Performance Evaluation Report

Reference Number: PPE:CAM 2009-57
Project Number: 28338
Loan Number: 1697
December 2009

Cambodia: Primary Roads Restoration Project

Independent Evaluation Department

Asian Development Bank

CURRENCY EQUIVALENTS

Currency Unit – Cambodian riel (KR)

	At Appraisal (August 1999)	At Project Completion (July 2006)	At Independent Evaluation (March 2009)
KHR1.00 =	$0.000260	$0.000242	$0.000242
$1.00 =	KR3,844.5	KR4,188.63	KR4,128.50

ABBREVIATIONS

ADB	–	Asian Development Bank
AP	–	affected person
AusAID	–	Australian Agency for International Development
BME	–	benefit monitoring and evaluation
COI	–	corridor of impact
COMFREL	–	Committee for Free and Fair Election
CDOH	–	Community Development Organization and Health Care
DMS	–	detail measurement survey
EFRP	–	Emergency Flood Rehabilitation Project
EIRR	–	economic internal rate of return
GDP	–	gross domestic product
GMS	–	Greater Mekong Subregion
ICB	–	international competitive bidding
IED	–	Independent Evaluation Department
IEE	–	initial environmental examination
IRC	–	Inter-ministerial Resettlement Committee
IRI	–	international roughness index
km	–	kilometer
Lao PDR	–	Lao People's Democratic Republic
LCB	–	local competitive bidding
m	–	meter
MPWT	–	Ministry of Public Works and Transport
NGO	–	nongovernment organization
NR	–	national road (route nationale)
NSDP	–	National Strategic Development Plan
PCC	–	project coordination committee
PCR	–	project completion report
PPER	–	project performance evaluation report
RAP	–	resettlement action plan
RD	–	Resettlement Department
ROW	–	right-of-way
RRP	–	report and recommendation of the President
RTAVIS	–	Road Traffic Accident Victim Information System
STD	–	Sexually transmitted disease
TA	–	technical assistance
TCR		technical assistance completion report
VOC	–	vehicle operating costs

NOTE

In this report, "$" refers to US dollars

Key Words

asian development bank, development effectiveness, cambodia, performance evaluation, poverty reduction, national roads road maintenance, transport

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The guidelines formally adopted by the Independent Evaluation Department (IED) on avoiding conflict of interest in its independent evaluation were observed in the preparation of this report. The fieldwork was undertaken by Peter Darjes, Sota Ouk, and Sok-Tharath Chreung (staff consultants) under the guidance of the mission leader. To the knowledge of the management of IED, there were no conflicts of interest of the persons preparing, reviewing, or approving this report.

APPENDIXES

BASIC DATA
Primary Roads Restoration Project [(Loan 1697-CAM(SF)]

Project Preparation/Institution Building

TA No.	TA Name	Type	Person-Months	Amount ($'000)	Approval Date
TA 2722	Transport Network Improvement	PPTA		600	19 Dec 1996
TA 2722	Transport Network Improvement (Supplementary)	PPTA	18	385	17 Mar 1998
TA 3257	Strengthening the Maintenance Planning and Management Capabilities at Ministry of Public Works and Transport	ADTA	21	735	21 Sep 1999

Key Project Data ($ million)	As per ADB Loan Documents	Actual
Total Project Cost	88.10	86.96
Foreign Exchange Cost	67.70	70.40
Local Currency Cost	20.40	16.56
ADB Loan Amount/Utilization	68.00	67.61
(SDR million)	49.85	49.63
ADB Loan Amount/Cancellation (SDR million)		0.39

Key Dates	Expected	Actual
Fact-Finding		6–21 March 1997
Appraisal		8–23 May 1997
Loan Negotiations		11–12 August 1997
Board Approval		21 September 1999
Loan Agreement		4 November 1999
Loan Effectiveness	4 February 2000	30 June 2000
First Disbursement		12 September 2000
Project Completion	31 July 2003	31 December 2005
Loan Closing	31 January 2004	4 August 2006
Months (effectiveness to completion)	41.0	66.0

Economic Internal Rates of Return (%)	Appraisal	PCR	PPER
NR 5	33.9	25.0	27.0
NR 6	19.3	22.0	21.3
NR 7	26.2	28.7	21.1
Entire Project	28.0	25.6	24.1

Borrower	Cambodia
Executing Agency	Ministry of Public Works and Transport

Mission Data

Type of Mission	No. of Missions	No. of Person-Days
Fact-Finding	1	48
Appraisal	2	76
Consultation	1	30
Special Loan Administration	3	48
Contract Assistance	1	5
Review	5	99
Resettlement Review	4	48
Project Completion	1	15
Operations Evaluation	1	27

ADB = Asian Development Bank, ADTA = advisory technical assistance, PCR = project completion report, PPER = project performance evaluation report, PPTA = project preparatory technical assistance, TA = technical assistance.

EXECUTIVE SUMMARY

This project performance evaluation report (PPER) presents the findings of an evaluation of the Primary Roads Restoration Project and associated technical assistance (TA) for Strengthening the Maintenance Planning and Management Capabilities at the Ministry of Public Works and Transport (MPWT) in Cambodia.

In September 1999, the Asian Development Bank (ADB) approved a loan for restoring and improving damaged sections of the country's primary road network. The loan of $68 million was to finance the restoration of 577 kilometers (km) of three primary roads: national road (NR) 5, NR6, and NR7. In addition to civil works for road rehabilitation, the project included the rehabilitation or replacement of bridges, and equipment supply. The cost of the project was estimated at $88.1 million, of which 77% was the foreign exchange cost.

Each of the national road segments financed under the project was intended to promote economic growth in Cambodia by reducing transport costs. The project also supported the government's strategy to reduce poverty and relieve transport bottlenecks, and each of the national roads had regional dimensions, with NR5 and NR6 being major transport corridors to Thailand, and NR7 serving as a transport corridor to Viet Nam. The project was expected to improve accessibility, promote economic and human development, reduce road transport costs, and increase the capacity to effectively manage and maintain the road network. Policy dialogue in the Cambodia road subsector since 1992 has focused on increased transport efficiency, improved sustainability of transport infrastructure, improved rural access, improved traffic safety, and ensuring adequate safeguard policies. During project formulation, policy dialogue focused mainly on strengthening transport planning capacity and road maintenance capability and on development of road user charges

The project was formulated using a project preparatory TA grant, and in general the PPER mission found that the TA was adequately prepared and gave technical, economic, and financial justifications for the project. A social impact study was conducted under the TA, and the report and recommendation of the President (RRP) included detailed appendixes covering beneficiary provinces and poverty in Cambodia. Policy dialogue, albeit limited to just three core issues, appears to have been effective. Details of consultations with beneficiaries and affected people during project preparation were not provided in the RRP, but the PPER mission found evidence of sufficient consultation with local officials in the provinces traversed by the national roads.

As envisaged at appraisal, MPWT was the executing agency for both the loan and the associated TA. A project management unit was formed and was expected to report to a project coordination committee (PCC) at least once every 6 months. However, the project completion report (PCR) indicates that the PCC met only as needed to solve problems; the PCR does not mention the frequency of the meetings. The PPER mission did not find any indication in its review of mission back-to-office reports that the infrequency of PCC meetings was an issue; but, given the subsequent project design changes, a more active PCC may have been better able to guide project implementation.

The overall actual project cost was $86.96 million, which was only $1.14 million (1.3%) lower than the $88.10 million estimate at appraisal. The actual foreign exchange cost was also close to the appraisal estimate (only 4% higher), but the local currency cost was $16.56 million, which was significantly lower (19%) than the appraisal estimate of $20.40 million. The increase in civil works project costs was due mainly to the high price adjustment payments. Other factors

contributing to the higher-than-expected project costs were (i) an underestimate of the required quantities of civil works at the time of appraisal; and (ii) exchange rate fluctuations between special drawing rights and the US dollar.

Major departures from the original scope of work were experienced during project implementation. Many of these changes were linked to ADB's response to the heavy flooding in 2000, which severely damaged several sections of NR5 and NR6. Under the road improvement component, three of the envisaged contract packages were cancelled from the project and made into subprojects under the Emergency Flood Rehabilitation Project in 2000. After these cancellations, the project rehabilitated only 405 km of national roads, significantly less than the originally envisaged 577 km.

The bridge rehabilitation component was substantially increased. At appraisal, only 30 new bridges were to be constructed on NR5, NR6, and NR7 through the ADB loan. Instead, 111 bridges were constructed or rehabilitated, most of which had not been included at the time of appraisal. Loan savings on the national roads and the equipment supply components were used to undertake this additional work. These changes were approved by ADB following proper procedures.

The equipment supply component included (i) communications equipment, (ii) laboratory equipment, (iii) weighbridges and vehicle monitoring equipment, and (iv) traffic signs and roadside furniture. This component was substantially decreased from what was envisaged at appraisal. Whereas the communication and laboratory equipment were procured as envisaged, the procurement of the weighbridges, vehicle monitoring equipment, and some of the traffic signs and roadside furniture did not take place as envisaged. The weighbridges and vehicle monitoring equipment were cancelled from the project and transferred to the Greater Mekong Subregion Cambodia Road Improvement Project. With regard to the traffic signs and road furniture, the PCR indicates that the procurement of traffic signs and roadside furniture was in line with what was envisaged at appraisal, but that more signs needed to be incorporated. The PPER mission observed that the traffic signs and roadside furniture were generally present on NR6 but missing on the NR7 segment visited. The absence of the signs and line markings poses a hazard to both motorists and pedestrians, particularly in the vicinity of marketplaces and schools, and for motorists driving at night.

Most of the loan covenants were complied with but there were some exceptions. One loan covenant that was not complied with involved the government and MPWT being required to ensure strict enforcement of legally prescribed axle load limits on project roads. Two covenants dealing with safeguard issues were partly complied with, while two other covenants dealing with road maintenance and midterm review were waived.

Updated information on the physical condition of the project roads, current and anticipated traffic, and vehicle operating costs were used to reestimate the economic internal rate of return (EIRR). The recalculated EIRR for the entire project was 24.1%. This result is largely consistent with the appraisal EIRR (28%) and the PCR EIRR (25.6%). The key difference can be explained by the lower EIRR for the NR7 component, which resulted from substantial projected diversion from that road to the secondary NR73. Another explanation lies in the difference of assumptions used in the PCR and at post-evaluation. Whereas the PCR forecasts increasing VOC savings over the project's future, the PPER mission assumed substantial periodic maintenance interventions as a reflection of an improved maintenance regime. Despite these high EIRRs, the project is not rated highly efficient due to the delay in implementation.

The PPER mission's inspection found the project roads, bridges, and equipment generally in good condition, although in a few areas the roads were beginning to show signs of insufficient maintenance. The main factor behind the deterioration is rampant truck overloading, which is damaging the road pavement. To ensure that the project roads do not deteriorate further from truck overloading, stricter enforcement of vehicle load limits will be necessary. In addition, the government should ensure an adequate annual budget for project road maintenance. Given the recent positive strides of the government in putting in place a new system that should lead to a more timely and predictable provision of maintenance financing in step with pavement deterioration, the outlook for the future maintenance of the project assets is positive. On the other hand, the project is not likely to achieve in the short to medium term the envisaged impact of improved road safety.

Overall the project is rated *successful*. It is assessed as *relevant*, *effective*, *efficient*, *likely to be sustainable,* and having a *moderate* impact. In terms of the project components, the national roads and bridges components are rated *successful*, while the equipment component is rated *partly successful*. No issues that could significantly downgrade the project assessment are foreseen.

Two key issues have been identified:

(i) The project was the first ADB road project in Cambodia to include weighbridges and vehicle monitoring equipment. This was in line with ADB's Cambodia road sector strategy's emphasis on improving traffic safety. The subsequent cancellation of the equipment coupled with generally lax enforcement of vehicle overloading rules detracted from efforts to improve road maintenance. Enforcement can be improved with support for vehicle monitoring, use of weighbridges, and levying of fines.

(ii) Serious resettlement problems were encountered during project implementation, which contributed to the long implementation delays. The PCR provides several lessons from resettlement, including the need to (i) update the detailed resettlement plan after a measurement survey to determine that provisions and cost adjustments are adequate, (ii) monitor resettlement more closely and submit monitoring reports on time, (iii) establish systematic data collection requirements, and (iv) supervise resettlement more effectively to stay informed of its progress and to ensure that it complies with the resettlement plan. These lessons were reconfirmed by the PPER mission.

Three lessons have been identified:

(i) As noted above, the project is not likely to achieve in the short to medium term the envisaged impact of improved road safety. One way in which the impact of the project could be enhanced is for the government to institute a vigorous regime of traffic law enforcement. Another way is for the government to analyze the main reasons for traffic accidents (e.g., unskilled drivers and road structures without sufficient facilities for pedestrians and bicycles, etc.) and undertake necessary measures to reduce such accidents.

(ii) The length of roads rehabilitated was reduced by almost one-third (from 577 km to 405 km) due to the cancellation of some of the contracts, which were transferred to the Emergency Flood Rehabilitation Project in the wake of floods in 2000. This flexible approach allowed the more seriously affected road segments of the NR5 and NR6 to be rehabilitated under ADB's quick-disbursing emergency lending modality, thus rapidly alleviating the more serious transport bottlenecks

along both national roads. This is a good example of the judicious use of lending modalities to maximize development impact.

(iii) There is a need to carefully evaluate the relative performance, cost effectiveness, and suitability of low cost double bitumen road pavement design and standard asphalt concrete type road pavement to guide future projects in Cambodia in particular and the region in general.

Based on the evaluation findings, two follow-up actions are proposed for consideration in the areas of road safety and resettlement in the table below.

Follow-up Actions

	Actions	Responsibility	Time Frame
1.	**Road safety**. Follow up with MPWT on the replacement of traffic signs and provision of missing road furniture on NR7.	SERD	End of 2010
2.	**Resettlement:** Ensure that the recommendations of the resettlement audit report are implemented.	SERD	End of 2010

MPWT = Ministry of Public Works and Transport, NR = national road, SERD = Southeast Asia Regional Department.

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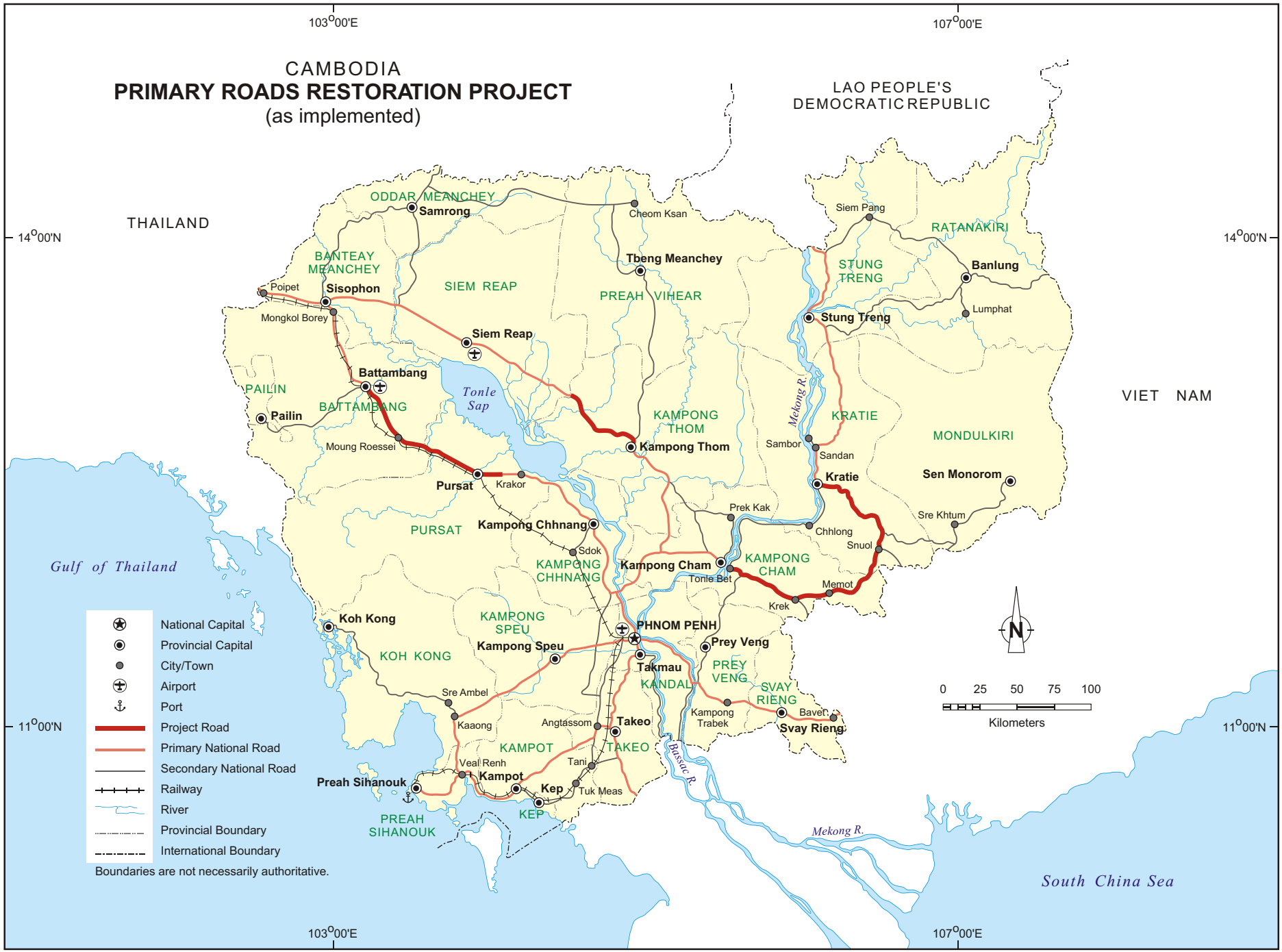
CAMBODIA
PRIMARY ROADS RESTORATION PROJECT
(as implemented)
LAO PEOPLE'S DEMOCRATIC REPUBLIC
THAILAND
VIET NAM
103°00'E
107°00'E
14°00'N
11°00'N
ODDAR MEANCHEY
Samrong
Cheom Ksan
Siem Pang
RATANAKIRI
BANTEAY MEANCHEY
Poipet
Sisophon
Mongkol Borey
SIEM REAP
Siem Reap
Tbeng Meanchey
PREAH VIHEAR
STUNG TRENG
Banlung
Lumphat
Stung Treng
Battambang
PAILIN
Pailin
BATTAMBANG
Moung Roessei
Tonle Sap
KAMPONG THOM
Kampong Thom
Mekong R.
KRATIE
Sambor
Sandan
Kratie
MONDULKIRI
Sen Monorom
Sre Khtum
Pursat
Krakor
PURSAT
Kampong Chhnang
Sdok
KAMPONG CHHNANG
Prek Kak
Chhlong
Snuol
Kampong Cham
Tonle Bet
KAMPONG CHAM
Memot
Krek
Gulf of Thailand
Koh Kong
KOH KONG
KAMPONG SPEU
Kampong Speu
PHNOM PENH
Prey Veng
Takmau
KANDAL
PREY VENG
SVAY RIENG
Bavet
Svay Rieng
Kampong Trabek
Sre Ambel
Kaaong
Angtassom
Takeo
TAKEO
KAMPOT
Veal Renh
Kampot
Tani
Tuk Meas
Kep
KEP
Preah Sihanouk
PREAH SIHANOUK
Bassac R.
Mekong R.
South China Sea
N
0 25 50 75 100
Kilometers
National Capital
Provincial Capital
City/Town
Airport
Port
Project Road
Primary National Road
Secondary National Road
Railway
River
Provincial Boundary
International Boundary
Boundaries are not necessarily authoritative.
09-4291 HR

I. INTRODUCTION

A. Evaluation Purpose and Process

1. The Primary Roads Restoration Project[1] was to assist the Government of Cambodia in restoring and improving damaged sections of the primary road network, thereby enhancing the prospects for accelerated economic growth in the country. The project was expected to improve accessibility, promote economic and human development, reduce road transport costs, and increase the capacity to effectively manage and maintain the road network.

2. The Independent Evaluation Department (IED) selected the project for evaluation in 2008 to provide inputs to two broader evaluations in Cambodia (e.g., a transport sector assistance evaluation and a country evaluation update) in 2009. The preparation of this project performance evaluation report (PPER), more than 3 years after project completion in 2006, allows sufficient time for impacts to be visible. Following IED's evaluation guidelines,[2] the PPER reassesses the status of the roads improved, provides lessons, and suggests follow-up actions. The evaluation draws on a review of project documents and other studies and on discussions between staff members of the Asian Development Bank (ADB) and officials of government agencies concerned with the project, international development institutions resident in Cambodia, and consultants. It incorporates the results of the PPER mission's field inspections, traffic studies, a rapid beneficiary assessment, and updated road accident data. A copy of the draft PPER was shared with the Southeast Asia Department of the ADB and the government, and their comments were incorporated where relevant.

3. In 2006, the project completion report (PCR)[3] rated the project *successful*.[4] The project was considered highly relevant in meeting the needs of the transport sector, effective in achieving its intended outcome, and highly efficient in the use of resources. However, it was rated *less likely to be sustainable*, given the absence of an effective mechanism to secure sustained release of road maintenance funds, expected deterioration of the roads due to overloading of trucks and to inadequate national government budget allocated for road maintenance, and the need for additional trained human resources in provincial transport offices. The PCR did not evaluate the suitability of road design despite government's misgivings about it. A technical assistance (TA) grant accompanied the project to strengthen the capabilities of the Ministry of Public Works and Transport (MPWT) to plan, manage, and implement the maintenance necessary to protect the investments made under the project. A self-evaluation rated the TA as *highly successful* (para. 63).

B. Expected Results

4. The project was classified as having economic growth as its primary objective and poverty reduction as its secondary objective. According to the project framework in the report and recommendation of the President (RRP), there were four expected impacts: (i) improved access to less accessible areas; (ii) economic growth, especially in rural areas; (iii) benefits for road users from lower vehicle operating costs; and (iv) community benefits from improved road safety. The expected outputs (incorrectly identified as outcomes) were to (i) improve 260

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[1] ADB. 1999. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and Technical Assistance Grant to the Kingdom of Cambodia for the Primary Roads Restoration Project*. Manila.

[2] Asian Development Bank (ADB). 2006. *Guidelines for Preparing Performance Evaluation Reports for Public Sector Operations*. Manila.

[3] ADB. 2006. *Project Completion Report on the Primary Roads Restoration Project (Loan 1697-CAM)*. Manila.

[4] The PCR mission was fielded on 18-22 July 2006.

kilometers (km) of National Road (NR) 5 from Phnom Penh to Pursat to Battambang to Sisophon, (ii) improve 112 km of NR6 between Kampong Thmor and the Siem Reap provincial border, (iii) improve 205 km of NR7 from Tonle Bet to Kratie, and (iv) clear road reservations of unexploded ordnance.[5] The project framework identified five categories of expected inputs (incorrectly identified as outputs). The first, accounting for most of the estimated project cost, was for civil works under nine separate contracts. The four further categories of expected inputs were (i) consultant services for construction supervision, (ii) unexploded ordnance removal, (iii) equipment procurement, and (iv) force account works for sections of primary road restoration.

5. The project framework was of poor quality, being in many cases internally inconsistent with the RRP's main text, and not in line with ADB's subsequent design and monitoring framework guidelines.[6] For example, the statement of project impact in the main text differed substantially from the statement in the project framework of the RRP. In the main text, the statement mentioned promoting economic and human development, facilitating more efficient movement of goods and passengers, and increasing the capacity of MPWT to effectively manage and maintain the road network, none of which were cited in the project framework.

6. The grouping of project outcomes and outputs in the main text also differed from their grouping in the project framework of the RRP. Whereas the project framework focused mainly on road improvements (para. 4), the main text included several additional outputs (incorrectly identified as outcomes): (i) rehabilitation or replacement of bridges and culverts along the roads, (ii) institutional strengthening by supplying vehicle monitoring and laboratory equipment to MPWT, and (iii) consulting services for construction supervision and training of MPWT personnel. Moreover, the project framework lacked monitorable indicators suitable for evaluating the success of several impact statements. For example, there were no indicators for economic growth in rural areas or for community benefits arising from improved road safety.

7. Given the above weaknesses, the PPER mission revised the project framework to more logically group outcomes and outputs to reflect the PPER mission's understanding of the major distinct categories of support under the project, taking into account the main cost elements. The PPER considers three groups of project outputs: (i) rehabilitation of national roads, (ii) rehabilitation or replacement of bridges, and (iii) equipment supply. Indicators more suitable for evaluating the success of several design summary statements have also been identified. Modified impact, outcome and output groupings and the additional indictors and/or targets are reflected in the revised summary design and monitoring framework in Appendix 1.

II. DESIGN AND IMPLEMENTATION

A. Formulation

8. The project preparatory TA[7] was adequately prepared and gave technical, economic, and financial justifications for the project. In formulating the project, ADB followed standard approaches to implementation arrangements, consulting services, and procurement, including use of international competitive bidding (ICB) based on International Federation of Consulting

[5] The project goal stated in the RRP is equated with project impact, and the project purpose is equated with outcome.

[6] ADB. 2007. *Guidelines for Preparing a Design and Monitoring Framework: Second Edition*. Manila.

[7] ADB. 1996. *Technical Assistance to the Kingdom of Cambodia for the Transport Network Improvement Project*. Manila; ADB. 1998. *Technical Assistance to the Kingdom of Cambodia for the Transport Network Improvement Project (Supplementary)*. Manila.

Engineers[8] standards. A social impact study was conducted under the project preparatory TA and the RRP included detailed appendixes covering beneficiary provinces and poverty in Cambodia. Policy dialogue, albeit limited to just three core issues, appears to have been effective. Details of consultations with beneficiaries and affected people during project preparation were not provided in the RRP, but the PPER mission found evidence of sufficient consultation with local officials in the provinces traversed by the national roads.

9. Policy dialogue in Cambodia's road subsector since 1992 has focused on increased transport efficiency, improved sustainability of transport infrastructure, improved rural access, improved traffic safety, and ensuring adequate safeguard policies. During project formulation, policy dialogue focused mainly on strengthening transport planning capacity and road maintenance capability and on the development of road user charges. In retrospect, the policy dialogue could have paid closer attention to other issues such as road safety and safeguards (especially resettlement of affected persons).

B. Rationale

10. Each of the national road segments financed under the project was intended to promote economic growth and reduce poverty in Cambodia by reducing transport costs. The project also supported the government's strategy to reduce poverty and relieve transport bottlenecks. The rehabilitation of bridges and culverts along the national roads was also aimed to relieve transport bottlenecks, particularly along NR5 and NR6. A further rationale for the project, and particularly for the accompanying TA grant, was support for institutional development of MPWT. Finally, each of the national roads had regional dimensions, with NR5 and NR6 being major transport corridors to Thailand, and NR7 serving as a transport corridor to Viet Nam.

11. The project was the first road project in Cambodia classified as having a secondary objective of poverty reduction and, as such, was expected to increase employment and income-generating opportunities and to contribute to reducing the incidence of poverty, particularly within the project area. The rationale for the project's poverty intervention was consistent with the country's National Strategic Development Plan (NSDP),[9] which spells out the government's strategies to reduce poverty rapidly (see para. 30).

12. The project rationale remains valid. The project supported the economic and social development of Cambodia by increasing the capacity and standard of key sections of the national road network. In particular, interregional connectivity has been strengthened, which was not emphasized at the time of appraisal.

C. Cost, Financing, and Executing Arrangements

13. As reported in the PCR, the overall project cost was $86.96 million, which was only $1.14 million (1.3%) lower than the $88.10 million estimate at appraisal. The actual foreign exchange cost was also close to the appraisal estimate (only 4% higher), but the local currency cost was $16.56 million, which was significantly lower (19%) than the appraisal estimate of $20.40 million. In terms of project components, the actual costs for the civil works for the roads and bridges component and for the construction supervision component both exceeded the appraisal estimate, whereas the other components were below the appraisal estimates. The PCR explains that the increase in civil works costs was due mainly to the high price adjustment

[8] Fédération Internationale des Ingénieurs Conseils.
[9] Kingdom of Cambodia. 2007. *National Strategic Development Plan 2006-2010*. Phnom Penh, Cambodia.

payments. Other factors contributing to the higher-than-expected project costs were (i) an underestimate of the required quantities of civil works at the time of appraisal, and (ii) exchange rate fluctuations between special drawing rights and the US dollar. The actual equipment cost was $0.71 million, which was $2.8 million lower than the appraisal estimate due to cancellation of the weighbridges and vehicle monitoring equipment for the project.

14. The actual financing shares were $67.6 million (78% of total project costs) from ADB, $6 million (7%) from the Organization of Petroleum Exporting Countries Fund, $0.86 million (1%) from the Australian Agency for International Development (AusAID), and $12.50 million equivalent (14%) covering the local currency cost borne by the government. A comparison of actual and estimated project costs is in Appendix 2.

15. As envisaged at appraisal, MPWT was the executing agency. A project management unit was formed and was expected to report to a project coordination committee (PCC) at least once every 6 months. However, the PCR indicates that the PCC met only as needed to solve problems, and does not mention the frequency of the meetings. The PPER mission did not find any indication in the review mission back-to-office reports that the infrequency of PCC meetings was an issue, but, given the subsequent project design changes, a more active PCC may have been better able to guide project implementation.

D. Procurement, Construction, and Scheduling

16. **Procurement.** Procurement under the project was divided into nine major civil works contract packages and four packages of equipment. Five of the civil works packages were awarded through ICB, whereas the remaining four civil works packages and all of the equipment packages were procured using local competitive bidding (LCB). The value of ADB component funding for the civil works contract packages ranged from $0.82 million to $10.9 million. The PCR provides details concerning the rejection of the lowest bidder for four of the five ICB civil works packages and the lowest bidder for three of the four LCB civil works packages. As reported in the PCR, ADB approved MPWT's recommendations in both cases that were in line with ADB's *Procurement Guidelines*.

17. **Construction.** Civil works commenced in September 2000 on the basis of the preliminary feasibility study design, and construction was completed in December 2005, two years behind the appraisal schedule. Before start of construction, excessive flooding led to damage of some sections of NR5 and NR6, and extensive rebuilding and improvement became necessary. Because the civil works of the ongoing packages and the additional civil works necessary to repair the damaged road sections covered were difficult to separate, ADB and MPWT agreed to address the additional rehabilitation works through variations in the ongoing contracts. A chronological narrative of the major events in implementation of civil works is included in the PCR.

18. **Scheduling.** The loan agreement was signed 1.5 months after approval. Loan effectiveness required an additional 8 months, as fulfilling the conditions took longer than expected. According to the PCR, consulting services began in the third quarter (Q3) of 1999 and finished in Q4 2005, nearly 2 years later than initially scheduled. Prequalification for the ICB civil works was completed according to schedule in Q3 1998, but prequalification for the LCB civil works was completed 2.5 years later than scheduled, in Q1 2000. Similarly, tendering and evaluation of the ICB civil works were completed according to schedule in Q2 2000, but tendering and evaluation for the LCB civil works were completed 2.5 years later than scheduled, in Q1 2002. Implementation of both the ICB and LCB civil works was substantially delayed, with

the ICB civil works completed in Q2 2004 (1 year later than scheduled) and the LCB civil works completed in Q4 2005, more than 2 years later than originally scheduled. As envisaged at appraisal, the project was to be implemented over 41 months from February 2000 until July 2003, with construction completed by March 2003. Actual implementation required about 66 months, from June 2000 to December 2005. The appraisal and actual implementation schedules are in Appendix 6 of the PCR.

19. According to the PCR, the longer-than-expected implementation period was due mainly to delays in the implementation of civil works contracts and in procurement of equipment. As an example, the international contractor on the NR7 encountered severe cash flow problems and difficulties in procuring equipment and employing local workers. The PCR includes a lesson that, in order to avoid similar delays in future projects (i) the prequalification process needs to be more rigorous, and effective measures should be put in place to discipline contractors who fail to comply with their contractual obligations; (ii) the performance of consultants needs to be monitored more closely; and (iii) consultants need to be familiar with ADB procedures on procurement and bid evaluation before they are appointed. The PPER concurs with the PCR, but finds that an additional reason for the delays incurred was the resettlement problems encountered during implementation (see paras. 54–56).

E. Design Changes

20. Major departures from the original scope of work were experienced during project implementation. Many of these changes were linked to ADB's response to the heavy flooding in 2000, which severely damaged several sections of NR5 and NR6. Under the road improvement component, three of the envisaged contract packages were cancelled from the project and made into subprojects under the Emergency Flood Rehabilitation Project (EFRP)[10] in 2000. According to the EFPR's PCR,[11] all of the transferred subprojects were implemented with acceptable quality. After these cancellations, the project rehabilitated only 405 km of national roads, significantly less than the originally envisaged 577 km.

21. The bridge rehabilitation component was substantially increased. At appraisal, only 30 new bridges were to be constructed on NR5, NR6, and NR7 through the ADB loan. Instead, a total of 111 bridges were constructed or rehabilitated, most of which had not been included at the time of appraisal. Loan savings on the national roads and the equipment supply components were used to undertake this additional work. Six bridges on NR5 from Kampong Chhang to Pursat were constructed using a grant from the Government of Australia, one more than envisaged at appraisal. These changes were approved through proper ADB procedures.

22. The equipment supply component included (i) communications equipment, (ii) laboratory equipment, (iii) weighbridges and vehicle monitoring equipment, and (iv) traffic signs and roadside furniture.[12] This component was substantially decreased from what was envisaged at appraisal. Whereas the communication and laboratory equipment was procured as envisaged, the procurement of the weighbridges, vehicle monitoring equipment, and some of the traffic signs and roadside furniture did not take place as envisaged. According to the PCR, the weighbridges and vehicle monitoring equipment were cancelled from the project to avoid cost

[10] ADB. 2000. R*eport and Recommendation of the President to the Board of Directors: Proposed Loan to the Kingdom of Cambodia for the Emergency Flood Rehabilitation Project and on a Proposal to Use Loan Savings.* Manila. (Loan 1824-CAM [SF]).

[11] ADB. 2006. *Project Completion Report on the Emergency Flood Rehabilitation Project (Cambodia) (Loan 1824-CAM[SF]).* Manila.

[12] Roadside furniture refers to items such as kilometer posts, line markings, and thermoplastic materials.

overruns due to rising civil works prices and unexpected exchange rate fluctuations and were transferred to the Greater Mekong Subregion (GMS) Cambodia Road Improvement Project.[13] The reduction in the equipment supplies reduced the impact on road safety component. Also the purchase of weighbridges could have mitigated the damage to road pavement and reduced the need for maintenance. With regard to the traffic signs and road furniture, the PCR indicates that their procurement was in line with what was envisaged at appraisal, but that more signs needed to be incorporated. The PPER mission observed that the traffic signs and roadside furniture were generally present on NR6, but that these were missing on the NR7 segment visited.[14] The absence of the signs and line markings poses a hazard to both motorists and pedestrians, particularly in the vicinity of marketplaces and schools, and for motorists driving at night.

F. Outputs

23. **National Roads.** As mentioned in para. 20, design changes substantially reduced the outputs of this component from what was envisaged at the time of appraisal. The main features of the national roads are shown on the project map (p. ix) and were the following:

(i) rehabilitation of 130 km of NR5 from Pursat Town to Battambang Town,
(ii) rehabilitation of 70 km of NR6 from Kampong Thmor Bridge to the provincial border between Kampong Thom and Siem Reap, and
(iii) rehabilitation of 205 km of NR7 from Tonle Bet to Kratie Town.

24. **Bridges.** As mentioned in para. 21, design changes substantially increased the outputs of this component from what was envisaged at the time of appraisal. The main features of the bridges were the following:

(i) construction of 30 large bridges, of which 15 were on NR5, 11 on NR6, and 4 on NR7;
(ii) construction or rehabilitation of 81 medium-sized and small bridges, of which 47 were on NR5, 11 on NR6, and 23 on NR7;
(iii) rehabilitation of 183 box culverts; and
(iv) rehabilitation of 8.1 km of pipe culverts.

25. **Equipment.** As mentioned in para. 22, the equipment supply component was substantially reduced from what was envisaged at the time of appraisal. Nevertheless, a range of communication and laboratory equipment, traffic signs, and roadside furniture was purchased for the project, as envisaged at appraisal.

G. Consultants

26. The PCR rates the overall performance of the consultants as poor and provides numerous instances of the shortcomings of the loan supervision consultants, including the need to replace the team leader and two resident engineers at the request of MPWT. This view of the loan supervision consultants was confirmed by the PPER mission in its discussions with MPWT staff. In particular, their monthly progress reports were not submitted to ADB on a timely basis

[13] ADB. 2002. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the Kingdom of Cambodia for the GMS Cambodia Road Improvement Project*. Manila (Loan 1945-CAM [SF]). This project financed three weigh stations on NR 5 and one each on NR 6 and NR 7. According to the project progress report dated 31 March 2009, these were completed satisfactorily.

[14] The NR7 segment visited by the PPER mission from Chhob Commune to the intersection with the secondary NR73 lacked center line, side line, and pedestrian crossing markings. Most of the traffic signs and kilometer markers were also missing. The NR6 segment from Kampong Thmor to the Siem Reap provincial border lacked side line markings.

and the consultants did not properly document the status of the resettlement activities. The PCR is silent on the performance of the consultants engaged under the project preparatory TA. The PPER mission reviewed the consultants' reports[15] and discussed the matter with concerned MPWT staff, and finds their performance satisfactory. The TA completion report prepared for the accompanying TA for strengthening the maintenance capabilities in MPWT assesses the performance of the consultants engaged under the TA as highly satisfactory. This view of the TA consultants was confirmed by the PPER mission in its discussions with MPWT staff (para. 63). Taking into account both the satisfactory performance of the consultants engaged under the two TAs and the unsatisfactory performance of the project supervision consultants, the PPER mission considers that the overall performance of the consultants was partly satisfactory.

H. Loan Covenants

27. Compliance was partly satisfactory and the government and MPWT generally complied with the standard loan covenants, with some exceptions. One loan covenant was not complied with: the government and MPWT were required, and so far have failed, to ensure the strict enforcement of legally prescribed axle load limits on project roads.

28. Two covenants were partly complied with. The PCR indicates that the covenant on ensuring that all persons affected by the acquisition of land required for the project were compensated and resettled in accordance with the compensation and resettlement plan was only partly complied with. Affected persons reportedly did not receive adequate compensation, as agreed to by the government in the Resettlement Action Plan. A resettlement audit was carried out and completed in mid-2009 (see details of land acquisition and resettlement activities in Appendix 3). Another covenant on ensuring that all environmental mitigation measures identified in the initial environmental examination (IEE) were incorporated in the project design and were undertaken during construction, operation and maintenance of the project roads was not fully complied with due to several of the contractors not having strictly applied the IEE mitigation measures (para 57).

29. Two covenants were waived. The covenant on carrying out a comprehensive midterm review of the project and its implementation status was waived by ADB in April 2003, given that no major issues were identified during the midterm implementation stage. Another covenant was aimed at ensuring the availability of necessary resources for the implementation of the road maintenance plans, through the Road Maintenance Fund, for the initial 5 years from the completion of the restoration of the project roads and subsequently through allocations from the borrower's general budget. The covenant was waived, because the maintenance allocations were included as a line item in the national budget (para. 31).

I. Policy Framework

30. **Poverty Reduction.** The integrated First Five-Year Socioeconomic Development Plan (1996–2000),[16] assisted by ADB, was the first medium-term program of national development within a market economy context. Its broad objective was to reduce poverty through rapid, private sector-led economic growth. With the adoption of ADB's Poverty Policy in 2000 and Cambodia's subsequent NSDP in 2007, it became a priority for all sectors, including infrastructure

[15] Wilbur Smith Associates. 2002. *CAMBODIA: Strengthening the Maintenance Planning and Management Capabilities at the Ministry of Public Works and Transport – Final Report, Volumes 1 and 2.* Bangkok, Thailand.

[16] Kingdom of Cambodia. 1997. *First Five-Year Socioeconomic Development Plan (1996–2000*). Phnom Penh (January).

and transport, to reduce poverty rapidly and to achieve the Cambodian Millennium Development Goals.[17]

31. **Road Maintenance.** The shortage of road maintenance funds has been a long-standing issue in Cambodia, particularly in regard to maintenance of rehabilitated national roads. Soon after project appraisal, the government established the Fund for Repair and Maintenance of Roads, financed from surcharges on fuel; however, the Fund was subsequently replaced with a line item in the national budget. To address the maintenance funding issue, an interministerial committee was created in 2005 to determine the annual allocations for maintenance. As a result, road maintenance funding increased from about $2 million–$3 million in fiscal year 2002/03 to about $26 million in 2007, about $33 million in 2008, and about $32 million in 2009. The Road Asset Management Project,[18] cofinanced with the World Bank and AusAID, is aimed at enhancing the sustainability of the existing primary road infrastructure by introducing new arrangements for managing and financing road maintenance. This new approach is expected to generate more lasting results since it is aimed at installing a system that would lead to a more timely predictable provision of maintenance financing in step with pavement deterioration.

32. **Traffic Safety.** In Cambodia, road traffic safety is a growing problem, with crashes, casualties, and fatalities all increasing faster than the growth in population and road traffic. The fatality rates in 2008 were 12.2 per 100,000 inhabitants and 15.1 per 10,000 registered vehicles. Whereas the fatality rate per 100,000 inhabitants had increased since 2005, the fatality rate per 10,000 registered vehicles had dipped over the last 2 years but was still four times its 1998 level and double the government's target for 2010 of 7 per 10,000 registered vehicles. Compared with its neighboring countries, the Lao People's Democratic Republic and Viet Nam, Cambodia has a significantly higher fatality rate per 10,000 registered vehicles. To address the traffic safety issue, the government approved in 2004 a National Road Safety Action Plan, which covers important topics such as road accident data systems, road safety audits, road safety education for children, law enforcement, vehicle inspections, and driver training. The government also established in 2005 a National Road Safety Council with the aim of combining forces of all concerned ministries to create cooperation, collaboration and to facilitate measures to prevent and reduce road traffic accidents to the lowest level. Recent enforcement measures instituted by MPWT include mandatory use of helmets for motorcyclists in cities. With regard to the enforcement of vehicle axle load limits, the government established a Working Group for Overloading Control and Management in 2007 and an action plan was developed in July 2007. Appendix 4 contains additional information on traffic safety in the project area.

33. **Regional Integration.** Although not designated as a GMS regional project, the Primary Roads Restoration Project financed road infrastructure along NR5 and NR6, which are the two main transport corridors between Cambodia and Thailand. The GMS Transport Sector Assistance Performance Evaluation[19] rated the impact of ADB's assistance as “substantial” based on positive economic impacts at the project, corridor, and national levels. At the project level, ADB assistance has led to increased economic activity, with new industries and special economic zones being planned along the roads. At the corridor level, prices of commodities have benefited from transport cost reductions, including decreases in bus fare on national roads,

[17] Kingdom of Cambodia. 2005. *Achieving the Cambodia National Millennium Development Goals: 2005 Update*. Phnom Penh, Cambodia.

[18] ADB. 2007. *Report and Recommendation of the President to the Board of Directors: Proposed Loan and Administration of Grant from the Government of Australia to the Kingdom of Cambodia for the Road Asset Management Project*. Manila.

[19] ADB. 2008. *Sector Assistance Performance Evaluation of Transport and Trade Facilitation in the Greater Mekong Subregion – Time to Shift Gears*. Manila.

attributable to ADB assistance. At the national level, the impact on Cambodia has been substantial, since a large proportion of its trade uses the border points on the Southern Corridor. However, there is still need for further improvement through implementation of the GMS Cross-Border Trade Agreement.

III. PERFORMANCE ASSESSMENT

A. Overall Assessment

34. Overall, the project is assessed as *successful*, based on separate assessments for the three project components (para. 7). In terms of project components, the national road and bridges components are rated *successful*, while the equipment component is rated *partly successful*. In terms of the four evaluation criteria, the project is rated *relevant, effective, efficient,* and *likely to be sustainable*.

35. To arrive at the overall assessment, the individual component ratings were aggregated using weightings developed by the PPER mission: national roads (55%), bridges (30%), and equipment supply (15%). These weightings reflect the relative importance of the component groupings to expected overall project outcomes, adjusted to recognize the shift in project emphasis towards rehabilitating more bridges. The rating of each component group used four criteria: relevance (20% weight), effectiveness (30%), efficiency (30%), and sustainability (20%). Individual criterion ratings were in whole numbers from 0 to 3, in increasing order of project performance. The overall assessment is summarized in Table 1. Further details are in Appendix 5.

Table 1: Overall Performance Assessment

	Project Component			
Criterion	**National Roads**	**Bridges**	**Equipment**	**Overall**
1. Relevance	2	2	2	2.00
2. Effectiveness	2	3	1	2.15
3. Efficiency	2	2	2	2.00
4. Sustainability	2	2	2	2.00
Total Rating[a]	**2.0**	**2.3**	**1.7**	**2.05**

[a] Highly successful: > 2.7; successful: 2.7 ≥ S ≥ 1.6; partly successful: 1.6 > PS ≥ 0.8; unsuccessful: < 0.8.
Source: Independent evaluation mission.

B. Relevance

36. The project is rated *relevant.* Individually, all three of the components are also rated *relevant*. The rating takes account of (i) the project's relevance to the country's priorities and ADB's country and sector strategies, and (ii) the extent to which each intervention was appropriately designed to achieve the intended impacts and outcomes.

37. All three components were fully consistent with government priorities at appraisal and evaluation. The project was in line with the government's strategy to focus road investments on rehabilitating national roads and selected provincial, rural, and urban roads. Each of the national roads rehabilitated under the project formed part of the government's priority national roads network. The project was in line with ADB's operational strategy for the road sector: to restore Cambodia's national roads to resolve transport bottlenecks. The project helps reduce poverty by lowering transport costs and linking poor provinces to Phnom Penh. However in retrospect,

feasibility of alternative technical designs could have been explored during appraisal, including the least-cost pavement design to determine the most suitable pavement design.

38. Using the summary design and monitoring framework (Appendix 1) as a reference, interventions can be seen to have already achieved their outcome and to be on course to achieve two of the four envisaged impacts. However, the achievement of the second impact (increased community benefits through improved road safety on the three national roads) is considered less likely to be achieved in the short- to medium term. Hence, it can be construed that the interventions were generally appropriately designed, but more effort could have been paid to traffic safety aspects, including enforcement issues.

C. Effectiveness

39. Overall, the project is rated *effective*. The bridges component is rated *highly effective*, the national roads component is rated *effective*, and the equipment supply component is rated *less effective*.

1. Project Outputs

40. **National Roads.** The three national roads have all been improved to an acceptable standard. In terms of output indicators, NR7 was rehabilitated and unexploded ordnance was cleared as envisaged at the time of appraisal. The length of roads rehabilitated on NR5 and NR6 was reduced by almost one-third (172 km) compared with what was envisaged at appraisal due to the cancellation of some of the contracts that were transferred to the EFRP after the floods in 2000 (para. 20). Although this reduction in scope detracted somewhat from its effectiveness, the national roads component is still rated overall as *effective*.

41. **Bridges**. The 111 bridges that were built or rehabilitated under the project have greatly contributed to relieving bottlenecks on NR5, NR6, and NR7. The replacement of narrow bridges with two-lane bridges has also improved traffic safety in previous accident-prone areas. As mentioned in para. 21, the component accomplished more than was expected at the time of appraisal and hence is rated *highly effective*.

42. **Equipment.** A range of communication and laboratory equipment, traffic signs, and roadside furniture was purchased for the project. However, the weighbridges and vehicle monitoring equipment were not purchased owing to the cost overrun on the road improvement component (para. 22). A subsequent project, the GMS Road Improvement Project, financed three weigh stations on NR5 and one each on NR6 and NR7. Similarly, some of the roadside furniture envisaged at appraisal was not procured and installed. The component accomplished significantly less than was expected at the time of appraisal and hence is rated *less effective.*

2. Project Outcome

43. The project achieved its expected outcome of improving road traffic efficiency in the project impact areas. The three national roads are all operating well in terms of roughness, ability to carry traffic, and allowing traffic to travel at higher speeds and in more comfort than before project conditions. In terms of outcome indicators, traffic volumes increased by 300% on NR5, more than 2,000% on NR6, and 550% on NR7 between 1997 and 2005. Road users benefited from a reduction in vehicle operating costs (VOC) by an average of 35%, more than the appraisal estimate of 25%. According to the PCR, the average travel times from villages to commune centers, district centers, provincial centers, national roads, Phnom Penh, and border

crossings with Viet Nam and Thailand have declined significantly, with reduction ranging from 9% to 41%. For NR5, average vehicle travel time from Phnom Penh to Poipet, on the border with Thailand, dropped from 9–16 hours before project to 5–8 hours at post-evaluation. For NR6, average vehicle travel time from Phnom Penh to Siem Reap dropped from 8–10 hours before the project to 4–7 hours at post-evaluation.

D. Efficiency

44. The project is rated *efficient*. The national roads, bridges, and equipment supply components are all rated *efficient*.

45. Improved road conditions have led to significant reductions in VOC and travel times, which represent the key benefits of the project. Updated information on the physical condition of the project roads, current and anticipated traffic, and VOC were used to reestimate the economic internal rate of return (EIRR). As shown in Table 2, the recalculated EIRR for the entire project is 24.1%. This result is largely consistent with the appraisal EIRR (28%) and with the result of the PCR, which estimated the EIRR for the entire project at 25.6%. The key difference can be explained by the lower EIRR for NR7, which resulted from substantial diversion from that road to the secondary NR73. Another explanation lies in the different assumptions used in the PCR and at evaluation. Whereas the PCR forecast increasing VOC savings over the project's future, the PPER mission assumed substantial periodic maintenance interventions as a reflection of an improved maintenance regime.

Table 2: Comparison of EIRR Calculations

Item	Appraisal	Project Completion	PPER
NR5	33.3%	25.0%	27.0%
NR6	19.3%	22.0%	21.3%
NR7	26.2%	28.7%	21.1 %
Entire Project	28.0%	25.6%	24.1%

EIRR = economic internal rate of return, PPER = project performance evaluation report, NR = national road

Sources: ADB. 1999. *Report and Recommendation of the President to the Board of Directors: Proposed Loan and Technical Assistance Grant to the Kingdom of Cambodia for the Primary Roads Restoration Project*. Manila; ADB. 2006. *Project Completion Report: Primary Roads Restoration Project*. Manila *(Loan 1697-CAM)*.

46. The assumptions and methodology used for the revised traffic forecast and the recalculation of the EIRR are in Appendix 6. The project is not rated highly efficient due to the 2.5-year delay in implementing the project. According to the PCR, the longer-than-expected implementation period was due mainly to delays in the implementation of civil works contracts and in procurement of equipment (paras. 16-18), although resettlement problems also delayed the implementation.

E. Sustainability

47. Overall, the project is rated *likely to be sustainable.* The national roads, bridges and equipment supply components are all rated *likely to be sustainable*.

48. The PPER mission’s inspection found the project roads, bridges, and equipment in generally good condition, although in a few areas the roads were beginning to show signs of insufficient maintenance. The main factor behind the deterioration is rampant truck overloading, which is damaging the road pavement. To ensure that the project roads do not deteriorate

further from truck overloading, stricter enforcement of vehicle load limits will be necessary. In addition, the government should ensure an adequate annual budget for project road maintenance. Given the recent positive strides of the government in putting in place a new system that should lead to a more timely predictable provision of maintenance financing in step with pavement deterioration (para. 31), the outlook for the future maintenance of the project assets is positive.

IV. OTHER ASSESSMENTS

A. Impact

1. Impact on Institutions

49. The project included an accompanying TA on Strengthening the Maintenance Planning and Management Capabilities at MPWT. Paras. 63–64 provide details of this TA. The TA contributed to the institution-building activities of MPWT. It achieved its main outputs in terms of developing a road maintenance management system for MPWT and establishing a 10-year maintenance program and road rehabilitation strategy. The impact of the TA is expected to be significant.

50. The project introduced international best practices in the form of better project implementation.[20] In terms of the private sector, the project contributed to the development of the contracting industry in the region wherein local contractors learned new techniques from international ones.

2. Socioeconomic Impact

51. The PCR assesses the socioeconomic impact of the project to have been significant, with the completed project roads having contributed to the provision of reliable all-weather access to and within their areas of influence, and between centers of economic activity within the country such as Phnom Penh and Siem Reap. The PPER mission undertook an assessment of socioeconomic and poverty reduction impacts of the project, which included site visits, interviews with poor households, and a rapid socioeconomic survey. The findings are in line with the findings in the project's benefit and monitoring evaluation report and those reported in the PCR that poor beneficiaries have generally not yet benefited to the extent anticipated at project appraisal. Details concerning the socioeconomic and poverty reduction impacts of the project are in Appendix 7.

52. The project is on track to achieve its envisaged impact of increasing growth in gross domestic product (GDP) in the project area. Since 1999, Cambodia has made very significant progress in term of economic development. Over 1999–2008, GDP grew at an average of 7.3% per year. However, the extent to which GDP growth and increase in rural incomes could be attributed to the project; is difficult to ascertain. Economic activities in the rural economy picked up, with the agriculture sector's share of GDP increasing from 1.2% in 1996 to 16.6% in 2005. However, Cambodia remains poor. Gross national product per capita was $490 in 2006, which was much lower than the Southeast Asian countries' average of $2,168.

[20] For example, the use of international competitive bidding for the civil works contracts exposed the MPWT, as well as local contractors, to international standards for better access to advanced technologies.

53. The project is also on track to achieve its envisaged impact of improving connectivity between Phnom Penh and cities in the project provinces, as well as improving mobility of goods and people. The project has contributed to transport connectivity in Cambodia and the reduction in land transport costs has expanded the nation's mobility. Before the project, there was limited mobility, with a proportionately larger demand for air transportation for long-distance travel, because road conditions were very poor. After the project, passengers and goods transporters could easily use land transportation and the increase in road traffic has greatly offset the decline in air traffic.

54. A summary resettlement plan, approved at appraisal, estimated that approximately 2,207 households would need to be resettled, and approximately 1,150 structures would be affected. By project completion, the number of project-affected households was reduced by 14% to 1,905, due partly to the reduction of the road corridor to minimize the number of affected persons (APs) and partly to the reduced length of the restored roads from 577 km envisaged at appraisal to only 405 km at completion. By contrast, the overall amount of compensation increased by 180% from $710,000 to nearly $2 million.

55. The PPER mission undertook a detailed assessment of the land acquisition and resettlement activities under the project, which included site visits, interviews with AP households and a rapid AP survey. A number of issues were identified, including the following: (i) the main reasons why the number of AP households was underestimated were due to a change in the definition of the road right-of-way, and poor quality of the design and measurement survey and resettlement action plan; (ii) compensation and entitlements paid to APs were in some cases not fully in line with the resettlement action plan; (iii) in some cases there appears to have been insufficient attention paid to income restoration and vulnerable APs; (iv) there was an apparent lack of transparency in the application of the grievance procedures; (v) the premature termination of the independent external monitor for resettlement appears to have been a factor in the poor resettlement implementation; and (vi) there appears to have been insufficient public consultation and participation in the resettlement process. Details on resettlement and land acquisition issues are provided in Appendix 3.

56. The PCR notes that an independent nongovernment organization (NGO) contacted ADB in 2003 regarding an estimated 303 AP households that had not been compensated in accordance with the resettlement action plan. In 2005, the government and ADB agreed to undertake a resettlement audit to fully investigate the allegations. A draft resettlement audit report was finally produced in October 2008 and finalized in mid-2009. The audit report's recommendations were being considered for implementation by the government, as of October 2009.

3. Environmental Impact

57. An IEE during project preparation concluded that the environmental impacts arising from the project during construction and operation due to the work being undertaken on the existing alignment would be minor. The civil works contract documents included environmental impact mitigation measures that contractors were to implement during construction. The PCR notes that the majority of civil works contractors did not implement these mitigation measures fully, although some improvements were observed following the recommendations of ADB review missions. The PPER mission discussed this noncompliance with MPWT and other officials and found that the actions of the contractors did not result in any significant long-term adverse environmental impacts.

4. Road Traffic Safety Impact

58. The project is not likely to achieve the envisaged impact of improved road safety in the short to medium term, due mainly to increased vehicle speeds and traffic growth on the project roads. Accident data are not fully reliable in Cambodia, but provisional data indicate that, although accident rates have improved slightly, death rates on the three roads as a whole have increased since their upgrading. Of the three national roads, NR5 has the most serious traffic safety problem, with both accidents and deaths increasing markedly over 2006–2008, while NR6 saw some improvements in accident and death rates over the same period. To counter this trend, MPWT informed the PPER mission that traffic awareness campaigns were being undertaken in villages, schools, etc., to inform people about the dangers of crossing the roads. Appendix 4 provides a quick overview of traffic safety in the project area.

5. Overall Impact Assessment

59. Overall the impact of the project is assessed as *moderate*. On the positive side, there has been significant institution-building impact on MPWT through the associated TA, GDP has grown strongly in the project area and connectivity between Phnom Penh and the cities in the project provinces has been improved. Less positive impacts include the problems encountered with resettlement implementation, compliance with environmental mitigation measures, and the unlikelihood that the envisaged impact of improved road safety could be achieved in the short to medium term.

B. ADB Performance

60. ADB's performance is rated *satisfactory*. From fact-finding to Board approval, the loan was processed over nearly 2.5 years due to the prevailing political unrest. Despite this long and interrupted period, loan processing resulted in generally good project design. During implementation, ADB gave adequate attention to the project through 13 project administration missions or about 2 missions per year. These included nine review missions, which dealt with several key issues on environment, resettlement, and timely disbursement of counterpart funds. The project team's efforts to avoid cost overruns following the unexpected currency fluctuations that affected civil works prices were notable. However, the PPER mission concurs with the PCR's finding that ADB's investigation of resettlement issues was not thorough throughout implementation of the project.

61. The PPER mission sought the executing agency's views on ADB performance, and MPWT staff indicated that they were generally satisfied. One issue of concern that they cited as a factor hindering implementation was the frequent turnover of project team leader. The PCR notes that ADB had five project officers involved during project implementation and suggests that ADB change project team leaders less frequently to improve continuity during implementation. IED concurs with this statement.

C. Borrower Performance

62. The borrower's performance is rated as *less than satisfactory*. As mentioned in paras. 28–29, the government in some cases did not comply or only partly complied with key loan covenants. Two additional issues that detracted from better performance were delays in contract payments and outstanding resettlement issues. Government counterpart payments to civil works contractors were sometimes delayed due to quantities exceeding the bill of quantities and to delays in agreements on price adjustment indexes. For the initial payments, MPWT's

delayed agreement on the source of indexes for price adjustments caused delays, though this was resolved later. With respect to resettlement issues, a resettlement audit was recently completed in mid-2009 to address complaints by an NGO that the resettlement provisions in the loan agreement were not complied with.

D. Technical Assistance

63. The attached TA on Strengthening the Maintenance Planning and Management Capabilities at MPWT (para. 3) was designed to strengthen the capabilities of MPWT to plan, manage, and implement the maintenance necessary to protect the investments made under the project. The technical assistance completion report (TCR)[21] rates it *highly successful* at completion. The TCR considers the TA highly relevant, efficacious, efficient, and highly sustainable. The performance of ADB and MPWT is rated *satisfactory* by the TCR. One success factor cited by the TCR is the project's innovative use of global positioning system technology to measure travel speed on roads and to quantify road conditions. The TCR recommends that (i) ADB missions should follow up on carrying out loan covenants on road network operations and maintenance under other ADB loans, and (ii) ADB should assist the government in training local contractors and government officials in the planning and execution of contract-based routine road maintenance works through another TA.

64. The PPER mission discussions with MPWT generally corroborated the findings of the TCR. The main output of the TA, the Road Maintenance Management System, has been adopted and formally developed within MPWT as the guiding procedure for planning and prioritization for maintenance of all national and provincial highways under MPWT administration. Other TA outputs, including the road restoration strategy in the 10-year road maintenance program, are also considered very useful and of high quality. The PPER mission confirmed that the TCR's first recommendation on carrying out maintenance-related covenants under other ADB loans has been followed up in subsequent projects. The TCR's second recommendation is being pursued under the Road Asset Management Project, which is using private contractors for all civil works.

V. ISSUES, LESSONS, AND FOLLOW-UP ACTIONS

A. Issues

65. The project was the first ADB road project in Cambodia to include weighbridges and vehicle monitoring equipment. This was in line with ADB's Cambodia road sector strategy's emphasis on improving traffic safety. The subsequent cancellation of the equipment coupled with generally lax enforcement of vehicle overloading rules detracted from efforts to improve road maintenance. Enforcement can be improved with support for vehicle monitoring, use of weighbridges, and levying of fines.

66. Serious resettlement problems were encountered during project implementation. As noted in para. 28, the covenant on ensuring that all persons affected by the acquisition of land required for the project were compensated and resettled in accordance with the compensation and resettlement plan was only partly complied with. Moreover, as noted in para. 46, these problems contributed to the long implementation delays. The PCR provides several lessons from resettlement, including the need to (i) update the detailed resettlement plan after a

[21] ADB. 2003. *Technical Assistance Completion Report: Strengthening the Maintenance Planning and Management Capabilities at Ministry of Public Works and Transport (Cambodia) (TA 3257-CAM)*. Manila.

measurement survey to determine that provisions and cost adjustments are adequate, (ii) monitor resettlement more closely and submit monitoring reports on time, (iii) establish systematic data collection requirements, and (iv) supervise resettlement more effectively to stay informed of its progress and to ensure that it complies with the resettlement plan. These lessons are reconfirmed by the PPER mission. Six additional issues identified by the PPER mission are mentioned in para. 55 and discussed in detail in Appendix 3.

B. Lessons

67. As noted in para. 58, the project is not likely to achieve in the short to medium term the envisaged impact of improved road safety. One way in which the impact of the project could be enhanced is for the government to institute a vigorous regime of traffic law enforcement. Another way is for the government to analyze the main reasons for traffic accidents (e.g., unskilled drivers and road structures without sufficient facilities for pedestrians and bicycles, etc.) and undertake necessary measures to reduce such accidents.

68. As noted in para. 40, the length of roads rehabilitated was reduced by almost one-third (from 577 km to 405 km) due to the cancellation of some of the contracts that were transferred to the EFRP after the floods in 2000. This flexible approach allowed the more seriously affected road segments of the NR5 and NR6 to be rehabilitated under ADB's quick-disbursing emergency lending modality, thus quickly alleviating the more serious transport bottlenecks along both national roads. This is a good example of the judicious use of lending modalities to maximize development impact.

69. There is a need to carefully evaluate the relative performance, cost effectiveness, and suitability of low cost double bitumen road pavement design and standard asphalt concrete type road pavement to guide future projects in Cambodia in particular and the region in general.

C. Follow-Up Actions

70. Based on the evaluation findings, two follow-up actions are proposed for government consideration (Table 3).

Table 3: Follow-Up Actions

Actions		Responsibility	Time Frame
1.	**Road safety**. Follow up with MPWT on the replacement of traffic signs and provision of missing road furniture on NR7. (para. 22 and Appendix 4)	SERD	End of 2010
2.	**Resettlement:** Ensure that the recommendations of the resettlement audit report are implemented. (para. 55)	SERD	End of 2010

MPWT = Ministry of Public Works and Transport, NR = national road, SERD = Southeast Asia Department.

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REVISED SUMMARY DESIGN AND MONITORING FRAMEWORK SHOWING PROJECT ACHIEVEMENTS AGAINST INTENDED IMPACTS, OUTCOME, AND OUTPUTS
(Prepared by Independent Evaluation Mission)

Design Summary[a]	Performance Indicators/Targets[b]	Assessment	Project Achievements
Impact: Improve welfare and promote economic growth in project impact areas	Increased community benefits through improved road safety on the three national roads (NRs)	Less likely to be achieved	Accident data are not fully reliable in Cambodia, but provisional data indicate that, although accident rates have improved slightly, death rates on the three roads as a whole have deteriorated since the upgrading of the roads. Of the three national roads, NR5 has the most serious traffic safety problem, with both accidents and deaths increasing markedly over the period 2006–2008, while NR6 saw some improvement in accident and death rates over the same period. Appendix 4 provides a quick overview of traffic safety in the project area.
	Gross domestic product (GDP) growth rate in the project area increased, especially in rural areas[c]	Achievable	Since 1999, Cambodia has made very significant progress in term of economic development. Over 1999–2008, GDP grew at an average of 7.3% per year. Economic activities in the rural economy picked up, with the agriculture sector's share of GDP increasing from 1.2% in 1996 to 16.6% in 2005. However, Cambodia remains poor. Gross national product per capita was $490 in 2006, which was much lower than the Southeast Asian countries' average of $2,168.
	Improved connectivity between Phnom Penh and cities in the project provinces, as well as improved mobility of goods and people[c]	Achievable	The project has contributed to transport connectivity in Cambodia and the reduction in land transport costs has expanded the nation's mobility. Before the Project, there was limited mobility, with a proportionately larger demand for air transportation for long-distance travel, because road conditions were very poor. After the Project, passengers and goods transporters could easily use land transportation and the increase in road traffic has greatly offset the decline in air traffic.
	Improved road safety	Partly achieved	Taking together the accident and death data, traffic safety on the three national roads has been mixed due mainly to increased vehicle speeds and traffic growth on the project roads. Although accident data are not fully reliable in Cambodia, provisional data indicate that accident rates have improved slightly. Death rates on the three roads as a whole have increased since their upgrading. To counter this trend, MPWT undertook traffic awareness campaigns to inform people about the dangers of crossing the roads.
Outcome: Road traffic efficiency improved in project impact areas	By 2005, traffic volumes increased by 40% on NR5, 300% on NR6, and 70% on NR7	Achieved	Traffic volumes increased by 300% on NR5, more than 2,000% on NR6, and 550% on NR7 between 1997 and 2005.
	Average vehicle operating costs (VOC) decreased by 25%	Achieved	Road users benefited from a reduction in VOC by an average of 35%.
	Reduced vehicle travel times on the three NRs[c]	Achieved	The Project Completion Report (PCR) indicates that average travel times from villages to commune centers, district centers, provincial centers, national roads, Phnom Penh, and border crossings with Viet Nam and Thailand have declined significantly, with reduction ranging from 9% to 41%. For NR5, average vehicle travel time from Phnom Penh to Poipet, on the border with Thailand, dropped from 9–16 hours before the project to 5–8 hours at evaluation. For NR6, average vehicle travel time from Phnom Penh to Siem Reap dropped from 8–10 hours before the project to 4–7 hours at evaluation.

Design Summary[a]	Performance Indicators/Targets[b]	Assessment	Project Achievements
Outputs: 1. National road improvements	Improve 260 kilometers (km) of NR5 from Phnom Penh to Pursat to Battambang	Partly achieved	The project rehabilitated 130 km of NR5 from Pursat to Battambang. Fewer kilometers were rehabilitated than envisaged at appraisal, as the 130-km segment from Phnom Penh to Pursat was transferred to Loan 1824-CAM (SF): Emergency Flood Rehabilitation Project due to floods in 2000.
	Improve 112 km of NR6 from Kampong Thmor to Siem Reap provincial border	Partly achieved	The project rehabilitated 70 km of NR6 from Kampong Thma to the Siem Reap provincial border. Fewer kilometers were rehabilitated than envisaged at appraisal, as the 42-km segment from Kampong Thmor to Kampong Thma was transferred to Loan 1824-CAM (SF): Emergency Flood Rehabilitation Project due to floods in 2000.
	Improve 205 km of NR7 from Tonle Bet to Kratie	Fully achieved	The project rehabilitated 205 km of NR7 from Tonle Bet, Chhob Commune, Kampong Cham Province to Kratie.
	No unexploded ordnance contamination within project road reservation by April 2003	Fully achieved	The PCR indicates that all unexploded ordnance was cleared, but neglects to mention whether or not this was accomplished before April 2003. Given that unexploded ordnance clearance was not flagged as an outstanding issue in any of the project back-to-office reports from 2002 to 2006, it can be concluded that this was the case.
2. Bridge improvements	Rehabilitation or replacement of bridges and culverts along the three national roads [c]	Fully achieved	Design changes substantially increased the outputs of this component from what was envisaged at the time of appraisal. The main features of the bridges were the following: (i) construction of 30 large bridges, of which 15 were on NR5, 11 on NR6, and 4 on NR7; (ii) construction or rehabilitation of 81 medium-sized and small bridges, of which 47 were on NR5, 11 on NR6, and 23 on NR7; (iii) rehabilitation of 183 box culverts; and (iv) rehabilitation of 8.1 km of pipe culverts.
3. Provision of equipment	Procurement of communication equipment, laboratory equipment, weighbridges and vehicle monitoring equipment, and traffic signs and roadside furniture [c]	Partly achieved	A range of communication and laboratory equipment, traffic signs, and roadside furniture was purchased for the project. However, the weighbridges and vehicle monitoring equipment were not purchased, owing to cost overruns on the road improvement component. A subsequent project, Loan 1945-CAM (SF): Greater Mekong Subregion Road Improvement Project, financed three weigh stations on NR5 and one each on NR6 and NR7.

GDP = gross domestic product, km = kilometer, NR = national road, PCR = project completion report, VOC = vehicle operating costs.

[a] The design summary statements have been modified in accordance with ADB's *Guidelines for Preparing a Design and Monitoring Framework* and to reflect design summaries included in design and monitoring frameworks (DMFs) of reports and recommendations of the President (RRPs) of recent road projects.

[b] Performance indicators/targets are by and large the same as those included in the RRP's DMF. However, new indicators/targets have been added and other indicators/targets revised in order to better measure the attainment of the design summary statements.

[c] Performance indicator added at evaluation stage in order to better measure the attainment of design summary statement.

Sources: ADB. 1999. *Report and Recommendation of the President to the Board of Directors: Proposed Loan and Technical Assistance Grant to the Kingdom of Cambodia for the Primary Roads Restoration Project*. Manila; ADB. 2006. *Project Completion Report: Primary Roads Restoration Project in Cambodia*. (Loan 1697-CAM[SF]). Manila.

APPRAISAL AND ACTUAL COSTS AND FINANCING

($ million)

Project Component	Appraisal			Actual		
	Foreign	Local	Total	Foreign	Local	Total
A. Base Cost						
1. Civil Works for Roads and Bridges	50.80	12.70	63.50	62.34	13.05	75.39
2. Resettlement, Utility Relocation, and UXO Clearance	0.00	2.50	2.50	0.00	2.23	2.23
3. Equipment	3.50	0.00	3.50	0.71	0.00	0.71
3. Construction Supervision	3.70	1.00	4.70	5.04	0.61	5.65
4. Training for MPWT	0.20	0.10	0.30	0.01	0.00	0.01
5. Incremental Administrative Expenses	0.00	1.00	1.00	0.20	0.67	0.87
Subtotal (A)	**58.20**	**17.30**	**75.50**	**68.30**	**16.56**	**84.86**
B. Contingencies						
1. Physical Contingencies	4.40	1.10	5.50	0.00	0.00	0.00
2. Price Escalation	3.10	2.00	5.10	0.00	0.00	0.00
Subtotal (B)	**7.50**	**3.10**	**10.60**	**0.00**	**0.00**	**0.00**
C. Interest During Construction	**2.00**	**0.00**	**2.00**	**2.10**	**0.00**	**2.10**
Total (A+B+C)	**67.70**	**20.40**	**88.10**	**70.40**	**16.56**	**86.96**

MPWT = Ministry of Public Works and Transport, UXO = unexploded ordnance.
Source: Project completion report.

LAND ACQUISITION AND RESETTLEMENT

A. Background

1. The goal of the Asian Development Bank (ADB) Primary Roads Restoration Project in Cambodia was to address the serious constraint to the economic development and physical integration of the country stemming from the severe damage to the primary road networks over 30 years of war and political instability. The original main objective of the project was to restore and to improve 577 kilometers (km) of the national road network, including segments of national road (NR) 5, NR6, and NR7. Although the project was closed on 4 August 2006, the project completion report (PCR)[1] stated that the government had not complied fully with the covenant on resettlement and at the time of the PCR a resettlement audit was still ongoing. The purpose of this appendix is to review the scope of land acquisition and resettlement, resettlement cost and compensation rates, and resettlement implementation issues under the project. It will also present the results of the rapid resettlement and socioeconomic survey undertaken during the Project Performance Evaluation Report (PPER) mission.

2. The loan agreement for the project was signed in November 1999, and was scheduled to be effective in February 2000, but it was twice extended and became effective 7 months later on 30 June 2000. One of the main conditions for loan effectiveness was that the government would submit a final resettlement action plan (RAP) acceptable to ADB. Subsequently, the government, represented by the Inter-ministerial Resettlement Committee (IRC), conducted a detail measurement survey (DMS) from 30 March to 10 May 2000, and based on the result of this DMS a final RAP[2] was prepared. The RAP was submitted to ADB and accepted in June 2000, after which ADB immediately declared loan effectiveness. The reason that the loan agreement required the government to submit the RAP was that the report and recommendation of the President (RRP)[3] recommended that "the final determination of the structures, land, and people affected will be undertaken during the DMS, which will be undertaken prior to the commencement of civil works on each road."

3. According to the PCR, several ADB missions during loan negotiations and project implementation emphasized the importance of following and adhering to ADB's policy on Involuntary Resettlement[4] and reported that resettlement implementation progressed smoothly. However, in October 2003, a complaint was filed by a local nongovernment organization (NGO), entitled the NGO Forum of Cambodia, alleging that some project affected persons (APs) had not received compensation. After investigation, the government determined that the allegations were valid, and the government and ADB reached an agreement to allow a resettlement audit for the project to be carried out from July to September 2004. Unfortunately, the audit did not commence until May 2005. The audit team began its work on 17 May 2005 and completed its field investigations in mid-April 2006. A draft resettlement audit report was finally produced in October 2008 and finalized in mid-2009. The long delays in finalizing the resettlement audit are partly attributable to lack of coordination between the audit consultant and IRC.

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[1] ADB. 2006. *Project Completion Report on the Primary Roads Restoration Project (Loan 1697-CAM)*. Manila.
[2] IRC. 2000. *Resettlement Action Plan including Detail Measurement Survey*. Phnom Penh, Cambodia.
[3] The RRP included an appendix (Appendix 9) that summarized a resettlement plan, called the Summary Resettlement Action Plan (SRAP). The SRAP in the RRP was prepared based on the Preliminary Resettlement Plan (PRP); and the PRP was prepared by the technical assistance (TA) consultant during the project preparatory TA (TA 2722-CAM) and included in the TA's report, which was done in September 1998. The PRP was included in the *Initial Environmental Examination and Social Report* project preparatory TA for the Transport Networks Improvement Project (TA 2722-CAM), SMEC International Pty. Ltd., September 1998.
[4] ADB. 1995. *Involuntary Resettlement*. Manila.

B. Right of Way

4. At the time of appraisal, the government claimed a 50-meter (m) right-of-way (ROW) (i.e., 25 m either side of the road centerline) for all national roads as a statutory requirement, and the RRP reported that the resettlement impact survey for all three project roads was carried out based on such a 50-m ROW. Later, the RAP reported that a corridor of impact (COI)[5] of only 30 m was adopted for the limit of the DMS (15 m either side of road centerline) in order to minimize the impact. However, according to a proposal made by IRC to the Prime Minister for securing the resettlement compensation budget on 10 August 2000 and approved on the same day, the DMS was actually undertaken consistently only on a 25-m COI (12.5 m each side of the existing centerline). Thus, the effective ROW was reduced from 50 m to only a 25-m COI during implementation, although the RAP misreported this as a 30-m COI. As a result of this change, the number of APs was reduced vis-à-vis what was envisaged at appraisal (para. 6).

C. Scope of Land Acquisition and Resettlement

5. At appraisal, the scope of land acquisition and resettlement envisaged that, with a 50-m ROW, 135 hectares would be required temporarily, and 1,150 structures and 2,207 households consisting of 11,474 people would be affected by the project. No land was expected to be acquired permanently, due to the fact that all the land required within the COI was also within the ROW. Figures for actual land acquisition are not available due to the absence of a final report on the implementation of the RAP or of a final reconciliation record of the land compensation paid. However, this is not a significant issue, due to the roads having been built on existing alignments and the RAP having stated that the APs were not eligible for compensation for land occupied in the ROW. All APs who were interviewed during the PPER mission confirmed that their affected lands were not compensated, but they indicated that they were still able to grow crops, plant trees, and rebuild their structures adjacent to the new road shoulder (12.5 m from the road center line for houses or stalls).[6]

6. The main controversial issue is the compensation payments for affected structures and other entitlements to the APs. By project completion, the number of AP households was reduced by 14% from 2,207 to 1,905 due partly to the reduction of the COI to minimize the number of AP and partly to the reduced length of the restored roads from 577 km envisaged at appraisal to only 405 km at completion. By contrast, the overall amount of compensation increased by 180%; the compensation paid to the APs increased by 89%; and, surprisingly, d incremental cost associated with the implementation of resettlement increased by 645%. Table A3.1 shows the variances of resettlement impacts and resettlement costs between the resettlement plan at appraisal and the actual resettlement implementation, as reported in the PCR and the reconciliation data in Table A3.2.

[5] The COI is the area needed for road construction activity, which is to be cleared of all people and structures.

[6] ADB. 1999. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and Technical Assistance grant to the Kingdom of Cambodia for the Primary Roads Restoration Project.* Manila. Para. 64 reported that an agreement was also reached between ADB and the government that people whose structures were to be affected would be permitted to rebuild their structures adjacent to the road, within the ROW but generally outside the 5-m clearance distance, once the road works in the area were completed.

Table A3.1: Resettlement Impacts and Total Cost: Variances and Causes

Impact	Unit	RRP (Nov. 1999)	Actual (Sep. 2007)	Variance (%)	Cause
Permanent land acquisition	ha	0	—		Decrease of project-affected people, partly due to (i) reducing COI, and (ii) reducing the length of project roads
Temporary land acquisition	ha	135	—		
Total population affected:	persons	11,474	9,525	(17%)	
- Total affected households	households	2,207	1,905	(14%)	
Affected housing, vendor stalls structures (in whole or in part):	number	1,150	—		
- Dwellers	%	2%	—		
- Business and residence	%	7%	—		
- Temporary vendor stall	%	91%	—		
Estimated cost of compensation and resettlement implementation:	$	710,000	1,984,814.58	180%	
- Compensation affected people	$	594,000	1,121,019.71	89%	
- Implementation of RAP	$	116,000	863,794.87	645%	

( ) = negative, COI = corridor of impact, ha = hectare, RAP = resettlement action plan, RRP = report and recommendation of the President.
Sources: RRP (August 1999), Project Completion Report (November 2006).

D. Resettlement Costs and Compensation Rates

7. In the absence of reconciliation data from the government, the PPER mission collected and compared data from the PCR with data from the Resettlement Department (RD) of the Ministry of Economy and Finance on the number of AP households and resettlement compensation. Table A3.2 shows that the actual compensation paid to APs was the sum of the amount quoted in the PCR ($1,966,494.04) plus an additional amount ($18,320.54) provided to APs in September 2007 by RD in response to the complaints made by the NGO Forum and the ADB resettlement review mission of 25–27 April 2007. The total compensation paid was nearly $2 million, and the total number of APs was 1,905.

Table A3.2: Reconciliation of Summary of Compensation Paid to Affected Persons

Province	Data of PCR		Data Provided by RD/MEF for Recompensation as of Sep. 2007		
	Number of AP Households	Compensation ($)	Number of AP Households	Compensation Paid ($)	Total ($)
Pursat	380	148,710.01	4	160.00	
Battambang	107	16,375.53	167	8,134.54	
Kampong Thom	205	145,566.35	14	2,584.75	
Kampong Cham	699	529,817.61	16	6,513.25	
Kratie	188	46,234.87	4	928.00	
Banteay Meanchey	121	215,994.80	-	-	
Subtotal for compensation cost	**1,700**	**1,102,699.17**	**205**	**18,320.54**	**1,121,019.71**
Incremental Costs		837,123.40		-	837,123.40
NGO COMFREL (external monitor)		26,671.47		-	26,671.47
Subtotal for RAP implementation					**863,794.87**
Total	**1,700**	**1,966,494.04**	**205**	**18,320.54**	**1,984,814.58**
Total Number AP Households as of Sep 2007					**1,905**

AP = affected person, COMFREL = Committee for Free and Fair Election, NGO = nongovernment organization, PCR = project completion report, RAP = resettlement action plan, RD/MEF = Resettlement Department of the Ministry of Economy and Finance.
Sources: Project Completion Report (November 2006). Resettlement Department of the Ministry of Economy and Finance.

8. Table A3.3 compares the actual resettlement impacts with those envisaged in the RAP. Total actual resettlement costs were $1.98 million, which was 71% more than the $1.16 million estimated in the RAP. However, the actual compensation cost paid to AP was $1.12 million, an increase of only 55% over the $724,000 estimate in the RAP. The difference is accounted for by the large increase in incremental resettlement cost incurred by IRC. These costs totaled $725,000, an increase of 327% over the $200,000 estimated in the RAP. The main reasons for the large increase in incremental resettlement costs is the lack of necessary experience to undertake resettlement in the Ministry of Public Works and Transport and IRC, which led to inefficient and slow resettlement implementation. A secondary contributing factor was the non-replacement of the independent external monitoring agency for the DMS survey, which gave a free hand to IRC to undertake the resettlement without proper independent oversight.

Table A3.3: RAP and Implementation of RAP

Impact	Unit	RAP (June 2000)	Actual (Sep 2007)	Variance (%)	Remarks
Permanent land acquisition	ha	0	-		Increase of resettlement cost due to un-accountability and inefficiency of the resettlement implementation.
Temporary land acquisition	ha	135	-		
Total population affected	persons	12,868	9,525	(26%)	
Total affected households	households	2,261[a]	1,905	(16%)	
Vulnerable Group:					
(i) Households who are: Female, Disable and Earning income below $10 per month	households	646	641[b]		
(II) Landless households	households	427	-		
Structure Affected:					
(i) Affected housing/vender stalls (in whole or in part)	number	1,531	1,213	(21%)	
Area demolition	m^2	28,271.53	-		
(ii) Fuel pumping station	number	7	-		
(iii) Small Market area	number	2	-		
Area demolition	m^2	1,505	-		
(iv) Other items of structures	number	188[c]	-		
(v) Trees and perennial crops	number	2600	0		
Total cost of compensation and resettlement implementation:	**$**	**1,157,928.73**	**1,984,814.58**	**71%**	
(i) Compensation affected people	$	724,690.73	1,121,019.71	55%	
(ii) Incremental cost by IRC	$	196,250.00	837,123.40	327%	
(iii) Incremental cost by External Monitor (COMFREL)	$	44,000.00	26,671.47	(39%)	
(iv) Contingencies	$	192,988.00			

( ) = negative, COMFREL = Committee for Free and Fair Election, ha = hectare, IRC = Inter-ministerial Resettlement Committee, m^2 = square meter, PCR = project completion report, RAP = resettlement action plan.

[a] Data in a table of final RAP (Detail Measurement Survey result) showed 2,261 AP households, but final RAP itself misquoted as 2,451 AP households.

[b] This number is counted from the Detail Measurement Survey (DMS) master list. However, it should be noted that on the DMS master list sheets, the footnote was dated May 2000, so it seemed the list was produced for the preparation of the final RAP. However, the final RAP itself has no attachment of the DMS master list. The DMS master list was obtained from an annex of the Final Draft Resettlement Audit Report of October 2008 and has no record of the compensation and $300 for resettlement plot development. So it would appear that an incomplete list was given to the resettlement audit team.

[c] Data in a table of final RAP (Detail Measurement Survey result) showed 188 items, but the PCR misquoted as 2,331 items. (Those are kiosks, fences, water wells, gates, and access bridges but none of grave consequence).

Sources: Resettlement Action Plan including Detail Measurement Survey (or final RAP of TA: No. 2722-CAM) (June 2000); project completion report (November 2006).

E. Resettlement and Land Acquisition Issues

9. The PPER mission identified the following resettlement and land acquisition issues:

(i) **Government move from ROW to COI reduced the number of APs.** As mentioned in paras. 4 and 6, the government changed from its statutory ROW of 50 m to a COI of 25 m at the time of preparation of the RAP. This contributed to the reduction in the number of AP from 2,207 households to 1,015 and appears to have been inconsistent with what was envisaged in the Summary Resettlement Plan at the time of appraisal.

(ii) **Poor quality of DMS and RAP led to misidentification of AP.** At the time of project approval, government agencies were unfamiliar with ADB's Involuntary Resettlement Policy. Government staff had little or no experience and had not yet benefited from training on resettlement implementation and monitoring. Although the RAP prepared by the technical assistance consultant complied with ADB's Involuntary Resettlement Policy, it had a number of defects. First, it contained a minor misstatement to the effect that the COI was 30 m, whereas it actually was 25 m. Second, the number of affected households and assets appear to not have been properly recorded during the DMS and RAP preparation. No pretesting of the DMS field questionnaire appears to have been undertaken, which calls into question the quality of DMS work undertaken. As evidence, 303 AP households were missed out in the RAP, of which 301 were identified by the NGO Forum of Cambodia and 2 were identified by IRC, itself. This error was partially rectified in 2007 when 205 of these households were redefined as made of eligible APs. However, 98 households are still uncompensated because of their being labeled as ineligible APs by the local authorities. These 98 AP households are along NR7 in Kampong Cham Province (Memot Commune) and Kratie Province (Sre-Cha Commune). The PPER mission socioeconomic consultant interviewed five AP households who were still identified as ineligible and concluded that they were eligible APs according to the RAP. The consultant also interviewed the village chief and his deputy of Machine Teuk Village, Memot Commune, who was a former member of the local authority working with IRC, and discovered that they were misinformed about the definition of an eligible/ineligible APs.

(iii) **Compensation and entitlement not fully in line with RAP**. In the RAP, eligible APs are entitled to cash compensation for eligible affected assets. The PPER mission socioeconomic consultant interviewed a sample of AP households and found that in many cases cash compensation had not been paid to APs for removal of trees and other affected assets located on the ROW. Some APs received compensation, but it was less than the agreed-upon formula specified in the RAP. As an example, an AP head of household who lived on NR6 at the junction of ADB's road segment with that financed by the World Bank Road Rehabilitation Project indicated during a field interview that she received only half the compensation for affected assets under ADB's project as compared with the compensation paid under the World Bank project. Moreover, she indicated that she did not receive any compensation for removal of trees on the ADB segment.

(iv) **Lack of income restoration and economic rehabilitation**. During the PPER mission's field interview, the socioeconomic consultant interviewed five AP households who had experienced negative impacts due to the project. All five AP households had lost their entire land and thus were entitled to resettle at a new relocation site with a cash income restoration allowance of $300. However, no income restoration allowances were provided to these landless households at the relocation sites. As an example, one poor AP household along NR7 in Kratie

Province did not receive any income restoration compensation. They were obliged to spend their own capital to build their new house, so they had insufficient capital to reopen their business. At present, they work as unskilled laborers during harvest periods and collect wood in the forest to survive.

(v) **Insufficient consideration of vulnerable groups**. Vulnerable AP households were not welldefined in the RAP and received only a flat-rate allowance. AP households that have female and/or disabled heads were entitled to receive an extra $20 allowance, but this allowance in some cases did not improve their quality of life. As an example, one AP household on NR6 headed by a widowed lady was relocated from their former land along NR6 to a small village road about 500 m away from their land. The new site was much less advantageous than the previous site, and the widow could not reopen the small shop that she had had before the project.

(vi) **Lack of transparency of grievance procedures.** Local grievance redress committees were established with IRC staff as members. This placed IRC in the dual role of being both the resettlement implementation agency as well as part of the grievance structure dealing with complaints. Under the circumstances, it appears that many of the verbal complaints received by the committees were ignored. In the interest of fairness and transparency, IRC staff should not have been represented on these committees.[7]

(vii) **External monitor of the project was prematurely terminated**. External monitoring and evaluation is one of the main ways for APs to raise their voices publicly. A contract for external monitoring and evaluation of the project was awarded to the NGO, Committee for Free and Fair Election (COMFREL), but unfortunately the contract was prematurely terminated before the end of the compensation process. IRC staff did not recall the reason for the contract termination, but in a meeting with COMFREL staff during the PPER mission it was explained that the contract termination was due to two reasons: (i) COMFREL claims for their services were not paid expeditiously, and they did not have funds to continue the monitoring; and (ii) during the monitoring, COMFREL raised many issues and complaints, but these were not addressed by IRC. After COMFREL's contract was terminated, there was no attempt made to recruit a new independent external monitor.

(viii) **Poor public consultation and participation.** The RAP required that full information about the project and its impacts should be disseminated to APs in a transparent manner. In practice, this consultation and dissemination were insufficient. APs and communities were invited to a public meeting once before the compensation payments were made and given general information about the project, its impact, and compensation rates. However, it appears that in many cases detailed information about final compensation rates, entitlements, and grievance procedures was not provided to APs. Of the 32 AP heads of household covered by the PPER mission's rapid survey (para. 10 and Table A3.4), only 25 (78%) confirmed that they were invited to attend a public meeting during DMS activities and were given a booklet on resettlement and compensation.

[7] At beginning of the project implementation, a proposal was put forth that the Ministry of Public Works and Transport be named as the only agency for resettlement implementation, and IRC should be involved only in monitoring. This proposal was later rejected.

F. Rapid Affected Person Survey

10. A rapid survey of 32 households was undertaken to find out whether the APs had been adequately compensated. The results of the survey, presented in Table A3.4 indicate that 24 APs (75%) received full compensation cost, while 1 AP (3%) received only about half the amount, and 7 APs (22%) never received compensation.

Table A3.4: Result of PPER Mission's Rapid Resettlement Survey on Compensation to Affected Persons

Project-Affected People Status	Sampling Size (Households)	Fully Received Compensation or Recompensation		Partly Received		Did Not Receive	
		No.	%	No.	%	No.	%
APs in DMS master list	23	20	87%	1	4%	2	9%
APs in NGO complaint list	9	4	44%	0	0%	5	56%
Total	**32**	**24**	**75%**	**1**	**3%**	**7**	**22%**

AP = affected People, DMS = detail measurement survey, NGO = nongovernment organization.
Source: PPER mission's rapid resettlement and socioeconomic survey (December 2008).

TRAFFIC SAFETY IN THE PROJECT AREA

A. Traffic Accident and Death Rates

1. The national roads component of the Primary Roads Restoration Project in Cambodia financed the upgrading of three national road (NR) segments of NR5, NR6, and NR7. The project area covered by these national road segments consists of 7 provinces, 24 districts, 115 communes, and 132 villages.

2. Commune-level accident data are available from the Road Traffic Accident Victim Information System (RTAVIS)[1] for each of the areas traversed by the national road segments financed under the project. Unfortunately, RTAVIS data are not available for the period before the start of the project, so it is not possible to undertake a with-and-without project analysis. Similarly, it was not possible to construct a project counterfactual due to the difficulty of choosing "control road segments" that would be comparable to the road segments covered by the project. Nevertheless, it was possible to collect data for an analysis of traffic accident developments since the rehabilitation of the road segments. This gives an indication as to the severity of the traffic problems on the segments and whether the situation had deteriorated or ameliorated since project completion.

3. The Project Performance Evaluation Report (PPER) mission arranged with Handicap International of Belgium, which is currently responsible for RTAVIS, to secure detailed commune-level accident data tailored to each of the three road segments financed under the project. Data were collected for two indicators: number of road accidents and number of deaths. Table A4.1 shows the breakdown of the number of accidents on each of the three NR segments during 2006–2008. Overall, the statistics show that traffic accidents on NR5 and NR6were more numerous, although there was a decline in the number of accidents over the coverage period, with most of the decline occurring in 2007. Based on partial 2008 data, traffic accidents on NR5 have deteriorated strongly, whereas NR7 accidents have correspondingly ameliorated.

Table A4.1: Number of Road-Related Accidents in Project Area, 2006–2008

	Number of Accidents				Percentage Increase
Year	NR5	NR6	NR7	Total	Year-Over-Year
2006	718	1,181	575	2,474	
2007	682	986	578	2,246	(9.22)
2008[a]	892	1,011	389	2,292	2.05
Average Growth Rate of Total Accidents, 2006–2008				(3.75%)	
Average Growth Rate of NR5 Accidents, 2006–2008				11.46%	
Average Growth Rate of NR6 Accidents, 2006–2008				(7.49%)	
Average Growth Rate of NR7 Accidents, 2006–2008				(17.71%)	

NR = national road.

[a] Based on annualized data for January–September 2008.

Source: Road Traffic Accident Victim Information System.

4. Table A4.2 shows the breakdown of the number of deaths on each of the three road segments during 2006–2008. Overall, the statistics show that NR5 has the most serious problem with traffic deaths. An increase in the number of deaths over the coverage period was

[1] Ministry of Interior, Ministry of Health, Ministry of Public Works and Transport, and Handicap International (Belgium). 2008. *Cambodia Road Traffic Accident and Victim Information System (RTAVIS) Annual Report*. Phnom Penh, Cambodia.

noted, with all of the increase occurring in 2007. Based on partial 2008 data, traffic deaths on NR6 have declined strongly, whereas NR5 deaths have continued to increase.

Table A4.2: Number of Road-Related Deaths in Project Area, 2006–2008

Year	Deaths			Total	Percentage Increase Year-Over-Year
	NR5	NR6	NR7		
2006	192	172	117	481	
2007	217	236	134	587	22.04
2008[a]	224	157	123	504	(14.41)
Average Growth Rate of Total Deaths 2006–2008				2.36	
Average Growth Rate of NR5 Deaths 2006–2008				8.01	
Average Growth Rate of NR6 Deaths 2006–2008				(4.36)	
Average Growth Rate of NR7 Deaths 2006–2008				2.39	

NR = national road.
[a] Based on annualized data for January-September 2008.
Source: Road Traffic Accident Victim Information System.

5. Taking together the accident and death data, traffic safety on the three national roads has been decidedly mixed. The fact that the overall accident rate declined while the total death rate increased suggests that there may be data problems. Nevertheless, some preliminary conclusions can be drawn from the data:

(i) NR5 has serious and deteriorating accident and death rates, with the average growth of each indicator in excess of 8% per annum.
(ii) NR6 has improving accident and death rates, with the average decline of each indicator in excess of 4% per annum.
(iii) NR7 has a mixed record, with accident rates declining strongly at the same time that death rates are growing. This does not appear to be logical and may be due to data problems.

B. Traffic Safety Issues

3. To assess the effect of the project on road safety, discussions were held with the Ministry of Public Works and Transport on traffic safety. Two issues emerged:

(i) **Traffic signs.** The project completion report notes that although traffic signs were installed on all of the roads, more signs needed to be incorporated, especially warning signs on speed. This was confirmed by the PPER mission in its site investigations of NR7, which lacked traffic signs on the segment from Tonle Bet to the junction of the secondary NR73, but not on the other two national roads. The absence of such signs constitutes a hazard to both motorists and pedestrians, particularly in the vicinity of marketplaces and schools.
(ii) **Roadside furniture.** The PPER mission's site investigations of NR7 noted the absence of roadside furniture on the road, including kilometer markers, centerline markings, and side line markings. The absence of the line markings constitutes a hazard to motorists, particularly when driving at night.

ASSESSMENT OF OVERALL PERFORMANCE

Table A5.1: National Roads
(55% weighting in overall rating)

Criterion	Weight[a] (%)	Assessment	Rating Value (0–3)	Weighted Rating
1. Relevance	20	Relevant	2	0.4
2. Effectiveness	30	Effective	2	0.6
3. Efficiency	30	Efficient	2	0.6
4. Sustainability	20	Likely	2	0.4
Total	**100**			**2.0**

Table A5.2: Bridges
(30% weighting in overall rating)

Criterion	Weight[a] (%)	Assessment	Rating Value (0–3)	Weighted Rating
1. Relevance	20	Relevant	2	0.4
2. Effectiveness	30	Highly Effective	3	0.9
3. Efficiency	30	Efficient	2	0.6
4. Sustainability	20	Likely	2	0.4
Total	**100**			**2.3**

Table A5.3: Equipment Supply
(15% weighting in overall rating)

Criterion	Weight[a] (%)	Assessment	Rating Value (0–3)	Weighted Rating
1. Relevance	20	Relevant	2	0.4
2. Effectiveness	30	Less Effective	1	0.3
3. Efficiency	30	Efficient	2	0.6
4. Sustainability	20	Likely	2	0.4
Total	**100**			**1.7**

Table A5.4: Overall Rating

Criterion	Weight[a] (%)	Assessment	Rating Value (0–3)	Weighted Rating
1. Relevance	20	Relevant	2.0	0.40
2. Effectiveness	30	Effective	2.2	0.65
3. Efficiency	30	Efficient	2.0	0.60
4. Sustainability	20	Likely	2.0	0.40
Total	**100**	**Successful**		**2.05**

[a] Weighted average of rating values for each component rounded to whole numbers.
Highly successful (HS): Overall weighted average (OWA) is > 2.7. Successful (S): OWA is between 1.6 ≤ S ≤ 2.7.
Partly successful (PS): OWA is between 0.8 ≤ PS ≤ 1.6. Unsuccessful (US): OWA is < 0.8.
Source: Independent evaluation mission.

ECONOMIC REESTIMATION

A. General

1. The economic viability of the project was reevaluated with updated information on road conditions, traffic, and vehicle operating costs (VOC). The methodology followed the approach adopted at appraisal and by the project completion report (PCR) and is based on with-and-without project scenarios. The with-project case is defined by vastly improved road conditions and a maintenance regime, under which periodic and routine maintenance is carried out regularly. The without-project case is characterized by high pavement roughness and rising maintenance expenditures necessary to prevent complete failure of the road pavement. The development of pavement conditions over time, reflecting different maintenance regimes and traffic loads, is expressed in terms of the international roughness index (IRI).[1]

2. Before the project, the IRI on the project roads measured 9,000 millimeters (mm) for NR5, 11,000 mm for NR6, and 8,000 mm for NR7. The maintenance intervention under the project reduced the IRI to below 3,000 mm on all project roads. Roughness is currently at an average level of 3,500 mm. Under the without-project case, the pavement would have further deteriorated, the pace of deterioration being slowed by increasing routine maintenance expenditures. In contrast, the with-project case allows for a better balance of routine and periodic maintenance interventions, whereby the periodic interventions would reduce the pavement roughness to about the original levels. The reevaluation has assumed substantial periodic interventions.

B. Costs

3. The actual investment cost was converted to economic cost, reflecting consumption of economic resources. To this end, taxes and duties were deducted from the cost, and wages were adjusted to reflect the opportunity cost of labor, indicating the actual scarcity of labor in Cambodia. Based on these considerations, a conversion factor of 0.86 was used to convert financial to economic costs. Historical maintenance cost data were obtained from Ministry of Public Works and Transport (MPWT), whereas future data were calibrated based on anticipated traffic loads, and relationships provided by the pavement deterioration model used in the evaluation. Periodic maintenance is assumed to be carried out at 10-year intervals based on the existing and forecast traffic loads.

C. Traffic

4. The actual traffic data and traffic forecasts were reviewed and updated based on traffic counts carried out in December 2008. It was noted that the traffic assumptions of the PCR were significantly below the actual traffic counts carried out by MPWT in 2006 and by the evaluation mission in 2008. Traffic is forecast to grow by 3% from 2008 to 2010 and by 6.0% on the average over the rest of the investment period. This growth rate adopted was consistent with the forecast economic growth in Cambodia and would lead to traffic volumes exceeding 10,000 vehicles per day. Motorcycles, having a significant share in total traffic volumes on all project roads, were converted into passenger car units based on four motorcycles per one passenger car units.

[1] The IRI is used to define a characteristic of the longitudinal profile of a traveled wheel track and constitutes a standardized roughness measurement. The measurement units are meters per kilometer (m/km) or millimeters per meter (mm/m). The IRI is based on the ratio of a standard vehicle's accumulated suspension motion caused by roughness (in mm, cm, or inches) divided by the distance traveled by the vehicle during the measurement (in m or km). The IRI scale is open-ended.

D. Benefits

5. Traffic data collected through traffic counts were translated into traffic output figures in terms of vehicle-kilometers. Recalculated benefits include (i) VOC savings due to better road conditions, and higher speed; (ii) travel time savings for passengers; and (iii) cost savings due to shorter distances.

1. VOC Savings

6. The reevaluation is based on VOC relationships generated by the widely-used Highway Design and Maintenance Standards Model version IV calibrated for road and traffic conditions in Cambodia. In this regard, the project performance evaluation report (PPER) mission used the VOC figures of the recent PPER for the Phnom Penh Ho Chi Minh Highway. The VOC are assumed to increase as a result of pavement roughness.

2. Time Savings

7. Time savings are related to passengers and freight. For the reevaluation, all passengers were assumed to realize benefits from the saving in travel time. Based on travel on the Project roads, the reduction in travel time due to pavement improvements was estimated at 2.0 hours per trip. As for freight, the same reduction was assumed and applied to the value of freight estimated at $600 per ton carried. The discount rate applied was 12%. The recalculated economic internal rates of return (EIRRs) are shown in Tables A6.1–A6.4.

Table A6.1: EIRR Recalculation for NR5

($ million)

		Costs			Benefits					
	Capital	Maintenance Cost			Normal	Generated	Diverted	Time	Total	**Net**
Year	Cost	With	Without	Incremental	Traffic	Traffic	Traffic	Savings	Benefits	**Benefits**
2000	2.6								0.0	(2.6)
2001	5.1								0.0	(5.1)
2002	12.1								0.0	(12.2)
2003	13.1								0.0	(13.1)
2004	6.3								0.0	(6.3)
2005	2.9	0.1	0.2	(0.1)	2.9	0.1	0.0	0.3	3.2	0.4
2006	0.5	0.2	0.3	(0.1)	6.1	0.2	0.0	0.6	6.9	6.3
2007		0.4	0.7	(0.3)	10.9	0.4	0.0	1.0	12.2	12.2
2008		0.4	0.7	(0.3)	14.3	0.5	0.0	1.2	16.1	16.1
2009		0.4	0.7	(0.3)	15.3	0.6	0.0	1.2	17.1	17.1
2010		0.4	0.7	(0.3)	16.2	0.6	0.0	1.2	18.0	18.0
2011		0.5	0.7	(0.3)	23.4	0.9	0.0	1.3	25.6	25.6
2012		0.5	0.8	(0.3)	26.1	1.0	0.0	1.3	28.4	28.4
2013		0.5	0.8	(0.3)	29.0	1.1	0.0	1.4	31.5	31.5
2014		0.5	0.8	(0.3)	32.2	1.2	0.0	1.4	34.9	34.9
2015		0.5	0.8	(0.3)	35.6	1.3	0.0	1.5	38.5	38.5
2016		0.5	0.8	(0.3)	39.2	1.5	0.0	1.6	42.3	42.3
2017		19.5	0.9	18.6	43.0	1.6	0.0	1.6	46.3	46.3
2018		0.4	0.9	(0.5)	55.0	2.1	0.0	1.7	58.7	58.7
2019		0.4	0.9	(0.5)	61.2	2.3	0.0	1.8	65.2	65.2
2020		0.4	1.0	(0.5)	67.9	2.6	0.0	1.8	72.3	72.3
2021		0.4	1.0	(0.5)	75.3	2.8	0.0	1.9	80.0	80.0
2022		0.5	1.0	(0.6)	83.1	3.1	0.0	2.0	88.2	88.2
2023		0.5	1.0	(0.6)	91.5	3.4	0.0	2.1	97.0	97.0
2024		0.5	1.1	(0.6)	100.4	3.8	0.0	2.1	106.3	106.3
2025		0.5	1.1	(0.6)	120.1	4.5	0.0	2.2	126.9	126.9
									EIRR	**27.0%**
									NPV (12%)	**94.7**

EIRR = economic internal rate of return, NPV = net present value.
Source: Independent evaluation mission estimates.

Table A6.2: EIRR Recalculation for the NR6

($ million)

	Costs				Benefits					
	Capital	Maintenance Cost			Normal	Generated	Diverted	Time	Total	**Net**
Year	Cost	With	Without	Incremental	Traffic	Traffic	Traffic	Savings	Benefits	**Benefits**
2000	1.7								0.0	(1.7)
2001	3.0								0.0	(3.0)
2002	6.2								0.0	(6.2)
2003	4.2								0.0	(4.2)
2004	4.0								0.0	(4.0)
2005	1.4	0.1	0.2	(0.1)	0.8	0.0	0.0	0.3	1.1	(0.3)
2006	0.3	0.2	0.3	(0.1)	1.5	0.2	0.0	0.6	2.3	2.0
2007		0.2	0.3	(0.1)	2.7	0.3	0.0	1.0	4.0	4.0
2008		0.2	0.3	(0.1)	3.6	0.4	0.0	1.3	5.2	5.2
2009		0.2	0.3	(0.1)	3.8	0.5	0.0	1.3	5.5	5.5
2010		0.2	0.3	(0.1)	4.0	0.4	0.0	1.3	5.8	5.8
2011		0.2	0.3	(0.1)	5.8	0.7	0.0	1.4	7.8	7.8
2012		0.2	0.3	(0.1)	6.5	0.7	0.0	1.4	8.6	8.6
2013		0.2	0.3	(0.1)	7.2	0.8	0.0	1.5	9.5	9.5
2014		0.2	0.3	(0.1)	8.0	0.9	0.0	1.5	10.4	10.4
2015		0.2	0.4	(0.1)	8.9	1.0	0.0	1.6	11.4	11.4
2016		0.2	0.4	(0.1)	9.8	1.1	0.0	1.6	12.5	12.5
2017		8.4	0.4	8.0	10.7	1.2	0.0	1.7	13.6	13.6
2018		0.2	0.4	(0.2)	13.7	1.5	0.0	1.8	17.0	17.0
2019		0.2	0.4	(0.2)	15.2	1.7	0.0	1.9	18.8	18.8
2020		0.2	0.4	(0.2)	16.9	1.9	0.0	1.9	20.7	20.7
2021		0.2	0.4	(0.2)	18.7	2.1	0.0	2.0	22.8	22.8
2022		0.2	0.4	(0.2)	20.7	2.3	0.0	2.1	25.1	25.1
2023		0.2	0.4	(0.2)	22.7	2.5	0.0	2.2	27.5	27.5
2024		0.2	0.5	(0.3)	24.9	2.8	0.0	2.3	30.0	30.0
2025		0.2	0.5	(0.3)	29.9	3.3	0.0	2.3	35.5	35.5
									EIRR	**21.3%**
									NPV (12%)	**22.8**

EIRR = economic internal rate of return, NPV = net present value.
Source: Independent evaluation mission estimates.

Table A6.3: EIRR Recalculation for the NR7

($ million)

	Costs				Benefits					
	Capital	Maintenance Cost			Normal	Generated	Diverted	Time	Total	Net
Year	Cost	With	Without	Incremental	Traffic	Traffic	Traffic	Savings	Benefits	Benefits
2000	1.8								0.0	(1.8)
2001	4.6								0.0	(4.6)
2002	6.8								0.0	(6.8)
2003	8.0								0.0	(8.0)
2004	6.7								0.0	(6.7)
2005	1.9	0.1	0.2	(0.1)	2.8	0.1	0.0	0.2	3.1	1.1
2006	0.2	0.2	0.3	(0.1)	4.1	0.1	0.0	0.4	4.7	4.4
2007		0.3	0.5	(0.2)	5.5	0.2	0.0	0.7	6.4	6.4
2008		0.3	0.5	(0.2)	6.0	0.2	(0.9)	0.8	6.1	6.1
2009		0.3	0.6	(0.2)	6.4	0.2	(1.0)	0.8	6.5	6.5
2010		0.3	0.6	(0.2)	7.0	0.2	(1.0)	0.9	7.0	7.0
2011		0.4	0.6	(0.2)	9.9	0.3	(1.5)	0.9	9.7	9.7
2012		0.4	0.6	(0.2)	11.1	0.4	(1.7)	0.9	10.8	10.8
2013		0.4	0.6	(0.2)	12.5	0.4	(1.9)	1.0	12.0	12.0
2014		0.4	0.6	(0.2)	13.9	0.5	(2.1)	1.0	13.3	13.3
2015		0.4	0.6	(0.3)	15.4	0.5	(2.3)	1.0	14.7	14.7
2016		0.4	0.7	(0.3)	17.1	0.6	(2.6)	1.1	16.2	16.2
2017		15.4	0.7	14.7	18.8	0.7	(2.8)	1.1	17.8	17.8
2018		0.3	0.7	(0.4)	23.8	0.8	(3.6)	1.2	22.2	22.2
2019		0.3	0.7	(0.4)	26.6	0.9	(4.0)	1.2	24.8	24.8
2020		0.3	0.7	(0.4)	29.7	1.0	(4.5)	1.3	27.5	27.5
2021		0.3	0.8	(0.4)	33.0	1.2	(4.9)	1.3	30.5	30.5
2022		0.4	0.8	(0.4)	36.6	1.3	(5.5)	1.4	33.7	33.7
2023		0.4	0.8	(0.5)	40.4	1.4	(6.1)	1.4	37.1	37.1
2024		0.4	0.8	(0.5)	44.4	1.6	(6.7)	1.5	40.8	40.8
2025		0.4	0.9	(0.5)	52.8	1.8	(7.9)	1.5	48.2	48.2
									EIRR	**21.1%**
									NPV (12%)	**29.5**

EIRR = economic internal rate of return, NPV = net present value.
Source: Independent evaluation mission estimates.

Table A6.4: EIRR Recalculation for the Entire Project
($ million)

	Costs				Benefits					
	Capital	Maintenance Cost			Normal	Generated	Diverted	Time	Total	**Net**
Year	Cost	With	Without	Incremental	Traffic	Traffic	Traffic	Savings	Benefits	**Benefits**
2000	6.1									(6.1)
2001	12.6									(12.6)
2002	25.1									(25.1)
2003	25.3									(25.3)
2004	17.0									(17.0)
2005	6.2	0.3	0.5	(0.2)	6.4	0.2	0.0	0.8	7.4	1.2
2006	1.0	0.6	1.0	(0.4)	11.7	0.5	0.0	1.5	13.8	12.8
2007		0.9	1.5	(0.6)	19.1	0.9	0.0	2.6	22.6	22.6
2008		0.9	1.5	(0.6)	23.9	1.1	(0.9)	3.3	27.4	27.4
2009		0.9	1.6	(0.6)	25.5	1.2	(1.0)	3.3	29.1	29.1
2010		1.0	1.6	(0.6)	27.2	1.3	(1.0)	3.4	30.9	30.9
2011		1.0	1.6	(0.6)	39.1	1.9	(1.5)	3.5	43.1	43.1
2012		1.0	1.7	(0.7)	43.7	2.1	(1.7)	3.7	47.8	47.8
2013		1.1	1.7	(0.7)	48.7	2.3	(1.9)	3.8	53.0	53.0
2014		1.1	1.8	(0.7)	54.1	2.6	(2.1)	4.0	58.6	58.6
2015		1.1	1.8	(0.7)	59.9	2.9	(2.3)	4.1	64.6	64.6
2016		1.1	1.9	(0.7)	66.1	3.2	(2.6)	4.3	71.0	71.0
2017		43.3	1.9	41.3	72.6	3.5	(2.8)	4.5	77.7	77.7
2018		0.9	2.0	(1.1)	92.4	4.4	(3.6)	4.6	97.9	97.9
2019		0.9	2.0	(1.1)	103.3	4.9	(4.0)	4.8	108.8	108.8
2020		0.9	2.1	(1.2)	114.5	5.5	(4.5)	5.0	120.6	120.6
2021		1.0	2.2	(1.2)	127.0	6.1	(4.9)	5.2	133.3	133.3
2022		1.0	2.2	(1.2)	140.4	6.7	(5.5)	5.4	147.0	147.0
2023		1.0	2.3	(1.3)	154.6	7.4	(6.1)	5.7	161.6	161.6
2024		1.1	2.4	(1.3)	169.7	8.1	(6.7)	5.9	177.0	177.0
2025		1.1	2.4	(1.4)	202.8	9.7	(7.9)	6.1	210.7	210.7
									EIRR	**24.1%**
									NPV (12%)	**147.0**

EIRR = economic internal rate of return, NPV = net present value.
Source: Independent evaluation mission estimates.

E. Results of Economic Analysis

9. The reestimated EIRR for the entire project was 24.1%. This result is largely consistent with the appraisal EIRR (28%) and with the result of the PCR, which had estimated the EIRR for the entire project at 25.6%. The key difference can be explained by the lower EIRR for the NR7 component, which resulted from projected substantial diversion from that road to the secondary NR73. Another explanation lies in the assumptions used. While the PPER mission assumed substantial periodic maintenance interventions as a reflection of an improved maintenance regime, the PCR did not make such an assumption but nonetheless forecast increasing VOC savings.

SOCIOECONOMIC DEVELOPMENT AND POVERTY REDUCTION IMPACTS

A. Socioeconomic Development of Cambodia

1. In 1996, Cambodia's population was 10.3 million, with a gross domestic product (GDP) per capita of $295 (Table A7.1). It was ranked 140th poorest of the world's 174 countries based on the United Nations Human Development Index. The 1997 Cambodia Socioeconomic Survey indicated that over 80% of the population was living in rural areas,[1] GDP growth was minus 2.7%. These were attributed to 35 years of war, political instability, and neglect. Most of Cambodia's physical infrastructure was left in ruins, particularly its road infrastructure. Since 1999, when the Asian Development Bank approved a loan for the Primary Road Restoration Project, Cambodia has made very significant progress in term of socioeconomic development and political stability. GDP grew at an average of 7.3% per year. Economic activities in the rural economy picked up, with the agriculture sector's share of GDP increasing from 1.2% in 1996 to 16.6% in 2005. However, Cambodia remains poor. Gross national product per capita was $490 in 2006, which was much lower than the Southeast Asian countries' average of $2,168 according to the World Development Indicator.[2]

Table A7.1: Cambodia Socioeconomic Indicators

Indicator	Unit	1996	1997	1999	2000	2002	2003	2005	2007	2008
Population	million	11.0	11.6	12.40	12.60	13.00	13.30	13.80	14.40[a]	13.388[b]
Nominal GDP	$ million	3,481.00	3,387.00	3,515.00	3,651.00	4,258.00	4,650.00	6,242.00	8,296.00	9,906.00
GDP per capita	$/person	295.00	281.00	283.00	288.00	326.00	345.00	448.00	576.00	740.00
GDP growth rate	%	1.80%	(2.70%)	11.40%	7.20%	6.50%	8.50%	13.50%	9.60%	7.50%
Agriculture sector growth share (of GDP)	%	1.20%	5.50%	3.70%	(1.20%)	(2.20%)	12.10%	16.60%	-	-
Fiscal revenue	KR billion	749.10	881.10	1,316.30	1,408.50	1,743.90	1,764.60	2,625.00	4,019.20	1194.1/ q1
Foreign trade (export)	$ million	-	-	1,130.00	1,397.10	1,769.80	2,086.80	2,910.30	4,089.00	4,823.00
Foreign trade (import)	$ million	-	-	1,591.90	1,935.70	2,360.50	2,668.10	3927.80	5,424.00	6,660.00
Price index[c]	%	-	-	-	100.00	103.70	104.80	118.2 0	-	-
Exchange rate (KR against $)	(KR) riels	-	-	3,844.00	3,940.00	3,912.00	3,973.00	4,092.00	4,062.00	4,050.00

$ = US Dollars, GDP = gross domestic product, KR = Khmer riels (Cambodian currency),
Note: q1: data are only available in first quarter.
[a] Projection in accordance with 2004 Cambodia Intercensus Population Survey (CIPS).
[b] Provisional result from the 2008 general population census of Cambodia
[c] Over previous year, from 2001 to 2007 for all items (July–December 2000=100).
Sources: Cambodia Statistical Yearbook 2006 (National Institute of Statistics); 2008 General Population Census of Cambodia (National Institute of Statistics); World Bank's World Development Indicators; and Economic Institute of Cambodia (Cambodia Economic Watch – October 2008).

B. Poverty Profiles of Cambodia

2. About 30% of Cambodia's population was below the poverty line in 2007. This was an improvement from 2002, when about 36% lived below the poverty line. Since Cambodia's reentry into the international community in 1991, the country has made significant advances in both human and economic terms. Cambodia was upgraded from its 140th ranking of the world's

[1] A statement in the report and recommendation of the President (RRP) to the Board of Directors on a proposed loan and technical assistance grant to the Kingdom of Cambodia for the Primary Road Restoration Project (August 1999) Appendix 13.
[2] Regional fact sheet from the world development indicators 2008-East Asia and Pacific (2008 World Development Indicators database, World Bank, 11 April 2008).

174 countries in 1996 to the rank of 121st out of 162 countries in the 2001 Human Development Report. Since 1993, GDP has experienced steady growth and a vibrant and growing export industry has also emerged. Nevertheless, the poverty incidence remains at a relatively high level. The government has been using a consumption-based poverty line, based on the daily consumption of 2,100 calories or KR2,124 per day (or $15.9 per month of 2004 average price in Phnom Penh). Following this adopted poverty line, the poverty incidence for the whole country is still high, estimated at 36.1% in 2002, with 11.9% for the Phnom Penh area, 30% for other urban areas, and 43% for most rural areas. The updated Poverty Profile of Cambodia 2004 showed very little progress, with poverty incidence still at 35.9% for the whole country. However, poverty incidence decreased to 2.4% for urban Phnom Penh, 20.9% for other urban areas, and 39.7% for the rest of rural areas (Table A7.2).[3]

Table A7.2: Poverty Incidence of Cambodia from 2002 to 2007

Location	Unit	2002	2004	2005	2007	Projection 2010
Country (average)	% of pop.	36.1	35.9	34.7	30.1	25.0
Phnom Penh	% of pop.	11.9	2.4	4.6	0.8	
Other Urban	% of pop.	30.0	20.9	24.7	21.9	
Rural	% of pop.	43.0	39.7	39.2	34.7	

MOP = Ministry of Planning, pop = population, RGC = Royal Government of Cambodia, WFP=World Food Programme of the United Nations.
Sources: Estimation of Poverty Rates at Commune Level in Cambodia 2002 (MOP & WFP, October 2002); A Poverty Profile of Cambodia 2004—Major Findings (MOP, February 2006); and Midterm Report 2008 on the implementation of the National Development Strategic Plan (RGC, November 2008).

C. Socioeconomic Development of Project Provinces

3. The benefit monitoring and evaluation (BME) reports were prepared based on two socioeconomic surveys. First was the baseline survey, undertaken from November 2002 to January 2003, for traffic and for people living in the villages along the project road corridors or in the nearby villages along the access roads to the project roads. The second was the postcompletion survey done in 2005 immediately after the completion of project physical works. The baseline survey was started too late; it should have been done before the start of civil works. However, the BME reports cover almost all aspects of socioeconomics and traffic such as changes in traffic count and volume by generated and diverted traffic; changes in travel time and travel cost savings due to road improvements; and household incomes, assets, and expenditures, among other things. In addition, the BME report also mentions some negative impacts such as (i) increase in traffic accidents; (ii) increased environmental pollution; (iii) increase in land prices, which contributed to more hardship for the landless poor; (iv) more robbing and pillaging; and (v) loss of lands. There was no significant effect on the ethnic minorities or indigenous people in the project area. However, major issues that concern the design of BME are as follows:

(i) The BME conducted a survey of 80 villages and concluded that the number of project beneficiaries was 23,139 households comprising 117,311 individuals. This number seemed relatively low compared with the wider areas being traversed by the project.

(ii) No survey or report of the impact of HIV/AIDS on the project area's villagers was conducted.

[3] Most of poverty incidence figures came from Estimation of Poverty Rates at Commune Level in Cambodia, which was prepared by the Ministry of Planning and the United Nations World Food Programme.

(iii) The BME did not provide any observations on livelihood restoration for the affected people.

(iv) The BME provided minimal information on the project's poverty impact in the affected areas over the last 3 years after the baseline survey. The project completion report (PCR) missed the result of a postcompletion village survey, which stated that "55% of the participants in the focus group discussion thought that the lives of poorest villagers had worsened." Instead, the PCR indicates that only "49% of respondents thought that the lives of the poorest had improved over the previous 3 years." The PCR also does not give substantial information on the project's poverty impact.

4. Nevertheless, the BME observed that the project provided significant socioeconomic benefits as a result of the reduction in travel time and improvements in transport conditions due to the road improvements. The lives of the majority of village beneficiaries were improved, and many of the positive changes were facilitated by the road improvement.

D. Poor Beneficiaries and Poverty Conditions in the Project Province

5. In view of the limited data and information on poverty, it was difficult to make a full assessment of the extent to which the project improved the poverty situation in the target areas. Table A7.3 indicates that, surprisingly, the poverty incidence in the project provinces even increased from 33.19% in 2002 to 40.84% in 2004 while the incidence of absolute poor increased from 3.93% to 4.05%. The 2-year period was too short for a thorough assessment of the project's impact on the poor. However, these data confirm the findings in the BME and in the project performance evaluation report (PPER) mission's rapid socioeconomic survey (see Table A7.5) that the project's poor beneficiaries were not able to capture the economic benefits from the project.

Table A7.3: Poverty Population in Project Provinces

Road/ Province	Total Population of Province in 2004	Absolute Poor or Poverty Severity (<$6.9 per month or KR927=$0.23 per day on consumptions)				Poor (<$15.9 per month or KR2,124=$0.53 per day on consumption)			
		2004		2002		2004		2002	
		Pop.	Incidence (%)	Pop.	Incidence (%)	Pop.	Incidence (%)	Pop.	Incidence (%)
NR5									
Banteay Meanchay	773,092	10,282	3.58	12,881	5.63	287,204	37.15	228,800	40.88
Battambong	997,840	14,925	3.78	5,822	2.93	394,845	39.57	198,700	26.41
Pursat	428,173	3,823	2.65	6,716	4.79	144,251	33.69	140,200	40.74
Kompong Chhang	513,179	7,676	3.78	8,941	4.97	203,065	39.57	179,900	44.6
NR6 and NR7									
Kampong Thom	681692	22,254	6.23	4,942	3.11	357,207	52.4	158,900	29.07
Kompong Cham	1,857,500	23,203	3.34	2,167	1.14	694,705	37.4	190,100	12.07
Kratie	333,761	7,664	4.98	4,831	4.94	153,897	46.11	97,800	38.59
Total of Provinces	**5,585,237**	**89,827**	**4.05**	**46,300**	**3.93**	**2,235,174**	**40.84**	**1,194,400**	**33.19**

KR = Khmer riel, MOP = Ministry of Planning, NIS = National Institute of Statistics, NR = national road, pop. = population, WFP = World Food Programme of the United Nations.

Sources: Estimation of Poverty Rates at Commune Level in Cambodia 2002 (MOP & WFP, October 2002), A Poverty profile of Cambodia 2004-Major Findings (MOP, February 2006), and Final Statistical Year Book 2006 (NIS, MOP).

E. Project Impact Areas

6. In a socioeconomic and poverty impact assessment, one important task is to identify project areas and project beneficiaries of the different project roads. To develop a basic socioeconomic profile of beneficiaries, the first step is to define the project areas for each road based on the nature and characteristics of each project physical component. The project area refers to the areas directly impacted and benefited. For the three project roads of NR5, NR6, and NR7, the project area of each road refers to the areas or administrative units located along the project road alignments or being traversed by these roads. A number of bridges and culverts were rehabilitated or constructed. Based on the appraisal report, the PCR, the BME, and the Resettlement Action Plan, the project areas are identified as follows:

1. National Road 5

7. NR5 (407 kilometers [km]) starts from Phnom Penh and runs along the southern side of the Tonle Sap, in a northwesterly direction, to the border with Thailand at Poipet. NR5 passes through the towns of Kompong Chhnang, Pursat, Battambang, and Sisophon, all of which are provincial capitals. The main economic activity in the area served by NR5 is rainfed lowland rice farming combined with sugar, palm cultivation, and cattle farming. The province of Battambang, through which the road passes, is Cambodia's major rice-producing area. Accordingly, NR5 serves as an important route for the transportation of agricultural produce between the northwestern part of Cambodia and Phnom Penh, and the more densely populated southeast of the country. NR5 serves as the main land access for the villages and other settlements that lie to the south of the Tonle Sap. NR5 serves as Cambodia's main land transport connection with Thailand and forms an essential part of the subregional road network, in particular the route linking Bangkok, Phnom Penh, and Ho Chi Minh City. The project mainly restored 130 km of NR5 between Pursat Town and Battambong Town.

2. National Road 6

8. NR6 (416 km) starts from Phnom Penh and runs north of the Tonle Sap through the towns of Kompong Thom and Siem Reap to Sisophon, where it joins NR5. NR6 provides the key road linkage between Phnom Penh and the north-central areas of the country. Its restoration reestablished land access to a large agricultural area on the northern side of the Tonle Sap and to the settlements that are concentrated within the corridor served by the road. Both Kompong Thom and Siem Reap are the capitals of their respective provinces. The main economic activity in the area of influence of NR6 is rainfed lowland rice farming in combination with sugar, palm cultivation, and cattle production. Restoration of NR6 greatly facilitated the transport of agricultural produce and other goods between the central and northern provinces of Siem Reap, Kompong Thom, Pream Vihear, and the rest of the country. In addition, NR6 provides reliable and comfortable road access to the Siem Reap area, thereby facilitating road transport for tourists wishing to visit the Angkor Wat complex and other historical sites. NR6 also provides an alternative to NR5 as a route between Phnom Penh and Poipet on the border with Thailand. At project completion, the project mainly restored 70 km of NR6 between Kampong Thmar Bridge and the Siem Reap provincial border.

3. National Road 7

9. NR7 (460 km) provides the main road access to the northeastern provinces. It starts at the junction with NR6 on the west side of the Mekong River continues over the newly-constructed Japanese bridge over the Mekong crossing at Kompong Cham, curves around

through the towns of Memot and Snoul before turning back to the town of Kratie, and finally heads north, running parallel to the Mekong up to the border with the Lao People's Democratic Republic (PDR). The road provides the main transport link between the provinces in its area of influence and the rest of the country. The northeastern provinces of Cambodia, although less densely settled than other parts of the country, represent areas of significant agricultural production and even greater potential. The initial sections of NR7 pass through areas where rainfed lowland rice is the main crop, with sugar, palm cultivation, and cattle production as secondary activities. On the east side of the Mekong River, laterite soils become more common, with the result that rubber plantations become one of the main economic activities in the area of influence of the road for most of the way to the town of Snoul. Some coffee and tapioca were grown in the hillier areas between Memot and Snoul, while the area between Snoul and Kratie is characterized by forest regrowth. NR7 also represents a potentially significant subregional road link that could provide Lao PDR with access to the Gulf of Thailand, and specifically to the port of Sihanoukville. The project restored 205 km of NR7 starting from Tonle Bet to Kratie Town in Kompong Cham and Kratie provinces.

F. Project Beneficiaries

10. The project beneficiaries are those from districts along the alignments of the NR 5, NR 6, and NR 7. At appraisal, the project was expected to benefit 2.3 million people. At completion, based on the information collected from government offices at the central and provincial levels, the three project roads passed through 132 villages, 115 communes, 24 districts, and 7 provinces or provincial capital towns. Assuming that the total population of the concerned districts will directly benefit from the rehabilitation of these three national roads, the project will benefit a total of 556,258 households and 2.6 million people. Since those national roads will benefit a wide area along the road alignment, this assumption seems to be appropriate. In addition, according to the project's BME, at postproject completion in 2005, the total numbers of people from benefited villages were 23,139 households and 117,311 individual. This figure seems relatively small compared with the project, which covers a wide geographical area and impacts a large portion of provinces, districts, and population. However, the BME report conducted a census of project village beneficiaries and found only 80 villages within the five provinces served by the three national road corridors under the project. Somehow, the BME report missed a large number of project beneficiaries and project impact areas of about 87 villages within the project area. This shows that more than half of the project-impacted villages or areas were neglected by the BME.

11. Table A7.4 also shows the percentage of project beneficiaries by each road. NR5 provided more than half of the project beneficiaries. Overall, the project directly benefited nearly 20% of the national population.

Table A7.4: Project Beneficiaries by District for Project Roads

Project Road/ Provinces	No. of Districts and Name	No. of Communities	No. of Villages	Population 2008	No. of Household 2008
Percentage of project beneficiaries by NR5				55%	
NR5: subtotal		58	67	1,441,910	304,754
Kompong Chhnang	1.Kompong Tralach	6	10	84,306	18,327
	2.Rolea B'iear	4	4	91,763	19,948
	3. Kompong Chhnang (PC)	4	4	42,809	8,562
	4.Baribo	4	4	58,265	12,666
Purast	1.Krakor	7	8	80,086	17,039
	2.Sampov Meas (PC)	4	4	54,014	11,742
	3.Bakan	4	4	130,806	27,831
Battampong	1.Mong Reusei	6	10	162,194	33,790
	2.Sangkae	4	4	128,952	26,865
	3.Svay Pao (PC)	4	4	185,872	37,933
	4.Battambang	4	4	140,969	29,369
Banteay Meanchay	1.Mongkol Borei	3	3	152,976	33,256
	2. Serey Sophon (PC)	4	4	128,898	27,425
Percentage of project beneficiaries along NR6				22%	
NR6		32	34	573,289	122,707
Kompong Thom	1.Baray	10	13	176,821	37,622
	2.Santouk	4	4	64,745	13,776
	3.Stueng Saen (PC)	6	4	67,268	14,312
	4.Kompong Svay	4	4	82,916	17,642
	5.Stoeung	5	4	104,284	22,188
Kompong Cham	1.Cheung Prey	3	5	77,254	17,168
Percentage of project beneficiaries along NR7				23%	
NR7		25	31	586,455	128,797
Kompong Cham	1.Tbong Khmum	6	6	221,653	49,256
	2.Po-nhea Kreak	4	4	127,843	28,410
	3.Memot	4	4	114,857	25,524
Kratie	1.Snuol	7	13	42,820	8,739
	2. Kratie (PC)	4	4	79,281	16,868
Total: 7 provinces	**24**	**115**	**132**	**2,601,653**	**556,258**
19%					
BME reports of village census within the same 7 provinces (2005)			80	117,311	23,139
Numbers of villages and population missing from BME			87	2,484,342	533,119
% of missing beneficiaries			52%	95%	96%
5,201,439	**1,107,990**				
13,388,410	**2,832,691**				

BME = benefit monitoring and evaluation, NIS = National Institute of Statistics, No. = number, NR = national road, PC = provincial capital town, RAP = resettlement action plan.
Sources: Resettlement Action Plan (June 2000), 2008 General Population Census of Cambodia (NIS), and mapping of villages, communes, and districts along national roads.

G. Impact of HIV/AIDS on the Project Areas and Villagers

12. The PCR indicates that after several warnings from the Ministry of Public Works and Transport (MPWT) and ADB, contractors started to disseminate information on the risks of sexually transmitted diseases (STDs) and on the HIV/AIDS prevention program to their workforce and the population in the areas adjacent to the project roads. The PPER's socioeconomic mission learned that the STD and HIV/AIDS information campaign and prevention program was included in the bill of quantity (BOQ) and the specifications of each civil works contract. The contractors were thus responsible for such programs which were to have been incorporated in the civil works schedules. Contractors usually have no experience with such campaigns and prevention programs, but they subcontracted them to a non-government

organization (NGO) that specialized in HIV/AIDS programs. The mission met and had discussions with this NGO, the Community Development Organization and Health Care CDOH). CDOH informed the mission that the subcontracts on STD-HIV/AIDS awareness and prevention programs were officially approved by MPWT, including a comprehensive program and schedule for the whole duration of civil works activities. Staff of CDOH and enumerators conducted fieldwork for NR5, NR6, and NR7 for the duration of the construction. The subcontracts on STD-HIV/AIDS were well arranged, because the same NGO received many subcontracts from various contractors under the project, seemingly indicating that this NGO carried out efficient programs for the contractors' workforces and the villagers in the project areas. The PPER mission obtained a few documents related to the objectives of the awareness and prevention program, including the tasks to be undertaken and the methodologies and implementing training program activities. However, since many years had passed, the NGO was unable to provide any data or report regarding the achievements of such work. It could thus not be readily ascertained if adequate mitigation measures were put in place during road construction.

H. Results of Rapid Socioeconomic Survey

13. The PPER mission undertook a rapid socioeconomic survey involving field visits and interviews with farmers, stall or shop owners, public servants, bus drivers, and other service providers such as car/motorbike/bicycle workshop owners. The Results are summarized as follows:

(i) The project improved accessibility from communities to urban, market, administration, education, and health centers by reducing travel time and reducing travel costs to more than half on average.

(ii) The project promoted economic growth in the beneficiary communities by increasing production of rice, sugar palm, fisheries, rubber, corn, bean, tapioca, poultry, livestock, and fruit products.

(iii) Prices of land increased by about 10 times for farmland and more than 5 times for residential land from 1999 to 2007.

(iv) Accessibility of utilities such as electricity, water supply, and mobile phone service increased significantly. Before the project, utilities were found only in the provincial capital town.

(v) Restaurants and rest areas, private clinics, private foreign language schools, and microcredit and banking services are now easily accessible. There were only a few of these services in the provincial capital at the time of appraisal.

(vi) The number of regular large passenger buses increased from almost none before the project to an average of 60 per day on each project road.

(vii) Travel quality improved in terms of safety (i.e., reduced incidence of robbing and pillaging) and protection from dust and floods.

(viii) The number of children going to school and attendance at higher levels of education (i.e., secondary, high school, university) significantly increased.

14. The main negative impact has been the increase in traffic accidents. More than 70% of households interviewed had experienced traffic accidents at least once after the roads were restored, while only about 10% had met traffic accidents at the time of appraisal. Increased traffic noise and littering were observed. Flash floods also occurred due to the raising of road embankments without side drains. Moreover, increases in the price of land caused more hardship to the absolute poor, who are landless.

15. In addition, restoration of the livelihood of the people affected by the project was observed. The survey on income distribution targeted 26 households of people affected by the

project and 30 non-affected households who were living along the project roads in rural and market areas, excluding the provincial capital (Table A7.3). Both the affected and non-affected households experienced significant increases in per capita income over 2000–2008 (Table A7.5). The affected households who were in the middle and upper classes of income seemed to be doing better. However, the affected households among the very poor seemed to not have significantly benefited. On balance, the restoration of incomes and livelihood proceeded well.

Table A7.5: Per Capita Income and Income Distribution
(in rural and market areas, but not in provincial capital centers)

Household Type	Sample Size (house-holds)	Year	Per Capita Income ($)	Income Distribution (population %) (per month) <$10	$10–$80	$81–$150	$151–$400	>$400
Land acquisition and resettlement affected	26	2008	300	4%	23%	15%	38%	19%
		2000	212	4%	42%	27%	15%	12%
		Change %	42%					
Non-affected	30	2008	267	0%	10%	43%	33%	13%
		2000	203	0%	37%	27%	30%	7%
		Change %	32%					
Total	56	2008	293	2%	16%	30%	36%	16%
		2000	208	2%	39%	27%	23%	9%
		Change %	41%					

PCR = project completion report, PPER = project performance evaluation report.
Note: The income distribution patterns followed the indicators of *Statistical Year Book 2006.* The average monthly household income by per household income decile and stratum in 1999 indicated that the average mean income per capita in rural areas was $82.70 (KR314,247) and in urban area about $135.53 (KR515,026). The decile rank was $37.41 to $147.03 for rural; for urban, the decile rank was $38.65 to $405.39. The exchange rate used was KR3,844.50 for US$1 as of 15 August 1999 (PCR).
Source: PPER mission's rapid resettlement and socioeconomic survey (December 2008).

I. Conclusion

16. The PCR assessed that "the BME undertaken by the consultant was unsatisfactory, as the BME specialist did not complete the terms of reference during the assignment".[4] However, the whole Appendix 12 on socioeconomic impacts of the PCR just restated the results of BME without conducting any supplementary survey on socioeconomic impact of the project to find out the areas where BME was wrong or not sufficient. The PPER mission noted four key areas where the BME was weak (para. 4).

17. Better insight on the project's poverty impact could have been generated if a more thorough BME had been undertaken. Also, the BME did not record any data on the number of poor households in the sample survey, nor on factors related to the severity of poverty incidence.

18. The PCR indicates that the project's goals were to improve accessibility, promote economic growth, reduce transport costs, and improve road safety.[5] However, at project completion, improvement in road safety was not achieved. Greater benefits were in the forms of restoration of damaged transport facilities and provision of access to basic facilities and utilities.

[4] Paragraph 36. Section J. Performance of Consultants, Contractors, and Suppliers, of the PCR (November 2006).
[5] Paragraph 1 of Appendix 12 "Socioeconomic Impacts", page 49, of the PCR (November 2006).