphasized the importance of reducing rural vulnerabilities and consolidating the transition to a market economy. The rural roads improved under the project reduced the economic distance between the isolated rural communities and the urban centers, thus improving domestic trade prospects, while facilitating access to health and education services. On the road safety side, the high rate of road accidents, the substantial growth over the last 5- 10 years in Mongolia's vehicle fleet with most (over 90 percent) of the imported vehicles continuing to be used, further confirms the relevance of the safety objective and of the importance of the vehicle inspection stations to check the vehicles' mechanical and emission conditions.

Project design and implementation were well suited to achieve the accessibility and the road safety objectives. The project's third objective, to increase rail capacity to carry export trade, was also important because the railways played, and continues to play, an essential role in Mongolia's external trade, by providing the key transport link to deep water ports in Russia and China. The component supporting this objective, a financial accounting system, while no doubt facilitating the use of financial and physical railway resources, especially the railways' traction and rolling stock equipment, appeared, however, weaker than the other project components in helping achieve the intended objective.

3.2 Achievement of Project Development Objectives

The project largely achieved its objectives, as described below.

Improve accessibility. The PAD's main indicator to assess the impact of the project in improving accessibility of the isolated and remote central and western regions of Mongolia is an increase in the number of days with accessibility to specified locations. The locations are Khovd, Arvaikheer, Bayangoor, Altai, Tosontsengel and Erdenesant. Accessibility, measured by the number of days per year that roads provided access to these locations, increased from 250 days (on average) at the start of the project to year-round accessibility. Accessibility further improved as a result of the rehabilitation of two additional road sections not originally included in the project. These are the Kharkorin-Tsetserleg road section (47 kilometers), which filled in gaps between reconstructed sections of Arvaikheer-Khovd road, and the rehabilitation of the 30 km stretch from Erdenesant eastwards towards Lun.

A secondary indication of the improvement in accessibility is the length of non-paved roads receiving one or two maintenance interventions (grading) per annum. The improvement was substantial. Thanks to the project-financed maintenance equipment, the length of gravel roads subject to at least one grading per year increased from 165 kilometers at the start of the project to 592 kilometers by project completion (against a target of 500 km). Also, 829 kilometers of earth

roads received maintenance in 2006 but this was well below the target of 1,500 km. No baseline was established to measure progress against (see Section 3.5 (a)).

Improve safety. The indicator for measuring the improvement in road safety is the reduction in annual road fatalities attributable to poor vehicle conditions. As discussed in the M&E section, it was not possible to measure this indicator. However, an analysis of road safety statistics (Table 3.1) indicates a substantial improvement in road safety over the life of the project. Fatalities per 10,000 vehicles dropped from 27.3 in 2002 to 21.4 in 2006.

Table 3.1: Mongolia: Road fatalities 2000-2006

	2000	2001	2002	2003	2004	2005	2006
Total road accidents		5325	5553	5296	4803	5042	5911
Total fatalities		335	327	391	385	355	378
Total vehicles (000)	118	131	142	143	155	165	177
Fatalities per 10,000 vehicles		25.6	23.0	27.3	24.8	21.5	21.4

Typically, one would attribute the reduction in fatalities per 10,000 vehicles to the 50 percent increase in the country's vehicle fleet between 2000 and 2006. The additions to the fleet would have been expected to be largely modern vehicles, in better condition and with more modern safety equipment. Consequently, just the modernization of the fleet would have been expected to play a major role in increasing road safety. However, this was not the case in Mongolia. Most of the vehicles imported during the period were second hand vehicles, most of which were over 10-to-15 years old. Since the installation and operation of vehicle inspection stations was one of the most important safety interventions during that period, it is reasonable to believe that the project contributed to the reduction in reducing road fatalities.

The project's contribution to road safety is also confirmed by the achievement of two output indicators, (i) the number of vehicle inspection stations made operational (24 vehicle inspection stations, 3 in Ulaanbaatar and 21 in the aimags); and (ii) the number of vehicles tested (85 percent of the country's vehicle fleet was tested in 2006, expected to increase to 100 percent in 2008).

Increase rail capacity. The outcome indicator for this objective is an increase in the volume of international and transit freight carried by the Mongolian railway. During the project period, such railway traffic grew from about 3 million ton at the start to 8 million tons in 2005 to 11 million tons in 2007. In addition, operational indices such as km/locomotive, km/wagon, km/coach, traffic units per staff and passengers carried improved, showing that railways efficiency improved. However, it is difficult to attribute much of the increase in traffic to the modernization of the financial accounting system. The high rates of economic growth in Mongolia, China and Russia were probably the main drivers of the large growth in international and transit freight traffic.

3.3 Efficiency

As explained in the PAD, a cost benefit analysis was carried out for all project components except for technical assistance and training including the rail component. The methodology used for appraising the viability of the different components was based on standard evaluation models developed by the Bank. Ideally, the re-estimation of the economic returns for the ICR would be based on the revised benefits based on updated traffic counts and actual costs. Due to lack of

resources, traffic was not measured after project implementation. The economic returns in Table 3.1 below are based on the same traffic data and projections used at the time of the project’s appraisal but on actual construction costs. Given that traffic projections have not been updated, there is a large degree of uncertainty surrounding the projected returns. Nevertheless, the returns are high enough to withstand significant drops in traffic volumes from what was projected. Furthermore, Mongolia’s vehicle fleet, which generally correlates with traffic levels, increased at a rate of 6.2 percent per year during the project period. This rate is higher than the average annual rate of increase in net benefits of 5 percent which had been estimated in the original economic analysis. The increase in net benefits would not only reflect the increase in traffic levels but also the increase in real incomes (used in estimating time savings.)

Table 3.2: Economic Returns Pre-implementation and Post Completion^{1/}

Component	Pre-implementation		Post-completion	
	ENPV (US\$ million)	EIRR (%)	ENPV (US\$ million)	EIRR (%)
Erdenesant to Arvaikheer	23.5	29.3	24.3 ^{2/}	23.7 ^{2/}
Erdenesant to Lun	2.23	16.1		
Arvaikheer to Khovd	36.6	48.9	36.8	49.8
Kharkhorin to Tosontsengel	17.8	32.4	17.1	30.1
Vehicle Inspection System	2.10	19.6	1.8	18.3
Road Maintenance Equipment	4.30	57.9	4.85	XX ^{3/}

1/ Post-completion returns are based on pre-implementation traffic volumes and actual costs

2/ The section from Erdenesant to Lun was added to the project at a later stage (see Section 1.6). As it was not possible to separate the costs for the two sections of the road, their economic returns were combined.

3/ No annual resource flows were available to allow for the estimation of the EIRR.

3.4 Justification of Overall Outcome Rating

Rating: Moderately Satisfactory.

The outcome rating is based on the project objectives’ relevance, the extent they were achieved, their sustainability and the economic efficiency of the project’s components. Cancellation of the road safety study (see Section 3.5b), the risks associated with the sustainability of the development outcome (see Section 4) and implementation delays are the reasons that the rating is Moderately Satisfactory instead of Satisfactory.

3.5 Overarching Themes, Other Outcomes and Impacts

(a) Poverty Impacts, Gender Aspects, and Social Development

Because the road improvement under the project focused on the central and western aimags, which had a high concentration of the country’s poor, the improved rural accessibility made possible by the better roads certainly has had an impact on the lives of the poor. Unfortunately, survey information on the economic and social impact of road development in Mongolia, expected to have been collected under a parallel ADB project was not available for this ICR, since the survey report had not been issued.

The local population had access to work through the contractors carrying out the road improvement activities. Those employed in the project-financed road works benefited from

contracts managed by MRTT through the PIU, and from the fact that such contracts obligated contractors to comply with minimum wages and other labor law provisions.

(b) Institutional Change/Strengthening

There were two areas where the project had an impact on institutional strengthening: road safety and road maintenance.

Road safety. The VIS component was the trigger for important institutional improvements. The most immediate outcome was the establishment of periodic and rigorous vehicle inspections throughout the country, and the training of operational personnel to carry out the inspections and maintain the inspection equipment in satisfactory condition. The VIS allowed the modernization and regular updating of the condition of the country's vehicle fleet. Further, although it took some time to develop, collaboration between the police and MRTT improved notably towards the end of the project, allowing regular sharing of road safety information between the police and MRTT. The project's impact on road safety could have been greater had the road safety study been carried out as it was originally intended (see Section 1.7-Road safety study)

Road Maintenance. While the road maintenance plan fell short of expectations mainly because of some weaknesses in road engineering concepts, it still represents a good basis for budget work and overall road maintenance planning. The Plan represented the first time that road maintenance requirements in Mongolia were quantified. MRTT has reported that the Maintenance Plan is being used to provide an evidence-base for determining maintenance interventions, type and location, and to prepare the corresponding maintenance budget. The database containing the road network condition is being updated to reflect current conditions. The Maintenance Plan was also a useful input for the Bank when it was preparing a document to support the Mongolian Government in preparing an infrastructure strategy in 2006.

Environmental Guidebook. As intended, an environmental guidebook for civil works' contractors was prepared under the project. The guidebook was approved by the Ministry of Environment and its use is legally required in the preparation and execution of road works.

(c) Other Unintended Outcomes and Impacts (positive or negative)

Environmental. A significant positive environmental impact of the project is the reduction of multitracking along the rehabilitated road sections, which makes more land available for grazing. Another positive impact, in view of the chronic poor urban air quality in Ulaanbaatar and other cities, is the control of vehicle emissions as a result of the operation of the vehicle inspection stations. Control of vehicle emissions has become more critical in the cities due to the increasing urbanization and related increase in air pollution mainly caused by coal and wood-burning stoves used to heat and cook, and by inefficient and antiquated energy generation methods.

Road design. The project helped improve knowledge about the type of pavement appropriate for Mongolian conditions. While some piloting/testing was originally included in the project, during implementation the amount of testing/piloting and useful knowledge for pavement design was substantially increased.

Fuel efficiency. High vehicle emissions are generally a reflection of poor fuel efficiency. Thus, the vehicle emission controls have had the added benefit of reducing fuel consumption, which is

important for the overall consumption of gasoline at the time that the long term price of gasoline is likely to remain substantially higher than it was at the time the project was appraised.

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops

4. Assessment of Risk to Development Outcome

Rating: Significant

Accessibility objective. The risk that the benefits of the roads improved under the project will be reduced due to inadequate road maintenance is substantial. While the project provided a good amount of road maintenance equipment, and there was a significant increase in the funding allocation for road maintenance (see Section 2.5), the amounts allocated for road maintenance remain insufficient. A strengthening of the Road Fund, with the creation of a Road Board, that was expected to occur under a parallel ADB-financed project, did not happen as MoF continued the current practice of using the Fund's resources as general tax revenues. Since at the time being, there is no Bank project on-going or under preparation for the road sector, it will be difficult for the Bank to influence the process in a way that would result in a larger allocation of domestic budgetary resources to road maintenance.

Safety objective. There appears to be little risk with regards to the operation of the vehicle inspection stations, since such facilities are self-financing and operating revenues cover not only operating costs, but also include a margin to repay the capital cost.

5. Assessment of Bank and Borrower Performance

5.1 Bank Performance

(a) Bank Performance in Ensuring Quality at Entry

Rating: Moderately Satisfactory

The Bank's role in assisting with project preparation and design was overall good, with well selected major objectives and appropriate supporting components. There were however a few shortcomings. One, is the objective relating to increasing rail capacity, where the supporting component may have been weak. Also, base values were also not defined for all indicators.

In assessing the performance of the Bank through the lending phase, it is essential to take into account the dearth of statistical data which made it very difficult to define objectives and indicators that could be monitored. This applies especially to the monitoring of road accident fatalities, and the causes of such accidents, which was the project's outcome indicator for the vehicle inspection stations, the component that supported the road safety objective.

Due to the limited resources available to the project relative to the vast needs of the road network in the western region, the selection of the road sections to be rehabilitated under the Project resulted in a number of non-contiguous sections in order to maximize the economic returns. The decision process, however, did not reflect the possibility that the structural failure in several non-contiguous road sections was an indication of perhaps the imminent failure of the remaining sections that were left out. This did prove to be the case in a number of other sections that were later improved using unallocated funds from the Credit."

The fact that two years after the project was declared effective all the initial road contracts (i.e. excluding the sections that were added later-see Section 1.6(i)) had been awarded and road works, representing close to 80 percent of the project cost at the time, were underway is a sign of good project preparation.

A worthwhile idea under the project was the introduction of pilots to test road design alternatives, which was appropriate given the special conditions in Mongolia (environment, soils, population density, remote populations) and the fact that existing road design standards were old.

(b) Quality of Supervision

Rating: Satisfactory

Supervision Team. The project's supervision team had four different team leaders through the project period. Despite this, the quality of supervision did not suffer, largely because two of the former Task Team Managers remained involved in the project in some capacity providing advice and clarification when requested. Both of these managers were accessible: one worked in the East Asia and Pacific Transport Unit, and the other one worked for the project as a consultant. In addition, continuity from the project's start to completion was provided by the project's senior road engineer (a consultant, former Bank staff) whose first involvement in the project was as peer reviewer. Another positive factor that prevented a breakdown in supervision was the good quality of the supervision documentation (aide-memoires and related documentation) which allowed the new teams to get rapidly acquainted with the project's progress and implementation issues.

Supervision Frequency. On average, about two supervision missions per year were carried out during project implementation, which was appropriate for the project.

Coordination with other donors. The supervision activity required periodic coordination and consultation with other donors. While the project was formally co-financed with the NDF, projects underway by the ADB and SIDA were closely related to the Bank's project, and required the supervision team to liaise with them as well.

Quality of road works. The supervision teams paid close attention to the quality of works, and to the selection of relevant pilots to help MRTT identify suitable road design standards. Supervision reports show constant and detailed attention by the missions to: (i) ensuring that problems with road construction were rectified and that the ultimate quality of road works is satisfactory and (ii) recommending appropriate measures to improve quality as may be necessary.

Safeguards. The supervision missions were concerned with environmental and safety issues, which are brought out in practically all supervision reports. Examples are missions' recommendations to speed up construction of the Erdenesant-Arvaikhair road to prevent further damage from multitracking and the adoption of additional measures, such as the use of durable reflective paint, to increase the safety on paved roads. The missions were also concerned to ensure that road work contractors, especially those working in the more remote areas, where the population has less access to local authorities, complied with labor law provisions, including those relating to minimum wages. Supervision missions followed the fiduciary aspects of the project closely, noting weakness, making recommendations for measures to be taken and ensuring they were implemented.

Comments on studies. While the road maintenance plan and the road master plan studies were not financed by the Bank, the supervision team reviewed these studies carefully and presented detailed comments for the revision of these documents.

(c) Justification of Rating for Overall Bank Performance

Rating: Satisfactory

The satisfactory rating results from the overall Bank performance results from the Bank's satisfactory rating for supervision and the moderately satisfactory rating for ensuring quality at entry.

5.2 Borrower Performance

(a) Government Performance

Rating: Moderately Satisfactory

MoF. The government provided counterpart funding in a fairly satisfactory manner, which allowed the project to proceed with most of the civil works with relatively little funding problems. Yet, project implementation was negatively affected in the later stages of the project by the role of MoF in the area of procurement, notably excessive intervention in the procurement of civil works, delaying procurement of spare parts for the NDF-financed vehicle inspection stations, and refusing or delaying extensions of new consultant contracts. The latter had an impact on the preparation and implementation of road works (see Section 2.2—*MoF position*).

MoI/MRTT – civil works. Both MoI and MRTT provided strong support for the execution of the road works, often seeking speedier resolution of issues resulting from MoF delays. MoI was also effective in setting up the PIU, which became operational just a month after the project was declared effective, although initially the PIU did not have a leader. And even before the PIU became operational, MoI had made the necessary arrangements to have several of the civil works contracts signed right after the loan was approved, but before loan effectiveness, which allowed early start of the civil works.

Project studies. MRTT interest in the conduct of the project's studies was less than that in completing the civil works. It took a relatively long time to secure internal approval for the Roads Master Plan study and the Road Safety Study. The latter study was ultimately cancelled by MoF.

The Vehicle Inspection System. MRTT was diligent in securing appropriate buildings for installing the vehicle inspection lines. There were some issues, however, especially in the aimags, regarding the coordination between readiness of the buildings and delivery of the VIS equipment but these were satisfactorily resolved. MRTT also took the necessary actions to ensure staff training for the operations of the VIS and for the regular transmission of data from the aimags and the Ulaanbaatar inspection stations to MRTT headquarters. Initial disagreements between the police and the Transport Service Center, MRTT's unit in charge of the VIS, which complicated data collection and use, were eventually resolved.

Monitoring and Evaluation. While monitoring indicators were tracked throughout the life of the project, the government's own M&E report was only issued for the first time in 2004, or three years after project implementation had started.

(b) Implementing Agency or Agencies Performance

Rating: Satisfactory

The PIU's performance during the project was satisfactory despite three changes in PIU directors over the life of the project in addition to changes in the government organization for the management of roads and road transport. In effect, the Ministry of Infrastructure, in charge at the time of project appraisal and initial implementation, was dissolved in 2004, when a new Ministry of Roads, Transport and Tourism (MRTT) became responsible for the sector.

(c) Justification of Rating for Overall Borrower Performance

Rating: Moderately Satisfactory

The moderately satisfactory rating of the Borrower's overall performance is largely due to the weak support to the project from MoF and the substantial risk to the development outcome.

6. Lessons Learned

Use of trials and pilots in the case of countries facing severe climatic conditions is important. During the project several pilots of alternative road surface designs were carried out. Pilots are helpful to assist with the selection of proper technologies given the conditions of Mongolia: harsh weather, long distances making it costly to carry road construction materials, sparse population making it difficult to secure personnel to carry out road maintenance. Since Mongolia road engineering standards were relatively old and inadequate, such trials and pilots were essential to assess proposed new standards before they were adopted.

Strong buy in from MoF is essential for project success. Lack of buy in by MoF in certain project subcomponents or certain technical assistance resulted in several delays and uncertainty throughout the life of the project. It is essential to ensure that not only MRTT, but also MoF, is fully committed to the entire project.

Maintaining the flexibility to redesign a project component during implementation can be helpful. The original idea to establish a few mobile vehicle inspection units to save in investment costs proved to be not economically efficient in Mongolia. Long distances and poor road conditions were found to make the cost of transporting mobile VIS equipment from one aimag to the next high, with the additional risk that poor road conditions could end up damaging the VIS equipment. Thus, the most economic solution turned was to establish vehicle inspection stations for each one of the aimags, with savings in transport and maintenance costs of equipment more than compensating for the higher investment costs in VIS equipment.

The difficulty in data collection needs to be considered when defining outcome indicators. The process of identifying objectives, components and outcome indicators is complex, often posing difficult trade-offs between what is desirable; and what is feasible and directly related to the project's activities.. Two situations in this project illustrate this issue. The first relates to the railway objective, where improvements in financial management were expected to translate into a better use of resources and an increase in profitability. While the assumption that the component would result in increased ridership and efficiency is plausible, it was not possible to isolate the increase in ridership resulting from an improved financial system. The second situation relates to vehicle inspection stations. Since the stations would primarily help reduce the number of vehicles circulating in poor mechanical conditions and consequently reduce the number of fatalities, an outcome indicator measuring the number of road traffic fatalities saved by reducing the number

of vehicles in poor condition made sense. Yet, such an indicator requires sophisticated data collection and processing, which is difficult to develop. A simpler but more indirect indicator, such as the one used in this report (road fatalities per unit of vehicle fleet) is a more realistic compromise between what is desirable and what is feasible.

Better-than-average project preparation is necessary in countries with short construction seasons. Countries with long and harsh winter conditions such as Mongolia only have a few months when conditions allow for carrying out road improvement works. Thus, better and more rigorous planning and procurement compared to other countries is necessary to ensure that works can be scheduled and implemented in a way that maximizes utilization of the short construction season, thus minimizing the cost of road works and facilitating an early completion of the works.

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners

(a) Borrower/implementing agencies

The Borrower and the implementing agency did not provide any comments on this report.

(b) Cofinanciers

The Nordic Development Fund (NDF) corroborated the views of the Bank with respect to MoF's delays hampering implementation, causing delays and ultimately resulting in the cancellation of the road safety study (See Annex 8).

The comments mention a lapse in the coordination between the Bank and NDF which resulted in the Bank's closing its Credit but NDF extending the closing date for its Credit under the belief that the Bank would extend as well. Coordination between the two institutions worked well throughout the project with the exception of this situation. This happened mainly because NDF was winding down its operations and there was also a change in the task management for NDF. In addition, the Bank's motivation for potentially extending the Credit was to oversee the road safety study but once MoF decided to cancel the study, there was no strong rationale for the Bank to extend its Credit.

(c) Other partners and stakeholders

Annex 1. Project Costs and Financing

(a) Project Cost by Component (in USD Million equivalent)

Components	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
1. RECONSTRUCTION AND IMPROVEMENTS OF ROADS	38.20	40.83	107.9
2. TECHNICAL ASSISTANCE, TRAINING PROGRAM	2.37	3.29	138.9
3. ROAD SAFETY/VEHICLE INSPECTION SYSTEM	6.20	3.32	53.6
4. ROAD MAINTENANCE	2.31	2.20	95.2
5. RAILWAY FINANCIAL ACCOUNTING SYSTEM (FAS)	0.46	0.00	0.00
Total Baseline Cost	49.54	49.64	100.2
Total Project Costs	49.54	49.64	100.2
Total Financing Required	49.54	49.64	100.2

(b) Financing

Source of Funds	Type of Cofinancing	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
Borrower		8.84	4.17	47.2
International Development Association (IDA)*		34.00	39.9	117.4
Nordic Development Fund (NDF)	Parallel	6.70	5.57	83.1

* While the percentage in \$US is greater than 100, the actual estimate as a percentage of that at appraisal in SDR is 93.6%. The difference is a result of the appreciation in SDR against the \$US.

Annex 2. Outputs by Component

Component	Output	Comments
Road Works		
Erdenesant-Arvaikheer	177 km	Reconstruction of paved road (177 km out of total length of 240 km)
Arvaikheer-Khovd	93 km	18 short sections upgraded to all-weather gravel surface (93 km out of total length of 1,040 km)
Kharkhorin-Tosontsengel	86 km	9 short sections upgraded to all weather-gravel surface (86 km out of total length of 450 km)
Kharkhorin-Tseterleg (addition)	47 km	5 short sections upgrading to gravel road standards. Rate of completion on four sections was 100% and on the fifth section 84%.
Erdenesant- Lun (addition)	30 km	Rehabilitation of existing asphalt road.
Road Maintenance Equipment		
(i) Road maintenance sets	6 sets	Each set comprising a grader, backhoe loader, and roller.
(ii) Bulldozers	2	
Vehicle Inspection Stations		
VIS Equipment and buildings	24	3 in Ulaanbaatar and 21 in the other aimags
Studies		
(i) Road Maintenance Plan	Plan	Completed
(ii) Road Master Plan	Plan	Completed

Annex 3. Economic and Financial Analysis

As explained in the PAD, a cost benefit analysis was carried out for all project components except for technical assistance and training including the rail component. The methodology used for appraising the viability of the different components was based on standard evaluation models developed by the Bank. Ideally, the re-estimation of the economic returns for the ICR would be based on the revised benefits based on updated traffic counts and actual costs. Due to lack of resources, traffic was not measured after project implementation. The economic returns in the table below are based on the same traffic data and projections used at the time of the project's appraisal by on actual construction costs. Given that traffic projections have not been updated, there is a large degree of uncertainty surrounding the projected returns. Nevertheless, the returns are high enough to withstand significant drops in traffic volumes from what was projected.

Table 3.2: Economic Returns Pre-implementation and Post Completion^{1/}

Component	Pre-implementation		Post-completion	
	ENPV (US\$ million)	EIRR (%)	ENPV (US\$ million)	EIRR (%)
Erdenesant to Arvaikheer	23.5	29.3	24.3 ^{2/}	23.7 ^{2/}
Erdenesant to Lun	2.23	16.1		
Arvaikheer to Khovd	36.6	48.9	36.8	49.8
Kharkhorin to Tosontsengel	17.8	32.4	17.1	30.1
Vehicle Inspection System	2.10	19.6	1.8	18.3
Road Maintenance Equipment	4.30	57.9	4.85	XX ^{3/}

1/ Post-completion returns are based on pre-implementation traffic volumes and actual costs

2/ The section from Erdenesant to Lun was added to the project at a later stage (see Section 1.6). As it was not possible to separate the costs for the two sections of the road, their economic returns were combined.

3/ No annual resource flows were available to allow for the estimation of the EIRR.

About 80 the project's cost was upgrading roads. To assess the viability of the project's investment in roads, the Highway Development and Management (HDM III) model was used to analyze road upgrading to the asphalt and the Roads Economic Decision (RED) model was used to assess the upgrading of roads to gravel. The post completion returns based on pre-implementation traffic volumes and actual construction costs were high. Most of the benefits are explained by the savings in vehicle operation costs which account for about 70% of total benefits.

Traffic growth rates used in the analysis were probably conservative. Annual traffic growth rates between 1994 and 1999 on the road sections upgraded by the project varied between 19 and 27 percent. Future traffic growth was projected at 10 percent per annum between 2000 and 2005, 5-6 percent between 2006 and 2010 and 3 percent thereafter.

Annex 4. Bank Lending and Implementation Support/Supervision Processes

(a) Task Team members

Names	Title	Unit	Responsibility/ Specialty
Lending			
Robin C. Carruthers	Lead Transport Economist	EASTR	Task Team Leader to 03/03
Dan Gibson	Resettlement Specialist	EASES	Resettlement Specialist
Alla Weinstein	Operations Officer	EASTR	Highway Engineer
R.I. Gopalkrishnan	Senior Procurement Specialist	EAPCO	Procurement
Hoi-Chan Nguyen	Senior Counsel	LEGEA	Legal
Carlos Escudero	Legal Counsel	LEGEA	Legal
Wijaya Wickrema	Financial Management Specialist	LOAFC	Financial Management
Anil Somani	Senior Environmental Specialist	EASEN	Environment
Saraswathi Sundaram	Task Assistant	EASTR	Assistant
Behdad Nowroozi	Financial Management Specialist	EAPCO	Financial Management
Anders H.G. Bonde	Highway Engineer	ECSIN	Peer Reviewer
Robin Mearns	Senior Economist	EASRD	Peer Reviewer
Supervision/ICR			
Baher El-Hefnawy	Senior Transport Economist	EASTE	Task Team Leader
Graham Smith	Transport Specialist	EASTR	Task Team Leader – to 06/06
Imogene Jensen	Senior Economist	EASTR	Task Team Leader - to 09/05
Robin C. Carruthers	Lead Transport Economist	EASTR	Task Team Leader to 03/03
Anders H. G. Bonde	Consultant	EASTE	Highway Engineer
Xiaoping Li	Sr. Procurement Specialist.	EAPCO	Procurement
Jinan Shi	Sr. Procurement Specialist	EAPCO	Procurement
Haixia Li	Financial Management Specialist	EAPCO	Financial Management
Orgodol Sanjaasuren	Infrastructure Operations Officer.	EASCS	Operations
Anil H. Somani	Consultant	EASTE	Environment Specialist
Hernan Levy	Consultant	EASTE	Transport Economist
Sally Burningham	Senior Engineer	EASTR	Transport Specialist
Sreyrov Tep	Program Assistant	EASTR	Assistant
Melissa Sanchez	Program Assistant	EASTE	Assistant
R.I. Gopalkrishnan	Procurement Specialist	EAPCO	Procurement
Tumentsogt Tsevegmid	Infrastructure Operations Officer	EASCS	Operations
Ochir Lkhagvasuren	Financial Management Specialist	EAPCO	Financial Management

(b) Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
Lending		
FY99		20.13
FY00	21	105.44
FY01	27	144.14
FY02		0.00
FY03		0.00
FY04		0.00
FY05		0.00
FY06		0.00
FY07		0.00
Total:	48	269.71
Supervision/ICR		
FY99		0.00
FY00		0.00
FY01	2	13.31
FY02	9	52.48
FY03	15	80.85
FY04	14	95.95
FY05	13	62.19
FY06	20	65.67
FY07 (estimated)	6	65.00
Total:	79	435.45

Annex 5. Beneficiary Survey Results

Not applicable

Annex 6. Stakeholder Workshop Report and Results

Not applicable

Annex 7. Summary of Borrower's ICR and/or Comments on Draft ICR

No comment

Annex 8. Comments of Cofinanciers and Other Partners/Stakeholders

Nordic Development Fund (NDF)

The interference by Ministry of Finance in the day to day activities has very much hampered implementation of important parts of the credit. Specifically the Road Safety Study which in NDF's opinion is essential if Mongolia intends to reduce the fatalities on the roads.

NDF extended the credit by one year last December. This was done with the understanding that WB would do the same. However, through some information lapse we never realized that WB would close its credit until it was too late. NDF's ambition was to ensure that the highly relevant Road Safety Study would be implemented and that the World Bank would be a supporter in this ambition.

NDF has tried on its own but with no success. The conclusion is NDF extended the credit closing date too early and that NDF should have awaited WB's decision.

We are currently in the process of tendering for four (4) additional Vehicle Testing Stations. The tendering process is not going smoothly. Documentation forwarded to us is not up to the required standard. NDF's opinion is that the PIU of the MRTT is weak and therefore the results have not been as expected.

Annex 9. List of Supporting Documents

1. The World Bank, *Transport Development Project: Project Appraisal Document* (Report No. 21739-MOG), February 28, 2001.
2. The World Bank, *Transport Development Project: Development Credit Agreement* (Credit No. 3478 MOG), between Mongolia and International Development Association, April 30, 2001.
3. The World Bank, Amendment to the Development Credit Agreement No. 3478 MOG between Mongolia and International Development Association, April 23, 2004.
4. The World Bank, Aide-Memoires of the Transport Development Project, from June 2001 to November 2006.
5. Ministry of Infrastructure Development, Department of Roads Mongolia, Transport Rehabilitation Project Roads Sub-Project, - Feasibility Study of Selected Road Maintenance Treatments and Short Section Improvement of Unpaved Road Final Report, prepared by Scott Wilson Kirkpatrick, Transport Research Laboratory in association with Intercontinental Consultants & Technocrats PVT Ltd., March 1997.
6. Ministry of Infrastructure Development Mongolia, Transport Rehabilitation Project, Final Business Plan (Main Report/Tables and Figures) Consulting Services for Mongolian Railways Subproject, prepared by Transurb Consult, Hickling, June 1997.
7. Japan International Cooperation Agency (JICA), Final Study Report of the Master Plan Study on Improvement and Rehabilitation of Road Network in Ulaanbaatar in Mongolia, March 1999.
8. Department of Roads of Mongolia, The Report of the Detailed Environmental Assessment and Mitigation Plan for Selective Rehabilitation of Kharkhorin-Tsetserleg-Tosontsengel Road prepared by ENCO CO. Ltd., December 1999.
9. Department of Roads of Mongolia, The Report of the Detailed Environmental Assessment and Mitigation Plan of Erdenesant-Arvaikheer Road prepared by ENCO CO. Ltd., January 2000.
10. Department of Roads of Mongolia, The Report of the Detailed Environmental Assessment and Mitigation Plan for Selective Rehabilitation of Arvaikheer Bayankhongor-Altai-Khovd Road prepared by ENCO CO. Ltd., April 2000.
11. Department of Roads of Mongolia, Report of the Environmental Impact Assessment and Mitigation Measures on Road Construction in the Region of Tsagaan Davaa (Amendment to the Report of the Detailed Environmental Assessment and Mitigation Plan for Selective Rehabilitation of Kharkhorin-Tsetserleg-Tosontsengel Road) by ENCO CO. Ltd., February 2001.

12. Department of Roads of Mongolia, The Report of the Environmental Impact Assessment and Management Plan for Rehabilitation Project of the 30 KM Road Section from Erdenesant to Ulaanbaatar prepared by ENCO CO., Ltd.

13. Department of Roads of Mongolia Feasibility Proposal for Rehabilitation of Erdenesant-Lun 30 km Paved Road, July 2003.

14. Department of Transport, Final Completion Report, Legislation and Regulations, prepared by Torbin Mikkelsen, Kampsax A/S in association with SBI and Master Consulting and Trading, February 2004.

15. Ministry of Roads, Transport and Tourism, Inception Report, Road Master Plan and Feasibility Study for Road Development in Western Aimags, prepared by SMEC International Pty Ltd., May 2007.