ADB

Performance Evaluation Report

Project Number: PPE: CAM-30513/VIE-30316
Loan Numbers: 1659-CAM(SF) and 1660-VIE(SF)
December 2008

Kingdom of Cambodia and Socialist Republic of Viet Nam: Greater Mekong Subregion: Phnom Penh to Ho Chi Minh City Highway Project

Operations Evaluation Department

Asian Development Bank

CURRENCY EQUIVALENTS

Cambodia
Currency Unit – riel (KR)

		Appraisal (11 November 1998)	Project Completion (13 November 2006)	Operations Evaluation (30 April 2008)
KR1.00	=	$0.00026	$0.00023	$0.00025
$1.00	=	KR3.700.00	KR4,286.30	KR3,961.00
SDR1.00	=	$1.346	$1.490	$1.62554

Viet Nam
Currency Unit – dong (D)

		Appraisal (11 November 1998)	Project Completion (27 October 2006)	Operations Evaluation (30 April 2008)
D1.00	=	$0.00007	$0.00006	$0.00006
$1.00	=	D13,880.00	D16,578.70	D16,122.00
SDR1.00	=	$1.346	$1.485	$1.62554

ABBREVIATIONS

ADB	–	Asian Development Bank
AADT	–	annual average daily traffic
CBTA	–	cross-border transport agreement
GDP	–	gross domestic product
GMS	–	Greater Mekong Subregion
EA	–	executing agency
EFRP	–	Emergency Flood Rehabilitation Project
EIRR	–	economic internal rate of return
HCMC	–	Ho Chi Minh City
HDM-4	–	Highway Design and Maintenance Model Version 4
IRI	–	international roughness index
km	–	kilometer
m	–	meter
MOT	–	Ministry of Transport
MPWT	–	Ministry of Public Works and Transport
MSEZ	–	Manhattan Special Economic Zone
NH	–	national highway
OED	–	Operations Evaluation Department
OEM	–	Operations Evaluation Mission
PCR	–	project completion report
PMU	–	project management unit
PMU-MT	–	project management unit−My Thuan
PPER	–	project performance evaluation report
RED	–	Road Economic Decision
RN	–	route national
SEZ	–	special economic zone
TA	–	technical assistance
VOC	–	vehicle operating cost
vpd	–	vehicle per day

NOTES

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

Key Words

regional cooperation, regional integration, gms, adb, asian development bank, greater mekong subregion, adb gms, cambodia, viet nam, development effectiveness, roads, roads maintenance, performance evaluation, transport, infrastructure, trade facilitation, cross-border projects, subregional cooperation, subregional economic analysis

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The guidelines formally adopted by the Operations Evaluation Department (OED) on avoiding conflict of interest in its independent evaluations were observed in the preparation of this report. Although H. Satish Rao, Director General, OED, headed the East Asia Department, and Ramesh B. Adhikari, Director of Operations Evaluation Division 1, worked for the Southeast Asia Department, they were not involved in preparing, implementing, and supervising Greater Mekong Subregion projects. Mr. Adhikari supervised the report up to interdepartmental review. Jean-Francois Gautrin, Hien Thi Phuong Nguyen, and Sota Ouk were the consultants. To the knowledge of the management of OED, there were no conflicts of interest of the persons preparing, reviewing, or approving this report.

APPENDIXES

Attachment:	Management Response

BASIC DATA
Loan 1659-CAM(SF): Greater Mekong Subregion Phnom Penh to Ho Chi Minh City Highway Project (Cambodia Component)

Project Preparation/Institution Building

TA No.	TA Name	Type	Person-Months	Amount ($'000)	Approval Date
5535	Promoting Subregional Cooperation among Cambodia, the People's Republic of China, Lao PDR, Myanmar, Thailand, and Viet Nam	RETA	120	4,000	10 Jun 1993
5649	GMS Infrastructure Improvement: Ho Chi Minh City to Phnom Penh Highway	PPTA	185	3,000	9 Nov 1995

Key Project Data ($ million)	As per ADB Loan Documents	Actual
Total Project Cost	50.7	42.3
Foreign Exchange Cost	36.1	35.7
Local Currency Cost	14.6	9.6
ADB Loan Amount/Utilization	40.0	38.2
(SDR million)	28.4	27.5
ADB Loan Amount/Cancellation		1.3
(SDR million)		0.9

Key Dates	Expected	Actual
Fact-Finding		21 Apr–9 May 1997
Appraisal		29 Apr–9 May 1998
Loan Negotiations		5–6 Nov 1998
Board Approval		15 Dec 1998
Loan Agreement		20 Mar 1999
Loan Effectiveness	18 Jun 1999	9 Nov 1999
First Disbursement		20 Jan 2000
Project Completion	Aug 2002	31 Dec 2005
Loan Closing	30 Jun 2003	20 Jul 2006
Months (effectiveness to completion)	38	74

Economic Internal Rate of Return (%)	Appraisal	PCR	PPER
Total Cambodia Component[a]	22.0	24.1	12.0
Total Project	23.0	25.1	11.3[a]

Borrower: Kingdom of Cambodia
Executing Agency: Ministry of Public Works and Transport

Mission Data

Type of Mission	No. of Missions	No. of Person-Days
Fact-Finding	1	30
Appraisal	1	44
Project Administration	20	
Review	18	334
of which Resettlement	7	104
Environment	1	4
Midterm Review	1	10
Special Loan Administration	1	40
Project Completion	1	36
Operations Evaluation[b]	1	—

— = not calculated, ADB = Asian Development Bank, Lao PDR = Lao People's Democratic Republic, PCR = project completion report, PPER = project performance evaluation report, PPTA = project preparatory technical assistance, RETA = regional technical assistance.

[a] Cambodia route national 1 only. Additional works are not included.

[b] Joint mission with the Sector Assistance Program Evaluation (SAPE) on Transport and Trade Facilitation in the Greater Mekong Subregion. Several surveys in selected sites were conducted as part of the (SAPE) study.

BASIC DATA
Loan 1660-VIE(SF): Greater Mekong Subregion Phnom Penh to Ho Chi Minh City Highway Project (Viet Nam Component)

Project Preparation/Institution Building

TA No.	TA Name	Type	Person-Months	Amount ($'000)	Approval Date
5535	Promoting Subregional Cooperation among Cambodia, the People's Republic of China, Lao PDR, Myanmar, Thailand, and Viet Nam	RETA	120	$4,000	10 Jun 1993
5649	GMS Infrastructure Improvement: Ho Chi Minh City to Phnom Penh Highway	PPTA	185	$3,000	9 Nov 1995

Key Project Data ($ million)	As per ADB Loan Documents	Actual
Total Project Cost	144.8	166.5
Foreign Exchange Cost	74.6	69.7
Local Currency Cost	70.2	96.8
ADB Loan Amount/Utilization	100.0	90.9
(SDR million)	71.0	65.3
ADB Loan Amount/Cancellation		8.2
(SDR million)		5.7

Key Dates	Expected	Actual
Fact-Finding		21 Apr–9 May 1997
Appraisal		29 Apr–9 May 1998
Loan Negotiations		5–6 Nov 1998
Board Approval		15 Dec 1998
Loan Agreement		20 Mar 1999
Loan Effectiveness	18 Jun 1999	9 Nov 1999
First Disbursement		27 Dec 1999
Project Completion	Aug 2002	31 Dec 2005
Loan Closing	30 Jun 2003	12 May 2006
Months (effectiveness to completion)	38	74

Economic Internal Rate of Return (%)	Appraisal	PCR	PPER
V1[a]	34.0	28.7	(2.0)
V2[a]	18.0	25.4	10.7
V3[a]	18.0	21.4	—
Total Viet Nam Component	24.0	25.6	—
Total Project	23.0	25.1	11.3 [b]

Borrower: Socialist Republic of Viet Nam
Executing Agency: Ministry of Transport

Mission Data

Type of Mission	No. of Missions	No. of Person-Days
Fact-Finding	1	30
Appraisal	1	44
Project Administration	17	117
Review	15	79
Midterm Review	1	16
Special Loan Administration	1	22
Project Completion	1	40
Operations Evaluation[c]	1	—

( ) indicates negative number, — = not calculated, ADB = Asian Development Bank, ADTA = advisory technical assistance, GMS = Greater Mekong Subregion, JSF = Japan Special Fund, Lao PDR = Lao People's Democratic Republic, PCR = project completion report, PPER = project performance evaluation report, PPTA = project preparatory technical assistance, TA = technical assistance, V1 = Viet Nam 1, V2 = Viet Nam 2, V3 = Viet Nam 3.

[a] V1 (national highway [NH] 22 from Thu Duc to Hoc Mon), V2 (NH22 from Hoc Mon to Moc Bai border), and V3 (7.6 km section within V1 comprising bridges and short road stretches).

[b] Viet Nam V2 (NH22) components only.

[c] Joint mission with the Sector Assistance Program Evaluation (SAPE) on Transport and Trade Facilitation in the Greater Mekong Subregion. Several surveys in selected sites were conducted as part of the SAPE study.

EXECUTIVE SUMMARY

The Phnom Penh to Ho Chi Minh City Highway Project supported bilateral trade in Cambodia and the southern region of Viet Nam and, in a broader context, regional cooperation among Greater Mekong Subregion (GMS) countries. The Project was developed as part of the GMS initiative of the Asian Development Bank (ADB) for addressing road transport and custom procedures-related bottlenecks. It aimed to assist the two governments in responding to changed political and economic circumstances through investments in transport infrastructure and improvements in cross-border movement regulations to promote cross-border and subregional trade and associated economic benefits.

The Project was selected for postevaluation in the 2008 work program of the Operations Evaluation Department (OED) since it had completed 3 years of operations. The project completion report was based on traffic data collected by the government agencies in 2005. This data needed to be updated independently in 2008. Moreover, in line with the OED's Guidelines, the timing of the project performance evaluation report (PPER) was advanced to provide inputs for the broader sector assistance program evaluation (SAPE) of the transport and trade facilitation sectors of the GMS program.

The Project is rated "highly relevant" in terms of sector, country, and regional demands. It was consistent with ADB's strategy for Cambodia and Viet Nam and their governments' policies and plans. Being the first GMS regional road project, its approach showed innovation that involves two states addressing cross-border and transport issues. It was consistent with the GMS program's aim of enhanced connectivity and increased competitiveness to strengthen cooperation between Cambodia and Viet Nam and economic links among GMS countries. The project route forms part of Asian Highway 1 and the remaining section of the strategic Bangkok–Phnom Penh–Ho Chi Minh City–Vung Tau corridor needing improvement. The Project has room for improvement in terms of the quality at entry. Besides the complexity of the Project involving two countries, the project preparatory activities were inadequate, i.e., the physical road designs had to be redone during implementation.

The Project was "effective" in improving road transport efficiency in both countries, i.e., reduced vehicle operating costs due to good road conditions, reduced travel time, and increased vehicle speeds. The quality of project outputs was satisfactory. This includes road design and pavement, border facilities and equipment, as well as added works outside the original scope. With the completion of the Project, the road transport movements within the two countries have improved substantially. However, the cross-border traffic growth has been relatively lower than expected at appraisal and at completion. The Project's effectiveness in Cambodia was marred by the absence of a bridge across the Mekong River at Neak Loeung. This is expected to be rectified with assistance from the Japanese Government. Deterioration in road safety was witnessed in both the countries and remains an issue.

The Project's targeted outcome of enabling cross-border movements has been "less effective." Despite the improvement of the project road and the reduction in bureaucratic and procedural constraints to cross-border trade, the cross-border traffic and trade have not grown as expected. The volume of subregional traffic between Cambodia, southern Viet Nam, and further to Thailand is small. This is expected to be rectified with the implementation of the Cross-Border Transport Agreement (CBTA). Unless the CBTA is implemented at the Bavet–Moc Bai border crossing, the full benefits of the cross-border road will not be achieved. The CBTA was not signed at the time when the Project was formulated.

Pending implementation of the CBTA, cross-border trade has been increasing in the recent years indicating the potential for further growth. Currently, freight has to be transshipped at the border crossing, i.e., goods from the host country vehicle have to be transferred to the destination country vehicle. This is time and cost consuming. Despite this, cross-border trade has increased from $10 million in 1999 (before road construction) to an annual average of $23 million during 2003−2005 (after road completion). This increased to $43 million in 2006 and $68 million in 2007.

The Project is rated “less efficient” owing to the low economic internal rate of returns (EIRR) at postevaluation for the entire Project of 11.3%. This EIRR is much lower than the 23.0% estimated at appraisal and 25.1% at project completion. The main factors attributed for this difference were lower growth in traffic, change in the assumptions for road roughness, and vehicle operating costs. The estimates at postevaluation have been conservative. Moreover, this EIRR does not incorporate benefits of reduction in congestion in Ho Chi Minh City and the potential increase in trade through land route.

The project completion was delayed by 3.5 years owing to various factors, the major ones were lack of adequate preparation in terms of physical road design, contractor problems, adverse weather conditions, and addition of new works to utilize loan savings. There remains room for improvement in the performance of both ADB and the borrower countries to rectify implementation issues especially those related to inadequate project preparation.

The Project witnessed substantial loan savings in both countries owing to lower bid costs for civil contracts. These loan savings were used to fund additional works. The use of loan savings under the Project could have benefited from a better justification at the project completion report stage. Including the additional works is seen as appropriate in light of the several apparent benefits such as reduction in congestion in Ho Chi Minh City area. However, ADB did not carry out adequate due diligence at project completion to check whether the loan savings had been used efficiently.

The Project is “less likely” to sustain the project benefits in Cambodia. But it is “likely” to sustain these benefits in Viet Nam. Funds allocated for road maintenance are generally insufficient for the entire Cambodia road network. The Government has reallocated maintenance funds for use on other projects such as flood drainage rehabilitation. The risk of overloading and continued low allocations for routine maintenance has lowered the sustainability in Cambodia. This issue is highlighted by the fact that ADB along with other development partners provided a loan road maintenance, which was justified on the basis of “inadequate road maintenance is primarily due to a shortage of financial resources, poor organization of road management, and weak technical capacity.”

The sustainability in Viet Nam is “likely” owing to increased allocations from the central budget and the ongoing efforts of the Government as well as the development partners. The regional road maintenance units receive an average of $2,100–$2,900 per km, which is higher than the other countries in the GMS. In addition, ADB, the World Bank, and the Japan Bank for International Cooperation have provided assistance focusing on improving road maintenance. This assistance has also enabled private sector participation in maintenance activities.

Based on the evaluation criteria of relevance, effectiveness, efficiency, and sustainability, the Project is rated “successful.” The main achievements of the Project were improvement of the transport efficiency and construction of border facilities. While the first

component has generated several benefits and impacts at the national level, the success of the Project can be improved with the construction of a bridge across the Mekong River and by implementing the CBTA.

The project impact has been found to be “moderate” in relation to the cross-border movements, but it has been “significant” in terms of socioeconomic changes at the local levels. This underlines the conclusion that the Project has provided relatively more national benefits as compared to regional benefits. In Cambodia, the Bavet area experienced an economic transformation from rice fields and an agriculture-based economy to an area of commerce and industry with the development of a special economic zone and urbanization of the border areas. In Viet Nam, road improvement influenced the development and expansion of new industrial estates and commercial establishments.

A protracted resettlement compensation issue in Cambodia was resolved in May 2008. No other negative social and environmental issues were reported.

ADB performance is “satisfactory” for both Cambodia and Viet Nam components. The performance of the Borrower and Executing Agency for the Cambodia component is “partly satisfactory” owing to the partial compliance with loan covenants, delayed provision of counterpart funds, and delayed payments to the contractor. These contributed to the implementation delays. On the other hand, the performance of the Borrower and Executing Agency in Viet Nam was found to be “satisfactory.”

Several issues emanate from the Project: (i) first, the need for CBTA to be implemented at the Bavet–Moc Bai border crossing soon to enable regional benefits of the Project; (ii) second, the need for adequate funds to be made available for the road maintenance (i.e., Cambodia); (iii) third, the emergence of road safety as an endemic issue; and (iv) finally, the increased vulnerability to the spread of diseases such as HIV and Avian influenza caused by cross border movement of people.

Lessons identified by the Project are (i) to achieve optimal benefits from cross-border or subregional road projects, the development and enforcement of a cross-border agreement, simplification of border formalities, and complementary investment in project area are crucial; (ii) while loan savings could be helpful for the borrowing country, ADB should carry out appropriate due diligence at approval and at completion; and (iii) resettlement of people should be carried out more carefully.

Follow-up actions for ADB are provided in the table below:

Follow-Up Action	Institution Responsible	Time Frame	Monitoring
1. Cross-Border Transport Agreement. ADB should work closely with the GMS countries in ensuring that the CBTA is fully ratified and implemented as per the agreed timetable.	Southeast Asia Department	Ongoing	GMS CBTA implementation plan
2. Economic Corridors. ADB needs to work with the governments to convert the transport corridors into economic corridors by undertaking parallel interventions to enable development of industries, agriculture, and production in general.	Southeast Asia Department	Ongoing	Development of economic corridors to be measured using GMS wide indicators
3. Periodic Maintenance. ADB should continue to engage MPWT of Cambodia and MOT in Viet Nam in policy dialogue to ensure that appropriate budget is allocated for regular, periodic, and routine maintenance.	Southeast Asia Department	Ongoing	Stepped increase in the allocations for maintenance in both countries

ADB = Asian Development Bank, CBTA = Cross-Border Transport Agreement, GMS = Greater Mekong Subregion, MPWT = Ministry of Public Works and Transport.
Source: Operations Evaluation Mission.

H. Satish Rao
Director General
Operations Evaluation Department

GMS 08-1666a EG

GREATER MEKONG SUBREGION

PHNOM PENH TO HO CHI MINH CITY HIGHWAY PROJECT

(as implemented)

GMS 08-1666b EG

I. INTRODUCTION

A. Evaluation Purpose

1. Situated in a corridor that has been important for regional communications and trade for many centuries, the Phnom Penh to Ho Chi Minh City (HCMC) Highway Project was planned to encourage traffic and trade flows between Cambodia and Viet Nam. Following restoration of peaceful conditions in Cambodia in 1992 and with Viet Nam's economic reforms taking hold, the potential for cross-border trade has become more evident and the need for it pressing. The potential for cross-border movements and trade was high in light of the growing economies of the Greater Mekong Subregion (GMS). The Project was developed as part of the GMS initiative of the Asian Development Bank (ADB) to assist the two governments in responding to changed circumstances by (i) investing in physical infrastructure, and (ii) changing cumbersome and inefficient regulations that impede the development of cross-border commerce and communications. In a broader context, the project road is part of a larger system linking Bangkok (Thailand), Phnom Penh (Cambodia), and HCMC and Vung Tau (Viet Nam) (Map 1).

2. The project evaluation was included in the 2008 work program of the Operations Evaluation Department (OED) owing to its regional significance. As per OED's *Guidelines for Preparing Performance Evaluation Reports (PPERs) for Public Sector Operations*, projects that have at least 3 years operational history can be selected for postevaluation.[1] In this case, the Project was completed in December 2005. This allowed sufficient time for the results to be visible. Moreover, the project completion report was based on traffic data collected by the government agencies in 2005. This data needed to be updated independently in 2008. Finally, in line with the OED's Guidelines, the timing of the PPER was advanced to provide inputs for the broader sector assistance program evaluation (SAPE) of the transport and trade facilitation sectors of the GMS program carried out in 2008.

3. The PPER draws on a desk review of the PCR data (i.e., design and implementation, resettlement) and related project documents. In verifying PCR findings, it updated and enhanced the quantitative (e.g., road conditions, maintenance budget, economic rates of return) and the qualitative PCR data (e.g., socioeconomic results, road safety). An incremental assessment of regional impacts, in addition to individual country benefits (i.e., trade), was pursued.[2] National consultants carried out field interviews and surveys (i.e., traffic survey, border-crossing point survey, freight forwarder survey, and border community survey) to collect primary and secondary data. A copy of the draft PPER was shared with concerned ADB departments and those of the borrowers; their comments were incorporated and acknowledged where relevant.

4. The draft PCR was circulated for interdepartmental comments in November 2007 and was approved in January 2008.[3] It satisfactorily met the requirements of self-evaluation.[4] The PCR rated the Project as a whole and its two country components "successful" using OED's four-category evaluation criteria.

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[1] ADB. 2006. *Guidelines for Preparing Performance Evaluation Reports for Public Sector Operations*. Manila.

[2] While the PCR was completed in 2007, preparation began in 2006. The PCR is based on traffic data collected in 2005.

[3] ADB. 2007. *Project Completion Report on the Greater Mekong Subregion: Phnom Penh to Ho Chi Minh City Highway Project in Cambodia and Viet Nam.* Manila.

[4] The standard PCR validation report was waived because a PPER was prepared within a year of PCR circulation.

B. Expected Results

5. The stated objective of the Project was to improve the Phnom Penh–HCMC Highway (to a standard required by domestic, subregional, and international traffic from 2002 to 2012) by improving facilities at the border crossing and facilitating government efforts to reduce bureaucratic and procedural constraints to cross-border trade. Designed as a regional project, the Project has two country components (Basic Data).

6. For the Cambodia component, the expected outputs were (i) civil works for reconstruction of 105 kilometers (km) of route national (RN) 1 (from Neak Loeung to the border with Viet Nam at Bavet) to a double bituminous surface treatment standard with an overall width of 11 meters (m), (ii) civil works for minor improvements to about 60 km of RN1 from Phnom Penh to the Mekong River ferry, (iii) reconstruction and rehabilitation of several bridges in poor condition, (iv) construction of border facilities at Bavet, and (v) consulting services for construction supervision.

7. For the Viet Nam component, the envisaged outputs included (i) civil works for reconstruction of 80 km to asphalt concrete standard with a carriageway of 33 m, 26 m, or 14 m wide; one or two lanes; and paved shoulders (i.e., 22 km of national highway [NH] 1A between Thu Duc and An Suong, and 58 km of NH22A from An Suong to the border with Cambodia at Moc Bai); (ii) bridge reconstruction and replacement or repair of several smaller bridges; (iii) construction of border facilities at Bavet; (iv) consulting services for construction supervision; and (v) incremental assistance support to the project management unit (PMU).

II. DESIGN AND IMPLEMENTATION

A. Formulation

8. This was the first GMS project to graduate from a preparatory study to a regional project. The GMS countries gave highest priority to improving the Bangkok–Phnom Penh–HCMC–Vung Tau highway corridor during the ADB-sponsored Second Conference on Subregional Economic Cooperation in August 1993. At that time, the corridor was being improved in the three countries through which it passes.[5] The road section between Phnom Penh and HCMC was the only remaining section needing improvement.

9. Feasibility of the Project was first examined under a regional technical assistance (TA).[6] A project preparatory TA was subsequently approved in 1995 to update the feasibility study and carry out the detailed designs.[7] Detailed designs were prepared for the reconstruction

[5] In Thailand, highways making up the Thai section have been, or were being, improved as part of the Government's highway improvement program. In Cambodia, the corridor between the border with Thailand and Phnom Penh has been partly rehabilitated with United Nations and ADB assistance. Most of the remaining unimproved length was being prepared then through an ADB-sponsored technical assistance (ADB. 1996. *Technical Assistance to the Kingdom of Cambodia for Transport Network Improvement*. Manila [TA 2722-CAM for $600,000 approved on 19 December 1996 and TA 2722-CAM (Supplementary) for $385,000 approved on 17 March 1998]). The HCMC–Vung Tau road section was being improved at that time with ADB assistance.

[6] ADB. 1993. *Technical Assistance for Promoting Subregional Cooperation among Cambodia, the PRC, Lao PDR, Myanmar, Thailand, and Viet Nam—Phase II.* Manila (TA 5535-REG, for $4 million, approved on 10 June).

[7] ADB. 1995. *Technical Assistance to Cambodia and Viet Nam for the Greater Mekong Subregion Infrastructure Improvement–Ho Chi Minh City to Phnom Penh Highway.* Manila (TA 5649-REG, for $3 million, approved on 9 November).

of the project road, which mostly followed existing alignments.[8] The project preparatory TA carried out a thorough evaluation of the Project including pavement analysis, environmental impact examination, and social and resettlement impact assessment. Despite major cost underruns on civil works, cost estimates were realistic and based on available information (footnotes 12 and 14).

10. As the first GMS regional road project, its approach was innovative in that it engaged two countries simultaneously, addressing cross-border and transport issues. To facilitate passenger and commercial traffic across the border between Cambodia and Viet Nam, the Project was designed to have the physical and nonphysical components proceed concurrently. The design was appropriate given clear demand for improved road conditions and simplified border procedures. While a bilateral agreement has been in place between Cambodia and Viet Nam since 1998, the exchange of traffic rights was still a binding constraint. This is a limitation that the two countries are hoping to address with the help of a wider cross-border transport agreement (CBTA) within ADB's GMS framework (para. 37).

11. On the other hand, since this was the first GMS project for which ADB provided loans to more than one country at the same time, the ADB Board of Directors raised concerns during approval about possible increased risks and complexity that can come from a project involving two countries. Subsequently, several design weaknesses were identified during implementation. Because of the considerable time needed by TA consultants to study issues relating to the international nature of the Project and given limited TA funds, the preliminary design on which tenders were based was inadequate for execution of the civil works. The design of most of the road alignment and bridges was incomplete at the start of project implementation.[9]

B. Rationale

12. The Phnom Penh–HCMC Highway Project was the first to be developed under the ADB's GMS economic cooperation program. The project rationale was and remains consistent with ADB's strategy for Cambodia and Viet Nam, the governments' policies and plans, and the GMS program. Despite the political setback in Cambodia in 1997, the Government remains committed to achieving its objective of sustainable growth. This has been supported by ADB. In the transport sector, ADB's strategy placed major emphasis on the restoration of primary road infrastructures to provide safe and economic travel to the country's main growth centers and border-crossing points. During project formulation, Viet Nam was implementing a transport sector reform program to improve transport efficiency and create an institutional environment conducive to growth. ADB supported this by according high priority to physical infrastructure development, and policy and institutional reforms in its 1995 country operational strategy.[10] The Project was consistent with the GMS program aim to enhance connectivity and promote competitiveness to strengthen cooperation and economic links between GMS countries.

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[8] Exceptions made in Cambodia were the 64 km of road at Ngik Ngouk, which needed to be realigned to avoid resettlement and about 124 km at Svay Rieng, where a bypass was designed for the town.

[9] This was recognized at the time of Board approval by including the detailed design in the civil works contracts, but the full extent of the shortfalls in investigation and quantities did not become apparent until completion of detailed design. The detailed design works proved time consuming. Significant time was required to carry out the surveys and designs (up to the end of 2000) and scope of work of approved new designs increased as compared with the bidding documents. This delayed the construction progress.

[10] ADB. 1995. *Country Operational Strategy Study: Viet Nam.* Manila.

C. Cost, Financing, and Executing Arrangements

13. Total project cost was in line with appraisal estimates (Appendix 1). The original scope was delivered well below appraisal cost targets due to the lower than expected cost of civil works. Loan savings were used for the extended scope and additional works in both the Cambodia and Viet Nam components, the latter accounting for a cost overrun.

14. **Cambodia Component.** At appraisal, the component cost was estimated at $50.7 million, of which $36.1 million (71%) was foreign exchange cost and $14.6 million (29%) local currency cost (Appendix 1). ADB's loan of $40 million, from its Special Fund resources, was to cover the entire foreign exchange component and $3.9 million of the local currency component.[11] The Government of Cambodia was to finance $10.7 million to cover the remainder of the local currency cost. The Ministry of Public Works and Transport (MPWT), as the Executing Agency (EA), assigned overall responsibility for implementation to its PMU.

15. The PCR reports actual project cost at $45.3 million, 10.7% lower than the appraisal estimate. The major reduction was realized for the civil works component (Table 1). Actual cost for civil works was $28.36 million, 18.5% lower than the $34.8 million estimated at appraisal. Consulting services for construction supervision and government management were higher than the appraisal estimate, although not significantly. Meanwhile, for the extended scope, the actual cost was $9.3 million, of which 90% was for civil works and the rest for equipment. The civil works cost was lower because bids were significantly less than the engineers' estimate.[12]

Table 1: Estimated and Actual Costs
($ million and %)

	Cambodia			Viet Nam		
Description	**Appraisal**	**Actual**	**Actual/ Appraisal** (%)	**Appraisal**	**Actual**	**Actual/ Appraisal** (%)
Asian Development Bank	40.0	38.2	95.5	100.0	90.9	90.9
Government	10.7	7.1	66.4	44.8	75.6	168.8
Total Project Cost	50.7	45.3	89.4	144.8	166.5	115.0
Base Costs	43.2	34.8	80.6	125.0	91.3	73.1
of which Civil Works	34.8	28.4	81.6	87.2	53.4	61.2
Consultant Supervision	3.0	3.5	116.7	5.8	5.4	93.1
Total Original Scope	50.7	35.9	70.8	144.8	93.5	64.6
Additional Works	0.0	9.3	0.0	0.0	73.0	0.0

Source: Asian Development Bank. 2008. *Project Completion Report on the Greater Mekong Subregion: Phnom Penh to Ho Chi Minh City Highway Project in Cambodia and Viet Nam*. Manila.

16. Financing shares at appraisal were $40 million (79%) from ADB and $10.7 million (31%) from the Government. Financing shares at completion were $38.15 million (84%) from ADB and $7.1 million (16%) from the Government. As a result of the significantly lower bids for the civil works, a reallocation of $8 million was made to the Emergency Flood Rehabilitation Project (EFRP) for the civil works component.[13]

[11] The loan was subject to a 1% service charge per annum based on the outstanding amount of loan withdrawn and semiannual repayments for 30 years.

[12] Cost estimates by the TA consultants were considered realistic based on information available. However, the market, which was not really structured then, proved competitive with some contractors willing to bid on a loss-leader basis to gain a foothold.

[13] ADB. 2000. *Report and Recommendation of the President for a 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], for $55 million, approved on 21 December).

17. The implementation arrangements were as envisaged at appraisal. MPWT was the EA; the PMU, headed by a project director, undertook day-to-day implementation of the component. The same project director continued until project completion, supported by PMU staff. Two staff from the provincial offices where the project road passes, Svay Rieng and Prey Veng, were assigned alternately to the PMU for 6 months at a time as part of the training process.

18. **Viet Nam Component.** The component cost at appraisal was estimated at $144.8 million, of which $74.6 (51.5%) was estimated to be the foreign exchange cost and $70.2 million (49.5%) the local currency cost (Appendix 1). ADB's loan of $100 million, from its Special Funds resources, was to cover the entire foreign exchange component and 36.2% of the local currency cost. The Government of Viet Nam was to provide $44.8 million to cover the remainder of the local currency cost. Financing shares at appraisal were $100 million (69%) from ADB and $44.8 million (31%) from the Government. Actual financing shares were $90.9 million (55%) from ADB and $75.6 million (45%) from the Government.

19. The original scope of work was delivered well below appraisal cost targets because of lower than expected civil works costs. This was mainly due to low bid prices of contractors shortlisted for the component.[14] Additional works were then carried out using unused loan funds. The Project involved major resettlement costs. The actual share of land, resettlement, and unexploded ordinance of total costs was 38.6% as compared with 21.8% estimated at appraisal.

20. Implementation arrangements were as envisaged at appraisal. The Ministry of Transport (MOT), the component's EA, assigned overall responsibility for implementation to the MOT vice minister in charge of externally financed projects. It assigned day-to-day control of the component to the PMU−My Thuan (PMU-MT), an MOT agency based in HCMC. The PMU-MT is headed by a deputy director general who oversaw day-to-day implementation.

D. Procurement, Construction, and Scheduling

1. Cambodia Component

21. **Procurement.** As planned at appraisal, the civil works component was covered by a single package using international competitive bidding procedures. Prequalification evaluation was completed in February 1997. However, procurement was halted as a result of the civil disturbance in mid-1997. The prequalification resumed in June 1998 and concluded in August 1998. The package for the road civil works originally included the design and construction of a new border post. However, it was removed from the main civil works contract in October 2002 because of the slow performance of the contractors. Bids were invited under local competitive bidding procedures for the construction of the border post. The bid was approved in January 2004. The same contractor undertook the construction of the border-post walkway roof, which was included as a separate contract. Only four of the five contracts for the supply of equipment for the border post were awarded.

[14] Cost estimates by the TA consultants were said to reflect the prices that would have been bid (and were actually bid, unsuccessfully) by interested international contractors. The estimates were based on market prices, and previous contracts (few in number at that time) implemented by international contractors in Viet Nam. However, contract bidders were all MOT-owned state enterprises, who bid to government-fixed "norm" prices, which were well below market prices. This was the practice throughout the country at the time. The objective was to keep the overall cost of constructing basic infrastructure low. The viability of the enterprises was not a concern. Losses incurred were made good through the national budget, in some way. While this situation no longer prevails, it was the reason the bid prices were low.

22. **Construction and Scheduling.** The Cambodia component was estimated to be implemented over 38 months from June 1999 to August 2002, including civil works for 36 months. Actual completion of the component took 74 months, from November 1999 to December 2005. Project completion was delayed by 36 months because of requests from MPWT for project extension. The extensions were caused by delays from (i) adverse weather conditions, (ii) construction delays due to poor planning by the contractor, (iii) lag in relocation of utilities and delay in finalizing the design of border-post facilities, and (iv) addition of items to the scope of work. ADB approved three loan extensions and reallocation of funds as appropriate (Appendix 2).

2. Viet Nam Component

23. **Procurement.** Procurement and implementation processes for the component were as envisaged at appraisal. The civil works were divided into three contract packages using international competitive bidding procedures. ADB found the bids from prequalified applicants to be very low, compared with the original estimates. ADB asked the PMU-MT to carefully evaluate the performance of the bidders. It submitted the evaluation report in September 1997, and ADB subsequently approved the civil works contracts in October 1997.

24. **Construction and Scheduling.** The Viet Nam component was implemented in parallel with its Cambodia counterpart. As in the case of Cambodia, actual completion of the component took 74 months or a delay of 36 months. The loan was extended twice to 31 December 2005 at the request of the Government. These extensions were caused by delays that were in part due to additions to the scope of the work (Appendix 2). Major delays were attributed to (i) adverse weather conditions, (ii) slow progress in resettlement activities including relocation of utilities, (iii) time consumed by preparation of detailed design and redesign, (iv) insufficient equipment of the contractors, and (v) heavy traffic in the construction area.

E. Design Changes

25. The original project design was modified to make use of loan savings by including additional works during implementation.[15] In general, these additional works enhanced the original project design.

26. **Cambodia Component.** Major departures from the original scope of work were linked to ADB response for the natural disasters in 2000 and 2001. The interim repairs of 58 km of roads from Neak Loeung to Phnom Penh were transferred to the EFRP because of flood damage in 2000. Likewise, rehabilitation of Trabek bridges 1 and 2 was deleted from the scope following requests from MPWT on 27 November 2001 and 7 December 2001 to have these bridges rehabilitated under the EFRP. Corresponding to the extension of scope of the Cambodia component, ADB approved the use of surplus loan funds to finance the urgent rehabilitation of RN11, which was severely damaged by floods in 2000.[16]

[15] Because of significant loan savings resulting from large differences between lowest bidder cost estimates and ADB appraisal estimates, the Governments requested ADB for inclusion of additional works

[16] RN11 was considered as a project component of the EFRP. When the EFRP was approved, ADB approved use of loan savings and an extension of the scope of the Phnom Penh to HCMC Highway Project to cover rehabilitation of the transport system damaged by the floods. Rigorous analysis of the economic rates of return was not feasible and not required under the ADB *Disaster and Emergency Assistance Policy* (2004).

27. **Viet Nam Component.** Design changes involved a significant number of additional works to capitalize on loan savings.[17] The total number of intersections covered by the Project increased from the original 2 envisaged at appraisal to a total of 10 following additional works. Minor changes in scope were undertaken as the route, physical site, or locations did not change and hence were within the project purpose. These included construction of flyovers in four intersections within NH1A (Thu Duc, Linh Xuan, Binh Phuoc [1.3 km] including reconstruction of Vinh Binh Bridge, and Quang Trung); one intersection in NH22A (Cu Chi intersection); and one flyover each at the Go Dau and Ga intersections.[18] The additional flyovers were considered part of overall efforts to relieve congestion on the urban road network and to enable the project road to provide easy access to Vung Tau and Saigon ports. [19] Other additional works involved (i) widening the road from Cu Chi to Go Dau including Go Dau Bridge, (ii) realigning the bypass at Trang Bang (3.9 km), (iii) upgrading provincial road 786 (11.1 km),[20] (iv) providing grade separation at Tan Thoi Hiep intersection, and (v) installing median barrier walls to reduce accidents at various locations. The additional works were incorporated through contract amendments.

F. Outputs

28. **Cambodia Component.** The Project completed the major outputs envisaged at approval albeit with delays. These involve (i) reconstruction of 105 km of the existing highway from the Mekong ferry at Neak Loeung to the Cambodia–Viet Nam border at Bavet (Map 2), (ii) construction of four new bridges and rehabilitation of six existing bridges, and (iii) construction of new customs and immigration facilities at the border. While design changes mentioned in para. 25 were carried out to use surplus loan funds, two minor components were transferred to another project. These include the transfer of interim repairs of the Phnom Penh–Neak Loeung section and rehabilitation of Trabek bridges 1 and 2 to the EFRP. In line with the extension of the scope of the Cambodia component, RN11 was selected for additional work. This involved rehabilitation of the whole road for about 97 km of subproject RN11C under the EFRP.

29. Consulting services for supervision were implemented as envisaged. The consultants trained the PMU staff through formal presentations and seminars. PMU staff assigned to the consultant supervision team as counterpart staff members received on-the-job training.

30. **Viet Nam Component.** Physical outputs under the Viet Nam component were implemented as planned except for delays. These include (i) improvements to 80 km of road along NH1 and NH22A to asphalt concrete standard (Map 2), and (ii) construction of eight bridges and rehabilitation of two bridges. Loans savings were realized after completion, and MOT asked to use these for additional work items (i.e., construction of five flyovers and widening of 28 km of road from 13 m to 18 m to increase safety for motorcycles) (para. 27).

31. Consulting services for supervision were as envisaged, except for extensions due to changes in design and inclusion of additional civil works.

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[17] They did not represent a change in route, physical site, or location, and were fully within the project purpose and considered a minor change in scope.

[18] The Go Dau and Ga intersections are located on the Dai Han Highway (other name of urban section of the NH1A). With respect to the Go Dau intersection, the Go Dau flyover was partly usable since only 3 out of the 4 access roads were completed.

[19] The original designs included four flyovers, but these were deleted from the scope because of an expected shortfall in foreign cost funding from ADB. As a result of the loan savings realized from the original civil works contracts and the deletion of the four flyovers from the scope, additional items were incorporated into the civil works. The PCR does not indicate whether the originally selected flyovers were reinstated.

[20] TL786 is a provincial road that joins NH22 at Trang Bom (km 53). It is a feeder road of the project corridor.

G. Consultants

32. The supervision consultants for each country's project component comprised an international consultant, supported by national consultants. The supervision consultants' work included extensive training for the EA and national consultant staff in project and contract management, in particular; and monitoring their respective component's land acquisition, resettlement, and other social impact-related activities.

33. **Cambodia Component.** A total of 1,114.5 person-months (164 person-months of international consulting and 950.5 person-months of national consulting) were used, including 35.5 additional person-months for border-post supervision consultancy. This was 31% more than the estimated 852 person-months of consulting services envisaged at appraisal, which was based on 36 months of construction. The increase in consultant services did not result in any increase in cost.

34. **Viet Nam Component.** At appraisal, a total of 1,710 person-months (260 person-months of international and 1,450 person-months of national) of consulting services were expected to be used. However at the contract stage, consulting services were reduced to a total of 941 person-months. Because of extensive revisions to the design and extension of consulting services for the additional works, actual consulting person-months totaled to 1,662.5 (358.5 person-months of international and 1,304 of national consulting). The increase in consulting services did not result in any increase in cost.

H. Loan Covenants

35. **Cambodia Component.** The Government and MPWT fully complied with 7 (58%) of 12 standard loan covenants (Appendix 4). The covenants on resettlement and compensation to project-affected people, environmental mitigation measures, and road maintenance were only partly complied with. A full resettlement audit was carried out following complaints from some project-affected people through a nongovernment organization.[21] This situation is only being resolved after road completion (para. 75). Delays were incurred in complying with environmental mitigation measures as ADB noted that consultants needed to improve these. The remedial action plan recommended by the supervision consultant specializing in environmental issues was subsequently carried out. A covenant to conduct tripartite coordination (Cambodia, Viet Nam, and ADB) meetings every two or three times a year to discuss project implementation matters was included. Although only three formal tripartite meetings were held during implementation, several informal meetings were held under a regional TA.

36. **Viet Nam Component.** The Government and MOT fully complied with about 88% of 16 standard loan covenants. However, the midterm review in November 2001 noted that the consultants needed to improve traffic control facilities during construction to improve safety. Traffic control subsequently improved, and the consultants used improved hazard signals, traffic signs, and safety barriers, thus reducing the number of accidents.

[21] ADB. 2007. *Project Completion Report on the Greater Mekong Subregion: Phnom Penh to Ho Chi Minh City Highway Project in Cambodia and Viet Nam.* Manila; and ADB Board Information Paper - ADB. 2005. *Loan 1659-CAM(SF): GMS: Phnom Penh to Ho Chi Minh City Highway Project—NGO Concerns about Resettlement*. Presented to the ADB Board on 25 July. Manila.

I. Policy Setting

37. The Third GMS Conference in April 1994 accorded high precedence to the development of priority subregional transport projects (including the East–West Economic Corridor) to encourage traffic and trade across international borders. These include strategic roads in the national road networks and interconnections between these national transport networks. At the same time, to mitigate barriers to the cross-border movement of goods and people in the GMS, the six GMS countries have signed the CBTA.[22] The CBTA is a multilateral instrument for the facilitation of cross-border transport of goods and people.[23] Box 1 provides the status of the CBTA. The Joint Committee of the CBTA, which met in Beijing on 20 March 2007, set as a target the ratification or acceptance by all GMS countries of all the annexes and protocols of the CBTA and commencement of the implementation of the national action plans of the CBTA by the time of the 3rd GMS Summit in 2008. This was not achieved owing to delays in ratification of the annexes and protocols.

Box 1: Current Status of the Cross-Border Transport Agreement

(i) All the countries have signed the CBTA, but ratification of the annexes and protocols is pending in three countries.
(ii) Cambodia, Lao PDR, and PRC have fully ratified the CBTA including its annexes and protocols. The other three countries are at various stages of ratification.
(iii) Initial implementation of the CBTA started at the Lao Bao–Dansavanh, Mukdahan–Kaysone Phomvihane, and Hekou–Lao Cai border-crossing points.
(iv) The GMS customs transit system has been adopted by all GMS countries, and the harmonized customs transit documents have been agreed upon. Implementation at the East–West Corridor is under way.

CBTA = Cross-Border Transport Agreement, GMS = Greater Mekong Subregion, Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China.
Source: Asian Development Bank's Southeast Asia Department.

38. The governments of Viet Nam and Cambodia became signatories to the CBTA in November 1999 and November 2001, respectively (para. 10). At the Eighth Meeting of the GMS Transport Forum held in Phnom Penh in August 2004, the GMS countries agreed to preempt the ratification of the annexes and protocols by undertaking initial implementation of the CBTA on a pilot basis at key border-crossing points, one of which is the Bavet−Moc Bai border crossing where the project road passes.

39. Implementation of the Bilateral Road Transport Agreement between Cambodia and Viet Nam was launched at Bavet−Moc Bai on 30 September 2006 (para. 56).[24] It applies to passenger and cargo vehicles. However, up to now, a maximum of 40 vehicles per day (vpd) from either side are allowed to cross the international border (para. 73), including passenger buses and cargo trucks. This is a real limitation, which the two countries are trying to address.

[22] Formulated under a series of ADB TA projects, the CBTA provides a practical approach to streamline regulations and reduce nonphysical barriers over the short to medium term, and includes measures such as more efficient inspection procedures and reciprocal traffic regulations.

[23] The GMS governments recognized that providing physical infrastructure is a necessary but not a sufficient condition for increased subregional connectivity. Mitigating nonphysical barriers to cross-border movement of goods and people is also important to increase efficiency, reduce costs, and maximize economic benefits from improved subregional transport infrastructure.

[24] The establishment of bilateral transport agreements was initiated as part of efforts to accelerate implementation of the CBTA. With full implementation of the CBTA pending, these agreements are intended to jumpstart implementation between countries that have already agreed to the application of certain CBTA provisions and principles between each other.

They have reached agreement in principle to increase the maximum to 150 vpd. Yet, even after full CBTA implementation, which could increase the number of licenses to 500 vehicles, diversion of freight traffic and trade will depend on a reduction of net road costs, which are currently higher than river or shipping costs. Meanwhile, complementary nonphysical interventions to improve the investment climate are being addressed under an ADB regional TA.[25]

III. PERFORMANCE ASSESSMENT

A. Overall Assessment

40. Overall, the Project is rated "successful." The relevance of the Project to regional and national development needs and to Government and ADB strategies is high. The Project achieved the main outputs of improving the road corridor, which resulted in an increase in traffic on the road. Project benefits met most of the intended outcomes of improved national road transport efficiency. Growth in national traffic was faster compared with subregional traffic due to continued restrictions on vehicle movement at the border. With full implementation of the CBTA still pending, the expected increases in cross-border traffic have not yet been realized. There remain several areas of improvement in the Project relating to implementation performance, use of loan savings, missing infrastructure links and sustainability. The following section provides more details on these issues.

41. The Project rating is based on OED's four-category evaluation criteria of relevance, effectiveness, efficiency, and sustainability. The weights used to aggregate individual country components take into account their share of project cost at completion. These are 21% for the Cambodia component and 79% for the Viet Nam component. The overall assessment is summarized in Table 2.

Table 2: Overall Performance Assessment

	Country Component		
Criterion	**Cambodia Component**	**Viet Nam Component**	**Overall**
Relevance (20%)	3.0	3.0	3.0
Effectiveness (30%)	2.0	2.0	2.0
Efficiency (30%)	2.0	1.0	1.2
Sustainability (20%)	1.0	2.0	1.8
Overall Rating[a]	**2.0**	**1.9**	**1.9**
	Successful	**Successful**	**Successful**

[a] Highly successful $\geq$ 2.7; successful 2.7 > S $\geq$ 1.6; partly successful 1.6 > PS $\geq$0.8; unsuccessful <0.8.
Source: Operations Evaluation Mission.

B. Relevance

42. The Project had regional and national importance (i.e., considered a priority by Government economic development reports and by ADB country documents and GMS reports). The Project was consistent with ADB's strategy for Cambodia and Viet Nam, and their governments' policies and plans. It was consistent with the GMS program aim to enhance connectivity and promote competitiveness to strengthen cooperation between Cambodia and Viet Nam, and economic links between GMS countries. The project road is part of the Asian

[25] ADB. 2006. *Technical Assistance for Implementation of the Greater Mekong Subregion Cross−Border Transport Agreement*, for $400,000 and $1,000,000 (Supplementary), approved on 6 March and 27 October, respectively. Manila.

Highway 1 route and the only remaining section of the strategic Bangkok–Phnom Penh–HCMC–Vung Tau highway corridor needing improvement at the time of approval (para. 1 and Map 1). Despite some quality-at-entry issues due to design weaknesses (paras. 10–11), the Project as a whole was (at loan approval) and remains "highly relevant" in terms of sector, country, and regional demands.

43. **Cambodia Component.** The Cambodia component is rated "highly relevant." The transfer of some project components and the extended scope of the Cambodia component were justified in the context of ADB emergency assistance to Cambodia. The extended scope, which covers RN11, complemented the project objective of improving road transport efficiency and safety. RN11 serves the northeast region of the country and is the road network for the central subcorridors of GMS transport corridors.

44. **Viet Nam Component.** NH22 leading to Moc Bai is part of the GMS network (58 km); while NH1A (22 km), which is part of the urban road network of HCMC, provides easy access to Vung Tau Port or Saigon Port within the GMS context. Additional works under this component complemented the Project's intent by improving traffic efficiency and reducing traffic congestion. The introduction of flyovers relieved congestion on the urban road network and helped improve intersection safety (para. 27). Meanwhile, the addition of RN786 was within the project purpose as the provincial road joins NH22 at km 53 and serves as a feeder road for the project corridor. Overall, the Viet Nam component is rated "highly relevant."

C. Effectiveness

45. The Project on the whole is rated "effective" in achieving its immediate objectives and outputs. The Project had targeted to improve the road transport efficiency along the Phnom Penh–HCMC Highway and to mitigate nonphysical barriers to cross border movement. Although the Project effectively achieved the first outcome, it was less effective in achieving the second outcome. The increase in cross border movement was dependent on the implementation of the CBTA, which is being negotiated and implemented separately. With the implementation of the CBTA, it is expected that the effectiveness of the second component will improve.

1. Improve Road Transport Efficiency

46. This key outcome of improving the Phnom Penh–HCMC regional road corridor was fully achieved.

47. **Cambodia Component.** Overall, the Cambodia component is rated "effective." The Project satisfactorily delivered expected outputs for road design and pavement. Road condition along RN1 is good except in the sections between Phnom Penh and Neak Loeung, which are currently under construction. The average roughness index improved from 7 m per km to 2.2 m per km at completion. The average travel time was reduced from 7 hours to 3 hours after the project road was completed (Table 3). Average vehicle speed was estimated to have improved to 53 km per hour at evaluation (from about 23 km per hour before). A sample perception survey of households along RN1 indicates that a higher number of families think that quality of travel along the road has become easier and safer although accidents have increased.[26] Vehicle operating costs (VOCs) are estimated to have decreased by about 10% as a result of the Project.

[26] The survey showed that 78% of respondents said quality of travel along RN1 was easier and safer now as compared with 55% before the Project.

Table 3: Comparison of Travel Times on the Phnom Penh−Ho Chi Minh City Highway and the East–West Transport Corridor

Road Section	Distance (km)	Average Travel Time (hour)		Travel Time Savings (hour)	Travel Time Savings per km (hour/km)	Average Speed (km/hour)	
		Before	After			Before	After
Phnom Penh−Bavet	158	7	3	4	0.025	22.6	52.7
Moc Bai−HCMC	80	4	2	2	0.025	20.0	40.0
Phnom Penh–HCMC	**238**	**11**	**5**	**6**	**0.025**	**21.6**	**47.6**
Kaysone Phomvihane−Dansavanh	236	10–12	4	7	0.030	21.5	59.0
Dong Ha−Lao Bao	83	4	2	2	0.024	20.8	41.5
East–West Corridor	**319**	**14–16**	**6**	**9**	**0.028**	**21.3**	**53.2**

HCMC = Ho Chi Minh City, km = kilometer.
Source: Operations Evaluation Mission survey results.

48. Other outputs comprising cross-border facilities and rehabilitation of RN11 in Cambodia were delivered to a satisfactory quality. An origin–destination survey conducted by the Operations Evaluation Mission (OEM) indicates average travel time of road users along RN11 decreased by 25%−40%, ranging from 3−6 hours at the time of evaluation as compared with 4−10 hours before the road improvement. Average speeds of vehicles doubled to 50–70 km per hour at evaluation compared with 25−35 km per hour before. A household perception survey along RN11 indicates that more households think that quality of travel along the road has become easier and safer, with fewer accidents.[27]

49. In addition to an increase in traffic, vehicle mix changed over time. Nonmotorcycle traffic accounted for 54.2% of total daily traffic in Bavet and 25.3% along RN1 (Appendix 5). In Bavet, cars accounted for 37.7% of daily traffic. Buses and trucks accounted for about 16% of traffic in Bavet and along RN1. Along RN11, nonmotorcycle traffic accounted for 19.1% of total daily traffic, with buses and trucks accounting for 11.7%. Table 4 shows the percent increase in traffic volumes in Cambodia and Viet Nam. Although the growth in traffic on the Cambodia side has been in line with the PCR's estimate, the actual vehicle operating cost savings have been lower than the PCR's assumptions.

Table 4: Traffic Growth

Item (%)	Cambodia RN1 Average Growth Rate per Year 2005–2014 (%)	Viet Nam NH22 Average Growth Rate per Year 2005–2014 (%)
Growth estimated at appraisal	8.5	9.5
Growth estimated by PCR at completion	8.0	8.9
Growth estimated by PPER at postevaluation	8.8	7.1

NH = national highway, PCR = project completion report, PPER = project performance evaluation report, RN = route national.
Sources: Operations Evaluation Mission estimates and ADB management system.

50. The increase in traffic volumes has been accompanied by a deterioration in road safety along the RN1 (para. 80). A majority of the respondents to OED's survey on RN1 perceived an increase in the number of accidents after the project completion. This is not unique to this Project. Road safety remains an important issue affecting the overall effectiveness of most road projects.

[27] The survey showed that 75% of respondent households said quality of travel along RN11 was easier and safer now as compared with 50% before the Project.

51. Despite the positive outcomes in terms of benefits from the Project road, the Cambodia component of the project road could not operate fully as an effective and efficient regional corridor in the absence of a bridge on the Mekong River (thereby requiring the need for ferry service and the use of alternate routes) and the section between Phnom Penh and Mekong River (at Neak Loeung), which was still under major rehabilitation at evaluation.[28] This is expected to change with the implementation of the CBTA and construction of the bridge (now in progress with financing from the Japan Bank for International Cooperation). The slow growth in establishing special economic zones (SEZs) to stimulate agriculture and industrial development in the project areas constrains national traffic growth.[29]

52. **Viet Nam Component.** The Viet Nam component is rated "effective". The Project satisfactorily delivered expected outputs for road design and pavement. Other expected outputs, like the cross-border facilities or additional works (e.g., flyovers) were all delivered to a satisfactory quality. Road conditions along NH22 and NH1A are good. Carriageways were widened from 10.5 m (2 lanes) to 14–28 m (4–6 lanes). The average international roughness index rating improved from about 4 m per km to 2.2 m per km at completion. Estimated travel time from Moc Bai to HCMC was reduced from 4 hours to 2 hours after the project road was completed (Table 3).[30] Average vehicle speed improved to 40 km per hour at evaluation (from 20 km per hour before). As in the Cambodia component, VOCs were estimated to be about 10% lower at evaluation.

53. On the Viet Nam side, national traffic grew at 15%−25% per year due to the presence of SEZ development in the project area. Traffic growth varied between urban and rural sections. In HCMC suburbs, traffic was already high in 1996 and dominated by motorcycles and trucks.[31] While the increase in subregional traffic is estimated at 24% during 2001−2007, it accounts only for 7% of total traffic. Since the CBTA has yet to be implemented, the number of freight trucks able to cross the border has been restricted. Another key constraint to increased subregional traffic between Cambodia and Viet Nam is the absence of a Mekong River bridge (at Neak Loeung) and poor road conditions in Cambodia (para. 51). Presently, tourist buses dominate the border crossing.

54. As in the case of Cambodia, the Viet Nam component was marred by an increase in traffic accidents. Although the number of accidents decreased, their severity in terms of fatalities has gone up (para. 80).

2. Mitigate Nonphysical Barriers to Cross-Border Movement

55. This project component is rated "less effective." The Project expected to increase the cross border movement between Cambodia and Viet Nam. This was partially achieved and remains constrained by the lack of vehicle movement. Parallel initiatives in the GMS program

[28] The East–West Corridor differs from the Phnom Penh to HCMC road, given the continuous uninterrupted link across the Lao People's Democratic Republic. Discussions with freight forwarders indicate that traffic from Thailand to Viet Nam has grown since completion of the ADB-funded road improvement (Loan 1727).

[29] Cambodia's only SEZ is the Manhattan SEZ, established in 2005.

[30] Travel time was not reduced on the section from Thu Duc to An Suong (NH1A) due to rapid traffic growth in the HCMC area.

[31] Despite this, a major change in vehicle distribution has taken place with a five-fold increase in cars and seven-fold increase in buses. In the Moc Han area, annual average daily traffic (AADT) increased from about 30,000 vpd to around 55,000 vpd at the time of the OEM. Nonmotorcycle traffic improved slightly from around 25% of total traffic to about 31% at OEM. In the Trang Bang area, the AADT doubled to about 41,000 vpd in 2008 from around 20,000 in 1996. Motorcycles continued to dominate the area as their share increased from 83%–85% of AADT to around 88% of total traffic at evaluation (Appendix 5). Meanwhile, in the Moc Bai border area, nonmotorcycle traffic was minimal at 360 vpd or about 6% of total traffic.

could be credited with simplifying customs procedures. The new border-crossing facilities built on the Cambodia side as part of the Project are adequate. The Cambodia border-post facilities were not completed until March 2005 because of delays in design and separate contract bidding. Additional facilities and equipment (i.e., x-ray machines, close circuit television, and fire-fighting equipment) were provided and the Cambodia border post opened on 15 December 2005. The equipment is sufficient for the current volume of passenger and goods traffic, but more equipment will be required as the traffic increases. Meanwhile, the Viet Nam facilities were completed in April 2003 using Government funding.

56. In September 2006, the Bavet-Moc Bai crossing was selected for pilot implementation of the CBTA (para. 39). The existing bilateral road transport agreement between Cambodia and Viet Nam applied to passenger and cargo vehicles. A year and half later, implementation of the CBTA is still pending at this border-crossing; progress has been slow in terms of border movement of people, goods, and vehicles. In Cambodia, the number of passengers increased five times between 2005 and 2007, reaching an average of 1,660 per day (both directions). This includes passengers crossing the border in buses going to and from Phnom Penh and HCMC, and those going to the casinos in Bavet. The proportion of Vietnamese crossing the border increased from 29% of total movements in 2003 to 37% in 2007, and the proportion of other international tourists increased from 25% to 30%. On the Viet Nam side, the number of people crossing the border after project completion consistently increased between 2004 and 2007.

57. Even with the improved roads and border facilities, the volume of trade and trucking activities is small.[32] Currently, the majority of the traffic on the project road is national rather than international (Table 5).[33]

Table 5: Distribution of National vis-à-vis International Traffic (%)

Country	Project	Subregional	National
Cambodia	Route National 1	20	80
Viet Nam	National Highway 22	7	93

Source: Operations Evaluation Mission's surveys.

58. Not unexpectedly, the number of vehicles crossing the border remains low as the CBTA is not yet implemented (paras. 39 and 73). Most of these vehicles are cars and buses. Subregional traffic along RN1 comprises mostly Viet Nam buses operating between Phnom Penh and HCMC. On the Viet Nam side, while showing a consistent increase in the number of vehicles crossing the border and rising significantly from 2004, traffic is only slightly above the 1997 count.

59. Due to restrictions at the border, trade activity along the border remains small relative to its potential (para. 71). Yet, even as trade facilitation efforts (i.e., CBTA) struggle forward, the package of improved road and border facilities already offer a strong upside toward encouraging trade activity across the border. At the same time, customs data from Viet Nam suggests progressive improvement in trade volumes across the border (para. 79). This progress is despite the need for transshipment of goods at the border. Since the movement of vehicles

[32] The OEM estimates the number of vehicles remains low averaging 67. Most of these are cars and buses. As a consequence, trade volume accounts only for 3% of total Vietnamese exports to Cambodia and less than 1% of total Vietnamese imports from Cambodia (2005); an estimated 40,000 tons of transit passes through the border crossing. This may be a noteworthy increase from 2003 when the road was still under construction, but less significant if compared with 1996.

[33] The OEM consultant survey indicates that only 20% of 2,367 vehicles surveyed along RN1 comprised international traffic. Along RN22 in Viet Nam, only 7% of 5,019 vehicles surveyed comprised international traffic.

across the border is restricted, transporters have to shift their goods from the originating country vehicle to the destination country vehicle. This increases the time and cost of trade.

D. Efficiency

60. The Project is rated "less efficient." Efficiency is a measure of how well the resources have been used to achieve the outcomes. At appraisal, the Project as a whole was assessed to be highly economically justifiable with an economic internal rate of return (EIRR) ranging from 18% to 34% (Table 6). The PCR reconfirms these results, with EIRRs ranging from 21% to 29%. The OEM found that the reestimated EIRR of the Project was less than 12% or much lower than expected.[34] Findings from this economic reevaluation were sensitive to traffic intensity forecasts and assumptions on road roughness and VOCs. Among the reasons for the lower EIRRs is the fact that traffic has not increased as fast as expected, since trade through the land route has yet to pick up strongly, and estimates of VOC are conservative. The EIRR is lower on the Viet Nam side owing to the fact that the quantified incremental benefits of the road improvement have been limited. The project road was in good condition before it was rehabilitated but it was heavily congested. The Project enabled road widening, which was costly and led to high capital costs. The incremental benefit in terms of higher traffic was not sufficient to raise the EIRR. The EIRR does not incorporate the benefits of reduction in congestion. This is a significant benefit for Ho Chi Minh City, which is difficult to quantify. Appendix 6 provides details on the methodology and existing limitations to the economic analysis and to its comparison with previous assessments.

Table 6: Comparison of Reestimated Economic Internal Rates of Return (%)

	Appraisal		Project Completion		Operations Evaluation	
Road Section[a]	**IRI**	**EIRR**	**IRI**	**EIRR**	**IRI**	**EIRR**
Cambodia						
C2 (RN1)	7.0	22.0	2.2	24.1	2.3–2.6	12.0
Viet Nam		24.0		25.6		
V1 (NH1A)	2.1	34.0	2.2	28.7	2.2	(2.0)[b]
V2 (NH22)	4.3	18.0	2.2	25.4	2.2	10.7
V3	4.1	18.0	2.2	21.4		—
Total Project		23.0		25.1		11.3
Total Project Plus Regional Benefits		26.0		—		—

( ) =negative number, — = not calculated, EIRR = economic internal rate of return, IRI = international roughness index, NH = national highway, RN = route national.

[a] C2 (Mekong River ferry to Bavet); Viet Nam: V1 (Thu Duc to Hoc Mon); and V2 (Hoc Mon to Moc Bai border).

[b] V1 is a relatively short section (approximately 22 km). Being basically urban, traffic is high on V1 near Ho Chi Minh City but varies widely outside the city. Comparison with past numbers is difficult, since the exact locations of past traffic counts are not known. As a result, different locations in this type of urban road may bring large fluctuations in traffic. The more important reason for the negative figure is that the V1 section incurred a large construction cost to expand the road carriageway from 6 to 28 meters or from 2 lanes to 6 lanes. The road roughness was low (at 3.5) before the Project. As a result, the incremental VOCs are not significant after road improvement.

Sources: Asian Development Bank project documents and Operations Evaluation Mission estimates.

61. This economic analysis is based on conservative assumptions and does not quantify benefits from reduction in congestion in the areas near Ho Chi Minh City, benefits on informal trade in the area, savings in time taken to cross the border, and incremental benefits of ensuring imports and exports continue to be handled efficiently at the border. For example, the economic reevaluation used 2007–08 prices and the equivalent long term oil price of $80/barrel. A higher

[34] A new economic analysis was carried out with new prices for VOC and construction, and new traffic surveys. This shows that the growth in traffic has been lower than estimated. Moreover, as shown in Table 5, the traffic is predominantly still local with little subregional traffic. With full implementation of the CBTA still pending, only a few vehicles cross the border. Under these conditions, the Project comes out as economically less viable as compared with expectations at appraisal and completion.

oil price would almost certainly push the 11% EIRR above 12%. In addition, the quantified analyses did not capture benefits from substantial growth in informal trade in the area. Reduction in traffic congestion near Ho Chi Minh City is a key benefit, which has not been quantified due to the absence of baseline data. Appendix 6 highlights other limitations of the economic analysis that need to be recognized. The country-specific distribution of benefits is almost on par indicating that regional projects do provide comparable benefits to both countries. Country-specific evaluations indicate that Viet Nam paid more but is getting slightly less benefits. The lack of any major imbalance in economic benefits between the two participating countries reinforces the regional cooperation aspect of the two components.

62. Based on the recalculated EIRR of 12%, the Cambodia component is rated "efficient," but the Viet Nam component is "less efficient," since the recalculated EIRR is less than 12%. Overall, the Project EIRR is 11.3% in view of the higher weighting of the Viet Nam component (para. 41).

63. The Project also witnessed substantial loan savings during implementation owing to the lower bid costs. These loan savings were used to fund additional works. In case of Cambodia, extended scope and additional works amounted to 39% of the total project cost in that country. Correspondingly, additional works in Viet Nam amounted to 39% of the total project cost. The use of loan savings under the Project could have benefited from a better justification at the PCR stage. While including the additional works is seen as appropriate, ADB did not carry out adequate due diligence at project completion to check whether the loan savings had been used efficiently. This uncertainty feeds into the downgrading of the efficiency rating. During implementation, the inclusion of additional works was subjected to appropriate environmental and social assessment, which was followed-up by the supervision consultant. The approvals for the reallocation of loan proceeds were carried out as per ADB *Project Administration Instructions 5.05.*[35]

E. Sustainability

64. The Project is rated "less likely" to be sustainable in Cambodia. However, the Project is rated "likely" to sustain estimated net benefits in Viet Nam.

65. **Cambodia Component.** Road conditions at RN1 and RN11 are still good, as at completion. While the last survey for international roughness index data was done in 2006 (after completion), the current average international roughness index of RN1 is estimated to be between 2 and 3. Some visible damage for maintenance work relates to pot holes and the edge of pavements. This has been caused by heavy rain, overloading, and use of the road by ox carts.

66. Two areas of concern in sustaining benefits for the Cambodia component relate to sustainable and adequate funding for road maintenance and overloading. In Cambodia, in 2003 (before road completion), the total maintenance budget was $2 million−$3 million or a maximum of $1,000/km/year for the primary road network. Data from MPWT indicate that the national budget for the road sector has increased from about $17.5 million in 2003 to about $23.0 million in 2006 and $40.0 million in 2007. Similarly, the annual maintenance budgets for RN1 and RN11 have increased.[36] During 2007−2008, the budget for RN1 was reported at about

[35] ADB. 2003. *Project Administration Instructions for Reallocating Loan Proceeds*. PAI 5.05. Revised August 2005.

[36] MPWT data show the maintenance budget for RN1 (about 167 km) was $19,574 in 2003, $146,080 in 2006, $278,756 in 2007, and $286,871 in 2008. For RN11 (about 90 km), the maintenance budget was $144,110 in 2006, $210,836 in 2007, and $216,764 in 2008.

$1,700/km/year and around $2,400/km/year for RN11. Recently, Cambodia has been able to spend $1,500/km/year for routine maintenance on rehabilitated roads. In general, the budget allocations for RN1 and RN11 indicate a mismatch given the larger traffic volume and heavy vehicle traffic using RN1.

67. The increased bus and truck movements on RN1 are likely to lead to further overloading. At the time of project completion, axle load control measures were lacking and the Government had not carried out any axle load monitoring activities. At postevaluation, the Government has only partly addressed overloading issues. Weight control bridges have been installed with indicative axle-load limits (including fines for overloading) on selected national roads. However, enforcement has not been strict.

68. Funds allocated for road maintenance are generally insufficient for the entire Cambodia road network. In the past, Government allocations for maintenance have been used for flood drainage rehabilitation. The risk of overloading and continued low allocations for routine maintenance has lowered the likelihood of sustainability in Cambodia. This issue is highlighted by the fact that ADB provided a loan of $6 million for a Road Asset Management Project.[37] ADB's justification for providing this assistance to Cambodia was "Inadequate road maintenance is primarily due to a shortage of financial resources, poor organization of road management, and weak technical capacity. Other consequences of this situation include a limited capacity for planning and implementing road maintenance and a scarcity of capable domestic road works contractors who could undertake maintenance works and who would require a reliable and reasonably predictable market for their services." This has increased the risk of poor maintenance in Cambodia causing a downgrading of the SAPE rating for GMS projects in Cambodia to "less likely to be sustainable". In view of this, the Project in Cambodia is rated "less likely" in terms of sustainability.

69. **Viet Nam Component.** Despite higher traffic levels, the condition of the Project road is good. As in Cambodia, truck traffic and overloading on the road is high, and the need for regular periodic maintenance is likely to increase. MOT has issued norms for maintenance work, but the budget is limited. On a more positive note, the responsibility of managing the Project road has been given to the Ho Chi Minh City Urban Transport Management Unit while the MOT's Regional road maintenance Unit 7 (RRMU7) was made responsible for managing the Tay Ninh portion of NH22A. The regional road maintenance units receive annual budgets from the Government. The units currently receive an average of $2,100–$2,900 per km, which is higher than the other countries in the GMS. With the increase in length of rehabilitated roads, the maintenance needs will increase. The MOT has expressed its commitment to increase these allocations. In addition, the World Bank has initiated several programs to support the financing of studies on improving road maintenance financing and management; implementing a framework to improve cost recovery and planning, budgeting, and monitoring of maintenance on road assets.[38] This assistance has also enabled private sector participation in maintenance activities. Since 2007, the RRMU7 and the Ho Chi Minh City Urban Transport Unit have initiated the use of highway development and management model to plan maintenance activities. Taking into consideration the steps undertaken to date and the ongoing efforts, the sustainability of this component is rated "likely."

[37] ADB. 2008. *Report and Recommendation of the President to the Board of Directors for the Proposed Loan and Administration of Grant for the Road Asset Management Project*. Manila (Loan 2406[SF], for $6 million, approved on 21 January).

[38] World Bank. 2003. Project abstract for *Road Network Improvement Project* for Viet Nam. Sourced from www.worldbank.org

IV. OTHER ASSESSMENTS

A. Impact

70. Overall impact of the Project is rated "significant," although it has been "moderate" at the regional levels. The impact has been moderate in terms of cross-border movements, but the Project has contributed positively to the socioeconomic changes at the local level.

1. Impact on Institutions

71. Overall, the main aim of cross-border trade was partly met. Given that transit traffic between southern Viet Nam, Cambodia, and Thailand is small, this will need to be developed to ensure cross-border trade reaches its full potential. OED conducted a household survey that shows only 16% of Bavet respondents indicate they are involved in trading goods over the border. In Viet Nam, only 24% of respondents say they trade goods over the border. Growth in cross-border trade is expected to accelerate after CBTA implementation. A survey of impacts resulting from the combined transport and trade facilitation improvements are presented in Appendix 7.

72. ADB support for the preparation and negotiation of the CBTA is a positive contribution to the key project objective of connectivity between GMS countries.[39] To a limited extent, the Project contributed to improving trade facilitation in the area. Since Cambodia and Viet Nam are proud of the project facilities, the facilities and equipment are rated "most likely" to be maintained properly (para. 55). Savings in process time (customs, immigration) already observed at the border crossing (largely due to measures put in place before the CBTA) will "most likely" be sustained.[40] With full implementation of the CBTA, these gains are seen to be "substantial." However, additional assistance will need to be allocated to ensure successful implementation of the CBTA.[41]

73. At the Bavet–Moc Bai border, the initial implementation of the CBTA has been delayed despite the signing of a memorandum of understanding. A key hindrance has been the restriction of vehicle movements across the border.[42] Implementation of the CBTA is expected to reduce these restrictions. Presently, the primary beneficiary is national traffic rather than international or transit traffic (para. 57). The majority of international shipments need to stop at the border and transfer goods to local vehicles for the onward journey. The impact of trade facilitation efforts will only be apparent after implementation of the CBTA. While national traffic has grown rapidly, subregional traffic has been slow to increase. This is not surprising considering that the CBTA has not yet been signed. Without this framework, the full benefits of

[39] ADB assistance to the design and implementation of cross-border agreements has been through a series of TA projects—all rated "satisfactory." More than $5 million, excluding the time costs of ADB staff, have been spent on finalizing the CBTA's annexes and protocols. The output in the form of ratification of these agreements is evidence that these funds have been used appropriately and efficiently.

[40] A reduction in processing time is largely due to customs modernization, which streamlined procedures on both sides of the border. This modernization was financed by another development partner.

[41] In a broader context, ADB assistance for trade facilitation is considered "efficient" based on key outputs such as the signing of the CBTA and ratification of its annexes and protocols (i.e., ratification by the People's Republic of China and Lao People's Democratic Republic is complete; other countries will complete this in the short term).

[42] At Moc Bai, the Tay Ninh customs do not allow vehicles to proceed into Cambodia territory, even to the nearby Manhattan SEZ (6 km away). Customs requires an international transport permit. To date, only one freight company has received such permission from the Viet Nam Road Administration. Most of the quota has been granted to passenger buses that go to Phnom Penh. Most freight destined for the nearby industrial zone needs to stop for transshipment at the border.

ADB assistance cannot be realized. Project experience implies that although the cross-border roads were rehabilitated, efficiency in the use of resources can only be realized if the supporting regulatory and policy framework is in place.

74. The OEM border-crossing survey and a 2006 ADB time release study indicate that less time is required to cross the Bavet–Moc Bai border (Appendix 7, paras. 9−10).[43] However, these improvements can be attributed more to the recent bilateral agreements between the two countries than to the Project. Although time taken to process documents is estimated to range from 22 to 38 minutes, overall border-crossing time is much higher as trucks cannot physically cross the border and need to transship their goods. Average transshipment is reported to vary between 3 and 5 hours depending on the type of commodity.

2. Resettlement Impacts

75. In Cambodia, resettlement issues arose as a result of MPWT's handling of resettlement implementation.[44] While rehabilitating RN1, more than 100 affected persons in Kraing Khok and Stoeung Slot communities reported that they were not appropriately compensated by the Government. Several affected households were not satisfied with the compensation received resulting in a full resettlement audit to resolve the matter. The PCR provides a comprehensive assessment of the impact of this social issue (PCR footnote 3, Appendix 11). Resettlement issues are pending resolution for some affected people who submitted lawsuits to the International Rescue Committee and are still waiting for their case to be heard. A second compensation was made following complaints by nongovernment organizations on behalf of the affected families, and ADB intercession. All complaints were resolved by the Government and ADB Cambodia Resident Mission in May 2008. Meanwhile, the resident mission and the Government will undertake an income restoration program for affected persons who are still not satisfied with the resettlement compensation. For this purpose, the resident mission is processing a Japan Fund for Poverty Reduction assistance aimed at improving the livelihood of affected people, due to adverse impacts of the Project. Implementation of the assistance for Livelihood Stabilization for Poor Households living along RN1 is expected to commence in December 2008.

76. The Viet Nam component involved a major resettlement component because of road-widening activities (para. 19). The PCR did not find any major issue or problem with resettlement activities. At evaluation, the OEM confirmed that the resettlement process was completed in a satisfactory manner with no major issues or problem raised by the affected households.

3. Socioeconomic Impact

77. Three years after its completion, the project road has generated several positive and distinct impacts. In Cambodia, the Bavet area experienced an economic transformation from rice fields and an agriculture-based economy into an area of commerce and industry with an SEZ, a border-crossing point, and a city. The increased development features, among others, (i) trade and commerce (e.g., a limited traffic of containers between Phnom Penh and HCMC); (ii) cross-border movement and tourism (e.g., at least 20 buses per day crossing the border); (iii) private

[43] ADB Time Release Study of 2006 at the Bavet–Moc Bai border-crossing point and OEM national consultant reports.

[44] At the time of project processing, resettlement posed a unique situation that was recognized and prepared for. Highway rights-of-way were not redefined after the civil war. After loan approval, the Government reinstated the rights-of-way, and people who had moved to the edge of the road when the conflict ended (with nowhere else to move) found themselves on government land. The project team developed the concept of "corridor of impact" to minimize the impact on these communities that would arise from highway construction.

sector activity in Bavet (e.g., presence of seven large international casinos and a SEZ with four large international manufacturers); and (iv) significant increase in land values (which, in part, is attributable to the project road). In addition, several buildings and other services were introduced after completion of the road: hotels, casinos, rest houses, dry port, bank, schools, and health center. The key impact on nonagriculture activities relates to job creation from livelihood diversification and increased trade. In the Bavet community, incoming migrant workers contributed to a 40% increase in the population after completion of the road. Bavet and communities along RN1 experienced enhanced living standards including increased household income and spending; and new construction including hotels, rental houses, factories, and other new buildings. The Project contributed to private sector awareness of the potential and strategic importance of the Phnom Penh–HCMC Highway in terms of national and subregional development. Communities along the completed RN1 experienced increased income and spending.

78. Despite these positive outcomes, rapid development in Bavet and along RN1 needs to be more inclusive. A survey of households in the project areas indicates a majority are subsistence producers with little to trade with Viet Nam. Several limitations constrain them from taking advantage of increased trade with Viet Nam: (i) higher price and production costs of agriculture products in Cambodia, (ii) limited agricultural technology with use of traditional equipment, (iii) product quality that does not meet requirements, (iv) higher industry production costs, and (v) lack of economies of scale. The significant rise in land prices does not favor low- and medium-class households who risk giving up land. Meanwhile, affluent entrepreneurs (from Phnom Penh and international) tend to buy land for speculation, especially when the SEZs expand.

79. In Viet Nam, the road improvement influenced the development and expansion of new industrial estates and commercial establishments along the route. Three large duty-free shopping centers are now operating in Moc Bai. Customs data show total trade coming through the Moc Bai border crossing increased from 14.6 million tons in 1997 to 39.6 million tons in 2006. In terms of value, total trade across the Moc Bai border increased from $7.3 million in 1997 to $42.8 million in 2006. Total export value increased from $5.8 million in 1997 to $27.5 million in 2005, while total imports grew from $1.5 million in 1997 to $15.3 million in 2005. For example, Viet Nam provides materials and supplies including power and water for Cambodia's only SEZ. A summary assessment of socioeconomic impacts is provided in Appendix 8.

80. This project road is not unique and, as frequently occurs, increased travel speed (for which mitigating measures were provided). Road safety is an important issue for both countries, in particular for RN1 in Cambodia. With the increase in vehicle traffic along RN1, the number of reported road accidents also increased from an annual average of 120 cases from 2003–2005 to 180 incidents during 2006–2007 (Appendix 9). While the number of resulting deaths was constant, bodily injuries increased significantly for both light and serious cases. Incidence of road accidents involved mainly light vehicles such as cars and, in particular, motorcycles. As in the case of RN1, motorcycles have been involved in a significant number of accidents along RN11 in Viet Nam. However, the number of road accidents has declined in recent years. In Viet Nam, despite an increase in traffic volume, accident statistics show a minor decline between 1997−2000 and 2001−2004. However, the increased severity of some of these accidents is indicated in increased deaths during 2001−2004, in particular in 2003 and 2004 after completion of the project road. Multiple vehicle accidents increased as the number of damaged vehicles per accident increased slightly from 1.3 during 1997–2000 to 1.45 during 2001–2004. On the positive side, the number of body injuries declined from 1.35 per accident during 1997–2000 to 1.10 per accident during 2001–2004.

4. Environmental Impact

81. At appraisal, no adverse environmental impacts were envisaged for either county component as they involved the rehabilitation of existing roads. Initial environmental examinations concluded that environmental impacts would be minor. The civil works contracts for both components included environmental impact mitigation measures to be implemented by the contractors. However, these mitigation measures were not always fully complied with initially. Subsequently, after repeated warnings, the contractors improved their mitigation measures. The supervision consultants monitored the civil works contractors to ensure that environmental mitigation measures were properly implemented.[45]

82. In the GMS, one of the negative impacts from transport improvement is deforestation due to new demand for hardwood logs and lumber. Road improvement has facilitated illegal logging in the Lao People's Democratic Republic. In the case of the project road, these do not appear to be a significant issue yet. At the time of the OEM, the household perception survey in Cambodia indicates the majority of the respondents perceived that there was minimal incidence of timber being transported by the Project road during the last 2 years.

B. Asian Development Bank, Borrower, and Executing Agency Performance

1. Asian Development Bank

83. **Cambodia Component.** The Cambodia component was originally administered and supervised from ADB headquarters and was transferred to the Cambodia Resident Mission on 12 April 2002. Continuity in ADB supervision was strong with three project specialists handling the Project after loan effectiveness. Two headquarters-based staff administered the component from 2000 to 2002 and a single resident mission staff member from 2002 to 2006. The frequency and quality of supervision missions was satisfactory. ADB conducted 18 review missions, 1 special loan administration mission, a midterm review mission, and a loan takeover mission transferring the Project to the resident mission. Of the 18 review missions, 7 were resettlement review missions in response to the problems that occurred and the subsequent resettlement audit. MPWT and the Cambodia PMU recognized the role performed by ADB missions in providing advice on technical issues, preparation and evaluation of bid documents, and matters of loan administration. However, ADB could not field a sufficient number of missions to fully monitor Government compliance and effective implementation of the resettlement action plan at the beginning of implementation. On the whole, ADB supervision was responsive to a wide range of issues that arose during implementation. These include limited ADB sector experience and government institutional capacity (this being the first ADB loan to the roads sector), resettlement issues, natural disaster (flooding), and a shortage of government funds. Accordingly, ADB performance is rated "satisfactory."

84. **Viet Nam Component.** The Viet Nam component was originally administered and supervised from ADB headquarters but was transferred on 7 January 2003 to the Viet Nam Resident Mission. The frequency and quality of supervision missions is considered satisfactory.

[45] Other concerns include (i) insufficient traffic control measures to minimize accidents during construction, (ii) lack of or inadequate temporary drainage and reduced travel lane width because of water pooling, (iii) borrow pits beside the road with steep slopes posing a safety risk to people and animals, (iv) dust in sections under construction and in unfinished sections, (v) erosion of embankments, and (vi) disruption of the normal course of business and daily life in communities. These were rectified at project completion. The OEM did not find any adverse impacts at postevaluation.

ADB conducted 13 review missions, 2 special loan administration missions, a midterm review mission, and a loan takeover mission transferring the component to the resident mission. ADB supervision was marked by a total of six project officers from 2000 to 2006. MOT and the PMU-MT recognized the role performed by ADB missions in providing advice on technical issues, preparation and evaluation of bid documents, and matters of loan administration. Overall, ADB performance is rated "satisfactory."

2. Borrower and Executing Agency Performance

85. **Cambodia Component.** Despite being the first ADB loan to roads and highways, the Cambodia PMU, the implementing agency of the component, effectively managed physical implementation with assistance of the supervision consultants. The quality of completed works was satisfactory despite the delayed implementation of civil works. On the other hand, the Government and MPWT fully complied with less than 60% of 12 standard loan covenants (Appendix 4). In addition, quality during implementation was affected by a shortage of government funds. The release of counterpart funds in 2003 was delayed, and this was made worse by poor revenue collection and the national elections. By October 2003, the main civil works contractor had not been paid for 5 months resulting in cash-flow problems that led to implementation delays. On the whole, the Borrower and EA performance are rated "partly satisfactory."

86. **Viet Nam Component.** This ADB loan (the fourth to the roads sector) was approved immediately after the Third Road Improvement Project in December 1998. The PMU-MT effectively managed physical implementation of the component with the assistance of the supervision consultants. The quality of completed works was considered satisfactory, although implementation of civil works was delayed. The Government and MOT fully complied with about 88% of 16 standard loan covenants. On the downside, the Project Completion Review Mission reported difficulty in obtaining information on actual component costs in Viet Nam from the PMU-MT, as the accounts on local expenditure were at times misleading. In addition, PMU-MT record-keeping on resettlement activities was also misleading, with some data conflicting with that obtained during previous ADB review missions. Overall, the Borrower and EA performance are rated "satisfactory" at the low end.

V. ISSUES, LESSONS, AND FOLLOW-UP ACTIONS

A. Issues

87. **Cross-Border Transport Agreement.** GMS governments have made much progress in terms of the CBTA, although this is not yet complete. The CBTA needs to be ratified and implemented to strengthen project achievements. Future milestones for improved road transport facilitation under the GMS program include (i) ratification by all GMS government of the 20 annexes and protocols; (ii) initial implementation of the CBTA, and its annexes and protocols; and (iii) full implementation of the CBTA, and its annexes and protocols.

88. **Road Assets Maintenance.** Funds need to be made available for timely and effective implementation of road maintenance. In Cambodia, the maintenance budget for RN1 could be improved and receive priority in line with expected traffic requirements and its strategic importance. Given that traffic, in particular of heavy vehicles, will continue to increase along the transport corridor, the prevalent issue of overloading if not effectively addressed will require more resources for regular, routine, and periodic maintenance in the future.

89. **Road Safety.** With expectations of a sustained increase in vehicle traffic, in particular motorcycles, potential road safety issues are likely to persist. These include (i) lack of enforcement of posted speed limits and lack of appreciation by drivers of the rationale of speed limits; (ii) increasing pedestrian traffic, both crossing and along the road; (iii) lack of adequate shoulder width for vehicle stops and parking; and (iv) continued breakdown of the edges of the shoulders. The Government of Cambodia is undertaking a public awareness campaign for road safety under its national road safety action plan, which the Road Asset Management Project will partly finance (footnote 37). However, projects need to address this issue as part of formulation. Several PPERs have highlighted the need for incorporating road safety components in project designs.

90. **Health Risks.** The increase in cross-border movement will continue to raise the vulnerability of each country to the potential spread of infectious diseases like HIV and Avian influenza. In Viet Nam, about 60% of households surveyed by the OEM perceive that they are now more vulnerable to infectious diseases than before. The situation is different in Cambodia where the majority of households feel less vulnerable to such infectious diseases based on their awareness and from information received from various sources to protect against the diseases. Notwithstanding, a household survey respondent reported one case of AIDS, while several households reported going to doctors for consultations to check for Avian influenza.

B. Lessons

91. To achieve optimal benefit from a cross-border or subregional road transport project, a cross-border agreement and its enforcement, simplification of border formalities, and complementary investment in the project area are necessary. Benefits can only be realized if the supporting regulatory and policy framework is in place, and benefits of cost savings are passed on to end users. ADB and the GMS countries also need a more comprehensive regional approach to transform transport corridors into economic corridors. This entails complementary nonphysical interventions directed at improving the investment climate and attracting private sector investments along the road corridor.

92. The prudent use of loan savings is an important lesson provided by the Project. The use of loan savings for additional works was justified on the grounds of reduction in congestion in Ho Chi Minh City area as well as cost and time savings. However, ADB should have carried out appropriate economic due diligence at approval and at completion to ensure that the selected subprojects were economically viable. With specific exceptions (i.e., disaster and emergency assistance), additional major works requested by ADB borrowers should be subjected to similar economic rigor as original project components at completion. Rapid estimates of economic returns could be used when rigorous cost-benefit analysis is not possible. In summary, additional works should be included in the economic analysis of the relevant PCR.

93. The GMS program needs to continue to emphasize the importance of appropriate resettlement in all cases. Complications surrounding the payment of appropriate compensation to resettled people in Kampong Soeung in Cambodia indicate that the impact of road improvements on local people could be high. The situation is being resolved after road completion. This reinforces past lessons that require careful project implementation.

C. Follow-Up Actions

94. Recommended follow-up actions are detailed in Table 7.

Table 7: Follow-Up Actions

Follow-Up Action	Institution Responsible	Time Frame	Monitoring
Cross-Border Transport Agreement. The CBTA is crucial for enabling cross-border traffic on the Phnom Penh–Ho Chi Minh City Highway. ADB should work closely with the GMS countries in ensuring that the CBTA is fully ratified and implemented as per the agreed timetable.	Southeast Asia Department	Ongoing	GMS CBTA implementation plan
Economic Corridors. Although the CBTA is a necessary condition for development of the economic corridors, it is not sufficient to trigger economic activities. In case of Viet Nam, there has been a spurt in number of industries and other economic activities triggered by the growth of its national economy. This needs to be matched with corresponding growth in Cambodia. ADB needs to work with the governments on parallel interventions that will enable development of industries, agriculture, and production in general.	Southeast Asia Department	Ongoing	Development of economic corridors to be measured using GMS wide indicators
Periodic Maintenance. The lack of allocation of adequate funds for maintenance has been a long standing issue in Cambodia. ADB should continue to engage MPWT of Cambodia as well as MOT in Viet Nam in policy dialogue to ensure that appropriate budget is allocated for regular, periodic, and routine maintenance.	Southeast Asia Department	Ongoing	Stepped increase in the allocations for maintenance in both countries

ADB = Asian Development Bank, CBTA = cross-border transport agreement, GMS = Greater Mekong Subregion, MOT = Ministry of Transport, MPWT = Ministry of Public Works and Transport.
Source: Operations Evaluation Mission.

PROJECT COSTS

Table A1.1: Appraisal and Actual Cambodia Component Costs ($ million)

Item	Appraisal ($ million) Foreign	Local	Total (A)	Actual ($ million) Foreign	Local	Total (B)	Ratio (B/A)
A. Base Cost							
1. Land, Resettlement, UXO	0.00	5.00	5.00	0.00	2.40	2.40	0.48
2. Civil Works	28.00	6.80	34.80	22.39	5.96	28.36	0.81
3. Consultant Supervision	2.33	0.69	3.02	3.49	0.00	3.49	1.16
4. Government Management	0.00	0.40	0.40	0.00	0.52	0.52	1.30
Subtotal (A)	**30.33**	**12.89**	**43.22**	**25.88**	**8.88**	**34.76**	**0.80**
B. Contingencies							
1. Physical	3.03	0.79	3.82	0.00	0.00	0.00	0.00
2. Price	1.37	0.94	2.31	0.00	0.00	0.00	0.00
Subtotal (B)	**4.40**	**1.73**	**6.13**	**0.00**	**0.00**	**0.00**	**0.00**
C. Service Charge during Construction	**1.35**	**0.00**	**1.35**	**1.16**	**0.00**	**1.16**	**0.86**
Subtotal (A+B+C)	**36.08**	**14.62**	**50.70**	**27.04**	**8.88**	**35.92**	**0.71**
D. Extended Scope							
1. Civil Works (Emergency Flood Rehabilitation)	0.00	0.00	0.00	7.75	0.70	8.45	
2. Equipment	0.00	0.00	0.00	0.86	0.02	0.88	
Subtotal (D)	**0.00**	**0.00**	**0.00**	**8.61**	**0.72**	**9.33**	
Total (A+B+C+D)	**36.08**	**14.62**	**50.70**	**35.65**	**9.60**	**45.25**	**0.89**

UXO = unexploded ordinance.
Source: Asian Development Bank project completion report.

Table A1.2: Appraisal and Actual Viet Nam Component Costs ($ million)

Item	Appraisal ($ million) Foreign	Local	Total (A)	Actual ($ million) Foreign	Local	Total (B)	Ratio (B/A)
A. Base Cost							
1. Land, Resettlement, UXO	0.00	31.50	31.50	0.00	32.37	32.37	1.03
2. Civil Works	58.42	28.78	87.20	35.98	17.41	53.39	0.61
3. Consultant Supervision	4.66	1.09	5.75	5.11	0.24	5.35	0.93
4. Government Management	0.00	0.50	0.50	0.00	0.23	0.23	0.46
Subtotal (A)	**63.08**	**61.87**	**124.95**	**41.09**	**50.25**	**91.34**	**0.73**
B. Contingencies							
1. Physical	6.31	3.04	9.35	0.00	0.00	0.00	0.00
2. Price	3.11	5.25	8.36	0.00	0.00	0.00	0.00
Subtotal (B)	**9.42**	**8.29**	**17.71**	**0.00**	**0.00**	**0.00**	**0.00**
C. Service Charge during Construction	**2.12**	**0.00**	**2.12**	**2.15**	**0.00**	**2.15**	**1.01**
Subtotal (A+B+C)	**74.62**	**70.16**	**144.78**	**43.24**	**50.25**	**93.49**	**0.65**
D. Extended Scope							
1. Land, Resettlement, UXO	0.00	0.00	0.00	0.00	31.96	31.96	
1. Civil Works	0.00	0.00	0.00	24.88	14.50	39.38	
2. Equipment	0.00	0.00	0.00	1.61	0.09	1.70	
Subtotal (D)	**0.00**	**0.00**	**0.00**	**26.49**	**46.55**	**73.04**	
Total (A+B+C+D)	**74.62**	**70.16**	**144.78**	**69.73**	**96.80**	**166.53**	**1.15**

UXO = unexploded ordinance.
Source: Asian Development Bank project completion report.

SCHEDULING: EXTENSION OF LOAN CLOSING DATES

Table A2.1: Cambodia Component

Extension	Reasons for Delay	Action Taken
1. The Ministry of Public Works and Transport (MPWT), the Executing Agency requested a 12-month loan extension in May 2003.	• Floods of 2000 and 2001 and the heavy rainfall in 2002 made civil works difficult • A disorganized construction plan by the contractor • Delay in relocating telecommunications cables • Additional slope protection work to protect the road from future flooding • Additional time to carry out remedial works at the collapsed embankment along Svay Rieng bypass, which was constructed on very soft natural ground • Delay in finalizing design of border-post facilities	The Asian Development Bank (ADB) approved extension of loan closing date and reallocation of funds in June 2003.
2. MPWT requested a further 12-month loan extension in June 2004.	• To allow completion by contractor of additional works • Delays in construction of the cross-border facilities at Bavet • Change in scope from the original asphalt concrete pavement to a reinforced concrete pavement to match road construction on the Viet Nam side • Use of loan savings to finance furnishings and equipment for the border-post facilities	ADB approved extension of loan closing date in July 2004.
3. MPWT requested a 6-month loan extension in May 2005.	• To ensure that adequate facilities and equipment are provided for implementation of the cross-border transport agreement at the Bavet–Moc Bai border crossing	ADB approved extension of the loan closing date and minor reallocation of loan proceeds in May 2005.

Source: Asian Development Bank. 2008. *Project Completion Report on the Greater Mekong Subregion: Phnom Penh to Ho Chi Minh City Highway Project in Cambodia and Viet Nam*. Manila.

Table A2.2: Viet Nam Component

Extension	Reasons for Delay	Action Taken
1. The Ministry of Transport (MOT), the Executing Agency, requested a 24-month loan extension in September 2002.	• Time consumed by preparation of the detailed design and redesign • Slow progress in resettlement activities, including the relocation of utilities • Contractors' low bid prices and insufficient equipment • A long rainy season in 2000 • Heavy traffic in the construction area	The Asian Development Bank (ADB) approved extension of the loan closing date in November 2005.
2. MOT asked for a 6-month loan extension in June 2005.	• To complete additional works to the civil works contracts using loan savings.	ADB approved extension of the loan closing date in August 2005.

Source: Asian Development Bank. 2008. *Project Completion Report on the Greater Mekong Subregion: Phnom Penh to Ho Chi Minh City Highway Project in Cambodia and Viet Nam*. Manila.

Table A2.3: Summary of Physical Achievements: Cambodia Component

As Per Loan Documents	Design Changes	At Completion
1. Rehabilitate 105 kilometers (km) of route national (RN) 1 from Neak Loeung to the border with Viet Nam at Bavet.	• Changes in scope from original asphalt concrete pavement to a reinforced concrete pavement to match the Viet Nam side of the border, and modifications to the fencing	Reconstruction of 105 km of RN1 implemented as envisaged
2. Make minor improvements to about 60 km of RN1 from Phnom Penh to Neak Loeung (Mekong River ferry).	• Interim repairs from Phnom Penh to Neak Loeung transferred to the Emergency Flood Rehabilitation Project (EFRP)	—
3. Reconstruct and rehabilitate several bridges in poor condition.	• Rehabilitation of Trabek bridges 1 and 2 undertaken by the EFRP	Four new bridges built and six existing bridges rehabilitated
4. Construct border facilities at Bavet.	• Use of loan savings to finance furnishings and equipment for the border-post facilities	Completed border facilities have x-ray machines, close circuit television, and firefighting equipment installed; sufficient for current volume of goods and traffic
—	• Extended scope included subproject RN11C (rehabilitation of 97 km of the whole road) under the EFRP	RN11C improved

Source: Asian Development Bank. 2008. *Project Completion Report on the Greater Mekong Subregion: Phnom Penh to Ho Chi Minh City Highway Project in Cambodia and Viet Nam.* Manila.

Table A2.4: Summary of Physical Achievements: Viet Nam Component

As Per Loan Documents	Design Changes	At Completion
1. Reconstruct 80 kilometers (km) of national highway (NH) 1A (22 km) between Thu Duc and An Suong, and NH22A (58 km) from An Suong and the border with Cambodia at Moc Bai).	Additional works implemented because of loan savings: • flyover at Thu Duc intersection on NH1A • flyover at Linh Xuan intersection on NH1A • flyover at Binh Phuoc intersection on NH1A (1.3 km) including reconstruction of Vinh Binh Bridge • flyover at Quang Trung intersection on NH1A • flyover at Cu Chi intersection on NH22A • widening of road from Cu Chi to Go Dau including Go Dau Bridge • flyover at Go Dau intersection • realignment of the bypass at Trang Bang (3.9 km) • upgrading of provincial road 786 (11.1 km) • flyover at Ga intersection • grade separation at Tan Thoi Hiep intersection • median barrier walls to reduce accidents at various locations	Road improvements for NH1A and NH22A implemented as planned; total length of road reconstructed increased by 16.35 km (including 1.3 km at the flyover of Binh Phuoc intersection on NH1A, 3.9 km at the realignment at Trang Bang. and 11. 1 km at provincial road 786).
2. Reconstruct bridge, and replace or repair several smaller bridges.		Construction of 8 bridges and rehabilitation of two bridges
3. Construct border facilities at Bavet.	None	Implemented as envisaged.

Source: Asian Development Bank. 2008. *Project Completion Report on the Greater Mekong Subregion: Phnom Penh to Ho Chi Minh City Highway Project in Cambodia and Viet Nam*. Manila.

DESIGN AND MONITORING FRAMEWORK

Design Summary	Appraisal Performance Indicators/Targets	Project Achievements	
		Cambodia	Viet Nam
Impact A more efficient national and regional transport system and simplified customs procedures fosters regional trade and cooperation in Cambodia and the southern region of Viet Nam.	• Increased movements across the Cambodia–Viet Nam border (number of people crossing, volume and value of goods crossing, and number and type of vehicles crossing) • Reduced time and cost for each movement	The number of people crossing the border increased after project completion. In Viet Nam, total trade going through the Moc Bai crossing increased by average compound growth of 24.7% from $7.3 million in 1997 to $42.8 million in 2006. Likewise, trade volume improved from 14.6 million tons in 1997 to 39.6 million tons in 2005. However, because of restrictions in the bilateral agreement being enforced, the number of vehicles crossing per day is limited to 40 (including buses). Most freight is transshipped with the total volume still being on the low side. The crossing time at Bavet–Moc Bai is reported to have improved slightly because of reduced processing and queuing time. However, trucks' waiting time and transshipment time in common control area are not accounted for. Traffic has not increased as expected on either side of the border, and the corridor has yet to graduate into a full economic corridor. This is not surprising since moving from a transport and logistics corridor to an effective economic corridor will take time. In addition to the absence of implementation of the cross-border transport agreement (CBTA), the Phnom Penh–Ho Chi Minh City corridor could not fully function as an efficient corridor since the bridge on the Mekong along the Phnom Penh to Neak Loeung section was under construction at evaluation. Even after full implementation of the CBTA, diversions of freight traffic, i.e., trade, will depend on the reduction of net road costs, which are currently higher than river or shipping costs.	
Outcome Road transport efficiency and safety improved in the Ho Chi Minh City–Phnom Penh regional road corridor.	• Greater traffic volume and changes in vehicle type • Benefits to vehicles using the road within Cambodia and Viet Nam in terms of lower unit vehicle operating cost and greater speed • Community benefits from	Road condition improved from average international roughness index (IRI) of 7 meter (m) per kilometer (km) at appraisal to 2 per km at completion. Travel time from Phnom Penh to Bavet decreased from 7 hours (hr) to 3 hr after road completion. Average vehicle speed improved from about 23 km/hr to 53 km/hr. Average travel time on route national (RN) 11 was estimated at 3−6 hours at evaluation from 4−10 hours before the Project. Average vehicle speed was 50–70 km/hr at evaluation compared with 25–35 km/hr before. The project performance evaluation report estimates vehicle operating costs have decreased by about 10%. Survey of households along RN1 indicates that	Road condition improved from average IRI of about 2.1–4.3 m per km at appraisal to an estimated 2 m per km at completion. Travel time from Moc Bai to Ho Chi Minh City decreased from 4 hr to 2 hr after road completion. Average vehicle speed improved to 40 km/hr from 20 km/hr before. National traffic along the Viet Nam component increased quickly. Traffic growth varied between urban and rural sections. In Ho Chi Minh City suburbs, traffic volume was high in 1996 and continues to be dominated by motorcycles and trucks. Despite this, a major change in vehicle distribution has resulted in a five-fold increase in cars and a seven-fold increase in buses. In the Moc Han area, annual average daily traffic (AADT) increased

Design Summary	Appraisal Performance Indicators/Targets	Project Achievements	
		Cambodia	Viet Nam
	better road safety	a higher number of families thought that quality of travel along the road has become easier and safer, albeit with more accidents.	from about 30,000 vehicles per day (vpd) to around 55,000 vpd at the time of evaluation. Nonmotorcycle traffic improved slightly from around 25% of total traffic to about 31% at evaluation. In the Trang Bang area, AADT doubled to about 41,000 vpd in 2008 from around 20,000 in 1996. Motorcycles continue to dominate the area as their share increased from 83%–85% of AADT to around 88% of total traffic at evaluation. Meanwhile, in the Moc Bai border area, nonmotorcycle traffic was minimal at 360 vpd or about 6% of total traffic.
Nonphysical barriers to the movement of goods and people mitigated at the Cambodia and Viet Nam sides of the border along the project roads.	• Enabling protocols and regulations negotiated, signed, and in operation • Bilateral agreement in place to harmonize, regulate, and simplify cross-border movements	Viet Nam signed the CBTA in November 1999 and Cambodia signed in November 2001. Sixteen of the 20 enabling annexes and protocols were signed; the remaining four were signed in March 2007. Ratification is expected sometime in 2008. At the Eighth Meeting of the GMS Transport Forum held in Phnom Penh in August 2004, the GMS countries agreed to preempt the ratification of the annexes and protocols by undertaking initial implementation of the CBTA on a pilot basis at key border-crossing points, one of which was the Bavet–Moc Bai border-crossing where the project road passes. The implementation of a pilot bilateral road transport agreement between Cambodia and Viet Nam was launched at Bavet–Moc Bai on 30 September 2006. Under this bilateral agreement, vehicle movement is still restricted to maximum of 40 vpd (including buses). Vehicle movements are proposed to increase to 150 vpd under the existing bilateral agreement and to 500 vpd upon implementation of the CBTA.	
Outputs Improve 245 km of the existing highway between Phnom Penh in Cambodia and Ho Chi Minh City (Thu Duc) in Viet Nam.	• 105 km of RN1 from Neak Loeung to the border with Viet Nam at Bavet reconstructed • Minor improvement works to about 60 km of RN1 from Phnom Penh to the Mekong River ferry completed • Reconstruction of 22 km of National Highway NH (1A) between Thu Duc and An	Reconstruction of 105 km of the existing highway from the Mekong ferry at Neak Loeung to the Cambodia–Viet Nam border at Bavet was completed as envisaged. The interim repairs of the Phnom Penh–Neak Loeung section (60 km) and rehabilitation of Trabek bridges 1 and 2 were transferred to the Emergency Flood Rehabilitation Program (EFRP) because of the 2000 floods. In line with the extension of the scope of the Cambodia component, RN11 was selected for	Improvements to 80 km of road along NH1 and NH22A to asphalt concrete standard were completed as envisaged. Construction of eight bridges and rehabilitation of two other bridges were implemented as planned. Loans savings were realized after completion, and the Ministry of Transport asked to use the savings for additional work items (i.e., construction of five flyovers and widening of a 28 km road section from 13 meters to 18

Design Summary	Appraisal Performance Indicators/Targets	Project Achievements	
		Cambodia	Viet Nam
	Suong completed • Reconstruction of 58 km of NH22A from An Suong and the border with Cambodia at Moc Bai completed	additional work. This involved the rehabilitation of the whole road for about 97 km of subproject RN11C under the EFRP.	meters to increase safety for motorcycles).
Reconstruct or rehabilitate bridges in poor condition.	• Reconstruction and replacement or repair of bridges completed	Four new bridges and six existing bridges were rehabilitated.	Civil works included construction of eight bridges and the rehabilitation of two.
Construct customs and immigration infrastructure on the Cambodian and Vietnamese sides of the border.	• Access roads, vehicle parking areas, bond stores, security areas, offices, and residential complexes completed	Construction of border facilities was completed in March 2005 due to delays in design and separate contract bidding. The border post was opened to traffic on 15 December 2005.	Facilities were completed in April 2003.
Provide consulting services for construction supervision.		Consulting services for supervision were implemented as envisaged. The consultants trained the project management unit staff through formal presentations and seminars. Project management unit staff assigned to the consultant supervision team as counterpart staff members received on-the-job training.	Consulting services for supervision were as envisaged, except for extensions due to changes in design and inclusion of the additional civil works.

Source: Operations Evaluation Mission.

COMPLIANCE WITH LOAN COVENANTS

Table A4.1: Cambodia Component

Covenant	Status of Compliance				Remarks
	Complied	Partly Complied	Not Complied	Total	
1. Sector	3	0	0	3	No change since project completion.
2. Environmental	1	0	0	1	No change since project completion.
3. Social	1	2	0	2	Schedule 6, paras. 2–3 on resettlement. Resettlement audit was necessary to resolve outstanding problems. The situation is only getting resolved after road completion. A second compensation followed complaints by nongovernment organizations on behalf of the affected families and Asian Development Bank (ADB) intercession. The Government and ADB's Cambodia Resident Mission resolved all complaints in May 2008; and will undertake an income restoration program for affected persons who remain unsatisfied with resettlement compensation. For this purpose, the Cambodia Resident Mission is processing a Japan Fund for Poverty Reduction-supported project to improve the livelihood of affected people resulting from adverse impacts of the Project. Implementation of the Livelihood Stabilization for Poor Households project will focus on people living along route national 1 (expected to commence in December 2008).
4. Cross-Border	1	1	0	2	No change since project completion.
5. Others	1	2	0	3	Schedule 6, para. 10 on benefits monitoring and evaluation. The benefits monitoring and evaluation report did not have sufficient detail and was not clear enough to enable a pre- and postproject detailed analysis to examine project impacts. The report did not include social and environmental aspects.
Total	**7 (58%)**	**5 (42%)**	**0 (0%)**	**12 (100%)**	

Source: Operations Evaluation Mission and Asian Development Bank project completion report.

Table A4.2: Viet Nam Component

Covenant	Status of Compliance			
	Complied/ Being Complied	Partly Complied	Not Complied	Total
1. Sector	7	0	0	7
2. Environmental	1	0	0	1
3. Social	1	1	0	1
4. Financial	2	0	0	2
5. Cross-Border	1	1	0	1
5. Others	2	0	0	2
Total	**14 (88%)**	**2 (12%)**	**0 (0%)**	**16 (100%)**

Source: Operations Evaluation Mission and Asian Development Bank project completion report.

TRAFFIC PERFORMANCE

A. Traffic Count Results

1. Transport surveys, comprising 5-day, 18-hour traffic counts, were undertaken in March 2008. To the extent possible, these traffic counts took place at the same locations as before the Project.[1] Daily averages could, without significant risk of error, be interpreted as annual average daily traffic (AADT) without recourse to expansion factors.[2] The traffic counts were recorded according to the vehicle classification[3] used by the Highway Design and Maintenance Model Version 4 and Road Economic Decision Model. Previous traffic surveys often used different vehicle classifications, and therefore assumptions have been made to permit comparisons. The results of the traffic surveys for Cambodia and Viet Nam are presented in Table A5.1. AADT is estimated for scenarios with and without motorcycles.

2. In Cambodia, the traffic count was carried out at two locations on completed project road sections along route national (RN) 1. A third survey location was along the project road section of RN11 from Neak Loeung to the provincial town of Prey Vang. AADT ranged from about 8,700 to 9,700 vehicles per day (vpd) along RN1. AADT along RN11 was lower at about 7,200 vpd (Table A5.1).

Table A5.1: Annual Average Daily Traffic (vehicles per day)

Item	MC	Car	Bus	Truck	Total With MC	Total Without MC
RN11 Neak Loeung	5,810	526	219	627	7,182	1,372
RN1 Neak Loeung*	7,248	903	736	810	9,697	2,449
RN1 Bavet	3,974	3,266	822	606	8,668	4,694

MC = motorcycle, RN = route national.
Source: Operations Evaluation Mission traffic count (2008).

3. Except for traffic in the Bavet area, motorcycles accounted for 75%–81% of total traffic (Table A5.2). In Bavet, car, bus, and truck traffic accounted for about 54% of AADT. For the purpose of economic analysis, the AADT at Neak Loeung (after the ferry) was selected as the typical representative traffic along the project section from Neak Loeung to Bavet (105 kilometers [km]). AADT without motorcycles at 2,449 is the figure retained.

Table A5.2: Vehicle Mix (% of total AADT)

Item	MC	Car	Bus	Truck	Total With MC	Total Without MC
RN11 Neak Loeung	80.9	7.3	3.0	8.7	100.0	19.1
RN1 Neak Loeung[a]	74.7	9.3	7.6	8.4	100.0	25.3
RN1 Bavet	45.8	37.7	9.5	7.0	100.0	54.2

AADT = annual average daily traffic, MC = motorcycle, RN = route national.
[a] Selected as typical representative traffic along the ADB stretch from Neak Loeung to Bavet.
Source: Operations Evaluation Mission traffic count (2008).

[1] Locations were carefully selected in order to not register local urban traffic. Ensuring that counts were conducted at the same locations as those used for previous reports was difficult. First, in quite a few of the referenced reports, no clear indication is given of the exact locations of traffic counts being used. Second, Cambodia, Lao People's Democratic Republic, and Viet Nam do not conduct regular traffic counts.

[2] Traffic surveys were conducted during weekdays and not on public holidays to avoid possible discrepancies. Information available confirms that March was a typical month. Traffic after midnight is generally nonexistent, and, therefore, the use of an expansion factor is not needed.

[3] Vehicles are motorcycles, cars, light bus and vans, medium buses, large buses, light and pickup trucks, medium-sized trucks, heavy trucks, and articulated trucks.

4. In Viet Nam, transport surveys were taken at three locations on the road from Ho Chi Minh City (HCMC) to the Cambodia border. The first, on national highway 22 (NH22) at Hoc Mon, then again on NH22 at Trang Bang, and finally at the border gate Moc Bai. Traffic was dense in HCMC suburbs (Table A5.3). On the other hand, traffic at the Moc Bai border was sparse, with motorcycles accounting for about 94% of AADT (Table A5.4).

Table A5.3: Annual Average Daily Traffic (number of vehicles)

Item	MC	Car	Bus	Truck	Total With MC	Total Without MC
NH22 Hoc Mon[a]	38,171	5,808	3,104	8,573	55,656	17,485
NH22 Trang Bang	35,805	1,346	1,845	1,828	40,824	5,019
NH22 Moc Bai Border	5,817	193	58	109	6,177	360

MC = motorcycle, NH = national highway.
[a] Selected as typical representative traffic along the project section from Moc Bai to Ho Chi Minh City.
Source: Operations Evaluation Mission traffic count (2008).

Table A5.4: Vehicle Mix (% of total AADT)

Item	MC	Car	Bus	Truck	Total With MC	Total Without MC
NH22 Hoc Mon[a]	68.6	10.4	5.6	15.4	100.0	31.4
NH22 Trang Bang	87.7	3.3	4.5	4.5	100.0	12.3
NH22 Moc Bai Border	94.2	3.1	0.9	1.8	100.0	5.8

AADT = annual average daily traffic, MC = motorcycle, NH = national highway.
[a] Selected as typical representative traffic along the project section from Moc Bai to Ho Chi Minh City.
Source: Operations Evaluation Mission traffic count (2008).

B. Comparison of Traffic

5. Overtime, traffic grows and vehicle composition is likely to change. To measure traffic growth and changes in vehicle composition, observed AADT was compared with survey findings at appraisal and at project completion. This comparison is given in the following series of tables. However, any comparison requires caution. Though consistency has been seriously attempted in the following tables, discrepancies still exist in survey locations and vehicle classification. The project completion report does not indicate survey locations. For instance, on the Phnom Penh−HCMC Highway, traffic intensity was high and is now very high, and numbers will be very sensitive to the exact location of the traffic surveys.

C. Cambodia

6. In Cambodia, along the RN1, traffic did not change much from 1996 until completion of the road (Tables A5.5−A5.6). Growth from 2003 onward has been maintained. But growth has been uneven, with the bus category seeing a 5-fold increase, the truck category a 2-fold increase, and cars increasing by 58% during the period.

Table A5.5: Annual Average Daily Traffic (number of vehicles)

Cambodia 2[a]	Year	MC	Car	Bus	Truck	Total With MC	Total Without MC
Appraisal (TA)	1996	4,161	572	140	355	5,228	1,067
Appraisal (RRP)	1996	8,173	569	29	252	9,023	850
PCR[b]	2005	3,148	542	621	716	5,027	1,879
PPER	2008	7,248	903	736	810	9,697	2,449

MC = motorcycle, PCR = project completion report, PPER = project performance evaluation report, RRP = report and recommendation of the President, TA = technical assistance.
[a] From Mekong River ferry to the Bavet border post.
[b] Based on traffic survey conducted in 2004.
Source: Operations Evaluation Mission estimates (2008).

Table A5.6: Vehicle Mix (% of total AADT with motorcycles)

Cambodia 2[a]	Year	MC	Car	Bus	Truck	Total With MC	Total Without MC
Appraisal (TA)	1996	79.6	10.9	2.7	6.8	100.0	10.7
Appraisal (RRP)	1996	90.6	6.3	0.3	2.8	100.0	8.5
PCR	2005	62.6	10.8	12.4	14.2	100.0	37.4
PPER	2008	74.7	9.3	7.6	8.4	100.0	24.5

AADT = annual average daily traffic, MC = motorcycle, PCR = project completion report, PPER = project performance evaluation report, RRP = report and recommendation of the president, TA = technical assistance.
[a] From Mekong River ferry to the Bavet border post.
Source: Operations Evaluation Mission estimates (2008).

D. Viet Nam

7. In Viet Nam, the growth pattern along the Phnom Penh–HCMC Highway is very different between the urban part of the road and the more rural part. In HCMC suburbs, traffic was already high in 1996 and has continued to be dominated by motorcycles and trucks. But a major change in the vehicle distribution has occurred with a five-fold increase in cars and seven-fold increase in buses. In the Moc Han area, AADT increased from about 30,000 vpd to around 55,000 vpd at the time of evaluation (Table A5.7). Nonmotorcycle traffic improved slightly from around 25% of total traffic to about 31% at evaluation (Table A5.8).

Table A5.7: Annual Average Daily Traffic (number of vehicles)

V1 on NH1[a]	Year	MC	Car	Bus	Truck	Total With MC	Total Without MC
Appraisal (TA)	1996	23,653	703	878	5,904	31,138	7,485
Appraisal (RRP)	1996	21,085	1,551	391	5,128	28,155	7,070
PCR	2005	35,168	3,578	5,992	17,223	61,961	26,793
PPER	2008	38,171	5,808	3,104	8,103	55,186	17,015

MC = motorcycle, NH = national highway, PCR = project completion report, PPER = project performance evaluation report, RRP = report and recommendation of the president, TA = technical assistance, V = Viet Nam.
[a] From Thu Duc to Hoc Mon.
Source: Operations Evaluation Mission estimates.

Table A5.8: Vehicle Mix (% of total AADT with motorcycles)

V1 on NH1[a]	Year	MC	Car	Bus	Truck	Total With MC	Total Without MC
Appraisal (TA)	1996	76.0	2.3	2.8	19.0	100.0	24.0
Appraisal (RRP)	1996	74.9	5.5	1.4	18.2	100.0	25.1
PCR	2005	56.8	5.8	9.7	27.8	100.0	43.2
PPER	2008	69.2	10.5	5.6	14.7	100.0	30.8

AADT = annual average daily traffic, MC = motorcycle, NH = national highway, PCR = project completion report, PPER = project performance evaluation report, RRP = report and recommendation of the president, TA = technical assistance.
[a] From Thu Duc to Hoc Mon.
Source: Operations Evaluation Mission estimates.

8. In the Trang Bang area, AADT doubled to about 41,000 vpd in 2008 from around 20,000 in 1996 (Table A5.9). Motorcycles continued to dominate, increasing from a share of 83%–85% of AADT to around 88% of total traffic at evaluation (Table A5.10).

Table A5.9: Annual Average Daily Traffic (number of vehicles)

V2 on NH22[a]	Year	MC	Car	Bus	Truck	Total With MC	Total Without MC
Appraisal (TA)	1996	15,790	717	652	1,896	19,055	3,265
Appraisal (RRP)	1996	16,838	1,038	261	1,628	19,765	2,927
PCR	2005	16,728	2,692	1,909	5,710	27,039	10,311
PPER	2008	35,805	1,346	1,845	1,828	40,824	5,019

MC = motorcycle, NH = national highway, PCR = project completion report, PPER = project performance evaluation report, RRP = report and recommendation of the president, TA = technical assistance, V = Viet Nam.
[a] From Hoc Mon to Moc Bai border post.
Source: Operations Evaluation Mission estimates.

Table A5.10: Vehicle Mix (% of total AADT with motorcycles)

V2 on NH22[a]	Year	MC	Car	Bus	Truck	Total with MC	Total Without MC
Appraisal (TA)	1996	82.9	3.8	3.4	10.0	100.0	17.1
Appraisal (RRP)	1996	85.2	5.3	1.3	8.2	100.0	14.8
PCR	2005	61.9	10.0	7.1	21.1	100.0	38.1
PPER	2008	87.7	3.3	4.5	4.5	100.0	12.3

AADT = annual average daily traffic, MC = motorcycle, NH = national highway, PCR = project completion report, PPER = project performance evaluation report, RRP = report and recommendation of the president, TA = technical assistance.
[a] From Hoc Mon to Moc Bai border post.
Source: Operations Evaluation Mission estimates.

E. Traffic Forecasts

9. Reassessing the project roads using current traffic observations implies calibrating traffic forecasts. The purpose is not to propose a new traffic forecast based on a different set of assumptions, but rather to keep the same forecasting methodology adjusted according to the traffic observations of the Operations Evaluation Mission in March 2008.

10. Forecast methodology adopted during appraisal was according to common practice where passenger demand (traffic) is assumed to vary according to gross domestic product (GDP) per capita, population growth, and GDP passenger demand elasticity. Freight demand (traffic), on the other hand, is expected to vary according to GDP and GDP freight demand elasticity. Consultant estimates for 2000–2007 are either based on real observations or are calculated by interpolation between starting dates and 2008. The summary of traffic forecasts for RN1 and NH22 is presented in Table A5.11. Vehicle traffic by type is from 2000 (starting year) and 2019 (ending year).

F. Diverted and Generated Traffic

11. Traditionally, a traffic forecast is divided between normal traffic growth, diverted traffic growth, and generated traffic growth. Diverted vehicle traffic is the traffic of vehicles, which before project completion were traveling on an alternative road (or alternative transport mode) and have now switched to the project road because of better road conditions and vehicle operating cost saving. Generated traffic is traffic that did not exist before road project completion. The distinction between the three is sometimes difficult to establish. When high growth rates are being used for normal traffic, the tendency is to capture part (sometimes a large part) of diverted and generated traffic.

12. At appraisal of the Phnom Penh–HCMC Highway Project, the improved road was hoped to be able to capture a significant diversion of the present volume of trade between Viet Nam and Cambodia currently using waterborne transportation. Also, as the road corridor moves to an economic corridor, new economic development is expected to occur along the road both in Cambodia and Viet Nam.

Table A5.11: Annual Average Daily Traffic Forecasts
(vehicles per day)

	Cambodia Route National 1				Viet Nam National Highway 22			
Year	Normal	Generated	Induced	Total	Normal	Generated	Induced	Total
2000	1,186	—	—	1,186	3,437	—	—	3,437
2001	1,316	—	—	1,316	3,588	—	—	3,588
2002	1,461	—	—	1,461	3,750	—	—	3,750
2003	1,623	186	—	1,809	3,925	380	—	4,305
2004	1,803	207	—	2,010	4,112	406	—	4,518
2005	1,926	224	10	2,160	4,312	434	10	4,756
2006	2,063	243	11	2,317	4,527	463	11	5,001
2007	2,218	264	12	2,494	4,757	495	12	5,264
2008	2,393	289	13	2,695	5,003	530	13	5,546
2009	2,591	317	14	2,922	5,267	567	14	5,849
2010	2,795	342	15	3,154	5,689	613	15	6,316
2011	3,019	370	16	3,405	6,144	662	16	6,821
2012	3,259	400	17	3,676	6,635	715	17	7,367
2013	3,518	432	18	3,968	7,166	772	18	7,956
2014	3,797	467	19	4,283	7,739	833	19	8,592
2015	4,025	495	20	4,540	8,359	900	20	9,279
2016	4,267	524	21	4,812	9,027	972	21	10,020
2017	4,523	556	22	5,101	9,749	1,050	22	10,821
2018	4,794	589	23	5,406	10,529	1,134	23	11,686
2019	5,082	625	24	5,731	11,372	1,225	24	12,620

Note: Total traffic without motorcycles.
Source: Operations Evaluation Mission estimates.

13. On the Cambodia side, the road that has been and continues to be used as an alternative to RN1 goes through Tay Ninh passing the Cambodian border at Trapang Phlong Pin and continuing in Cambodia on RN72 and RN7 through Kampong Cham before reaching Phnom Penh. This road makes use of a Mekong bridge and avoids the Neak Loeung ferry. In 1995, trade was estimated at 50,000 tons at that border compared with a meager 15,000–20,000 tons for the Bavet–Moc Bai border (or 5–10 trucks a day).[4] The overall distance of Phnom Penh−HCMC by this road is 325 km compared with 245 km on the project road. This road remains an alternative since trade volume at that border crossing is estimated to vary between 500,000 and 765,000 tons per year.[5] At appraisal, the vehicle operating cost saving was estimated to result in generated traffic of 10% per year. The project completion report adopted the same hypothesis.

14. The consultant conducted a few interviews with freight forwarders[6] in Cambodia and Viet Nam to assess the competitiveness of the road corridor with the Mekong route. On average, the net cost of sending a container by road from Phnom Penh to HCMC is $1,000 ($800 for the other direction) and $300 if coming by barge along the Mekong River. By road, the average time is now 8 hours and by river between 40 hours and 96 hours. Therefore, the road can currently compete with the river only for high value goods requiring quick delivery. In short, use of the road is

[4] Quoted from ADB. 1995. *Technical Assistance to the Kingdom of Cambodia and the Socialist Republic of Viet Nam for the Greater Mekong Subregion–Infrastructure Improvement: Ho Chi Minh City to Phnom Penh Highway Project*. Manila (TA 5649-REG, for $3 million, approved on 9 November).

[5] According to information provided by the Ministry of Public Works and Transport in Cambodia, 700 4-wheel vehicles currently cross the border every day, of which 300 are medium-sized and heavy trucks and 50 are articulated trucks, assuming respectively, average loads of 8 and 20 tons and conservative loading factor of 50% and 75% gives a range of trade volume at the border between 500,000 and 765,000 tons.

[6] Calculations are based on shipping rates given by three road freight forwarders in Cambodia and two freight forwarders road transporters in Viet Nam, as well as an interview with one of the main container shipping operators along the Mekong River between HCMC and Phnom Penh.

economically justifiable if the time value per hour of transporting a container is greater than $10.0.[7] This should be put in perspective with a cargo time delay value of $2.00.

15. Not surprisingly, road container traffic has not increased after road completion. The ratio of road to river transportation for container traffic is estimated at 1/10. Given the current traffic volume, the maximum diversion traffic on RN1 in Cambodia is about 54,000 tons,[8] far less than the 155,000 tons (footnote 5) expected to be diverted after road completion. Therefore, a maximum of 10 vehicles, increasing by 8%, could be considered for 2008 in the economic analysis. No positive diversions are being considered along the Viet Nam portion of the Phnom Penh–HCMC Highway with the exception of the 10 vehicles mentioned here.

16. Once the transport corridor moves to a fully functioning logistic corridor, some of the trade between Thailand and Viet Nam may move overland using RN1 and crossing the border at Bavet. Allowing for rest time and custom clearance, the overland total transport time between Bangkok and HCMC through Cambodia varies between 37 and 48 hours (2,200 km). This compares with 2 days for air cargo and 3–8 days for shipping (depending if connection is immediate or not). The arithmetic is simple, time value of a vehicle transporting the reference cargo varies between $7 and $22, far above the average time value for cargo delay. Therefore, no significant Thai imports or exports have been seen on the project road. Bavet customs do not yet report any transit goods from Thailand to Viet Nam and vice versa.

[7] Assuming $900 for net road cost and $300 for shipping cost, 8 hours for road transportation, and 72 hours for shipping transportation, then the road is competitive with shipping if time value/hour > $9.4. If container value is $40,000, assuming 2,400 hours/year for container truck utilization and 12% interest rate, the value of cargo time delay per vehicle per hour is $2.00.

[8] The only Cambodian transport operator transporting containers by road to and from Viet Nam gave a figure of 300 containers per month, assuming an average of 15 tons per containers gives a volume of 54,000 tons.

ECONOMIC REEVALUATION

1. The objectives of this economic reevaluation are to (i) determine the economic viability of the Project based on updated traffic information (Appendix 5) and vehicle operating costs (VOCs), and (ii) assess net economic benefits for Cambodia and Viet Nam from the Project. The methodology followed the approach adopted at appraisal and by the project completion report (PCR).[1] The analyses were carried out as per Asian Development Bank (ADB) guidelines by comparing the with- and without-project scenarios that weighed benefits (i.e., saving in VOC and travel time costs, and benefits from road safety) against the initial investments and periodic and routine maintenance over 20 years.

2. The with-project case is defined by a maintenance regime, from which the Project accrued its principal rationale: (i) to provide periodic maintenance to restore pavement conditions to cost-efficient levels, and (ii) to continue with a balanced mix of routine and periodic maintenance interventions. The without-project case is defined by the maintenance practice that prevailed before the Project—a neglect of proper maintenance—creating a backlog of maintenance and leading to premature deterioration of the road pavement. The behavior of pavement conditions over time, reflecting different maintenance regimes and traffic loads, is expressed in terms of the international roughness index (IRI).

3. The economic assessment also attempts to comparatively assess how economic benefits are evolving among participating countries. Comparisons with past project economic analyses will naturally be attempted, though caution is required. Findings from economic analyses are very sensitive to traffic intensity forecasts and assumptions on IRI and VOC. These background details are often not available and caution is required when comparing economic internal rates of return (EIRRs) and net present value (NPV) from previous sources.

4. To carry out the economic analyses, a set of parameters were defined (Table A6.1).

Table A6.1: Parameters for Economic Analyses of the Road Project

Parameters	Assumptions and Comments
Investment Costs	Cambodia: Financial costs (civil works, resettlement, and supervision) derived as follows: $22 million (contract value of RN1) + $2.4 million (resettlement cost) + $3.25 (supervision of RN1 only). Total of $27.7 million then adjusted by price factor of 1.21. Financial cost of $33.2 million adjusted to economic costs or $28.2 million equivalent. Financial and economic costs attributed to project road only (excludes cost of border facilities). Viet Nam: Financial costs (civil works, resettlement cost, and supervision) derived as follows: $27.4 million (contract value of NH22) + 25% of the resettlement cost of $32.4 million and supervision cost of $7.0 million). Total of $37.2 million then adjusted by price factor. Financial cost of $46.7 million adjusted to economic costs or $46.7 million equivalent. Since most resettlement costs were on the V1 and V3 components, a ratio of 25% was used for resettlement and supervision costs instead of 50% as applied in the PCR.
Vehicle Operating Cost (VOC)	Surveys were conducted in Cambodia and Viet Nam to obtain market and economic prices of VOC components. Two sets of tables were used: VOC Cambodia and VOC Viet Nam. Fuel prices are higher than used in the PCR but lower than the latest price of oil on the world market.[a]
International Roughness Index (IRI)	IRI were extracted from previous reports (RRP or PCR) and confirmed by consultant interviews and visual inspection of the Phnom Penh–Ho Chi Minh City Highway Project: RN1 (Cambodia): IRI = 7.0 m/km without Project and IRI = 2.2 m/km with Project; NH22 (Viet Nam): IRI = 6.0 m/km without Project and IRI = 2.2 m/km with Project; and NH1/1A (Viet Nam): IRI = 3.7 m/km without Project and 2.2 m/km with Project.
Traffic Forecast	Two types: forecasts adjusted for observed 2008 traffic counts and forecasts not adjusted, both growing using growth rates defined in the PCR.

[1] ADB. 2007. *Project Completion Report on the Greater Mekong Subregion: Phnom Penh to Ho Chi Minh City Highway Project in Cambodia and Viet Nam.* Manila.

Parameters	Assumptions and Comments
Conversion Factor	Conversion factors to adjust financial costs to economic costs, varies among reports. For standardization, a conversion factor of 0.85 is applied for Cambodia and Viet Nam.
Value of Time (passengers)	Value of time ($/hour) for passengers varies if working or nonworking hours with nonworking hours being 1/3 of the value of working hours. At appraisal, working value varied between $0.45 and $0.5; at PCR (2007), the value used was $0.76. The value for passenger cars is assumed to be $1 and for bus passengers $0.5.
Value of Time of Cargo	Value of cargo delay is estimated at $0.04/vehicle-hour based on 8% interest rate, 1,750 working hours, and average value of truck load: $1,000 per ton for a 10 ton truck.
Road Maintenance Expenditure	In 2002, the Cambodian MPWT spent a maximum of 1,000/km on road maintenance on RNs, which converts to $1,300 in 2007 (routine and minor repairs). Maintaining the current situation without a road project requires more than $1,300 and was assumed by the PCR to be $4,000/km. For the road project, $1,500/km is assumed for routine maintenance.
Road Accident	No systematic data exist. Accident reductions are only reported in Viet Nam (reduction by half) and assumed value of $1,000 per accident was selected.

HCMC = Ho Chi Minh City, km = kilometer, m = meter, MPWT = Ministry of Public Works and Transport, NH = national highway, PCR= project completion report, RN = route national, RRP = report and recommendation of the President, V = Viet Nam.

[a] Selected economic cost fuel price for Cambodia was chosen as $0.58/liter, which corresponds to $80 per barrel prevailing at the time with 15% refinery charge. Viet Nam, as an oil producer, has a lower economic price of $0.52/liter. The PCR of the Phnom Penh–HCMC Highway Project used $0.39/liter, which adjusted for pump price increases is $0.48/liter in 2008.

Note: V1 comprise 21.7 km stretch between Thu Duc to Hoc Mon. V3 is a 7.6 km section within V1 comprising several bridge with short road stretches between them.

Sources: Operations Evaluation Mission estimates. Data sources from ADB. 2007. *Project Completion Report on the Greater Mekong Subregion: Phnom Penh to Ho Chi Minh City Highway Project in Cambodia and Viet Nam.* Manila.

5. The parameters are a combination of consultant assumptions and real observations collected by national consultants during fieldwork in March 2008. They also make use, after updating, of assumptions used by previous analyses when available. A comparison of VOC data across project road sections is provided in Table A6.2.

Table A6.2: Comparison of Vehicle Operating Costs
($ per vehicle-kilometer)

	Cambodia (RN1)			Viet Nam (NH22)			PCR		
Vehicle Type	VOC IRI = 2.2	VOC IRI = 7	Savings	VOC IRI = 2.2	VOC IRI = 6.0	Savings	VOC IRI = 2.2	VOC IRI = 4.0	Savings
Car Medium	0.225	0.249	0.023	0.204	0.221	0.017	0.15	0.28	0.13
Goods Vehicle	0.179	0.199	0.020	0.164	0.177	0.13	0.14	0.19	0.05
Bus Light	0.207	0.227	0.020	0.189	0.202	0.013			
Bus Medium	0.353	0.433	0.079	0.301	0.358	0.057	0.17	0.23	0.06
Bus Heavy	0.456	0.532	0.077	0.345	0.401	0.056	0.3	0.41	0.11
Truck Light	0.182	0.203	0.020	0.165	0.178	0.013	0.12	0.17	0.05
Truck Medium	0.286	0.324	0.038	0.247	0.272	0.025	0.21	0.27	0.06
Truck Heavy	0.579	0.636	0.057	0.469	0.524	0.055	0.37	0.51	0.14
Truck Articulated	0.773	0.862	0.089	0.644	0.701	0.057			

IRI = international roughness index, NH = national highway, PCR = project completion report, RN = route national, VOC = vehicle operating cost.

Sources: Operations Evaluation Mission estimates. ADB. 2007. *Project Completion Report on the Greater Mekong Subregion: Phnom Penh to Ho Chi Minh City Highway Project in Cambodia and Viet Nam.* Manila.

6. The PCR's IRI values (Table A6.2) are questionable in terms of level and variations. Average suggested saving in VOC for Phnom Penh–HCMC is 9%–10%.

7. The economic analyses of the two road project components were carried out using the recent Highway Design and Maintenance Model Version 4 (HDM-4) to calculate the VOC and

the Road Economic Decision (RED)[2] model for the complete evaluation.[3] All calculations are in constant 2008 prices[4] and with growth prospects after 2008 similar to what was envisaged at appraisal and project completion. This applies to VOCs, which reflect an average of 2007 (1st quarter) prices. For consistency, construction costs[5] were adjusted by a price factor using the country consumer price index (CPI).[6]

8. Benefits from motorcycle traffic are not considered in the RED model and, hence, not included in the economic analysis. However, with VOC savings from motorcycle traffic being quite small, its expected impact on the analyses' outcome is not material.

9. The economic analyses being carried out have limitations—the most important from the use of RED for the full economic evaluation of the Project. The disadvantages are in the constrained formatting of the software:

(i) construction periods cannot go over 3 years;
(ii) road benefits start only in the year following full completion of the road;
(iii) value of time is fixed for the whole period;
(iv) evaluation period is fixed to 20 years;
(v) no possibility to enter an end of period value for road asset;
(vi) traffic grows according to a series of vehicle growth rates defined along periods of 5 years; and
(vii) no capacity to account for reductions in congestion.

10. RED has been designed to help with economic analysis of rural or semirural roads, not urban roads. Despite these limitations, RED and the use of HDM-4 for VOC were judged sufficiently reliable to reassess the road project components with a certain margin of error.

11. Other minor limitations need to be mentioned. The economic analysis of any road project, and this one is no exception, is focused around savings in VOC and savings in travel time. RED allows benefits from road safety to be added. Information on road accidents and costs of road projects are not very reliable and could be contradictory. Results from the economic analysis depend on traffic forecasts. Starting with new forecasting of traffic on the road project components was beyond the scope of this economic analysis. This would have involved new macroeconomic assessment and reestimation of price elasticity. Therefore, traffic forecasts use growth rates developed by previous studies and calibrated to the observed 2008 traffic. Results are very sensitive to roughness measurement before and after road completion. For this, the consultant had to rely on numbers[7] quoted in previous reports (project preparatory technical assistance, appraisal, PCR, and benefit monitoring and evaluation). The results of the simulation using HDM-4 and RED are presented in Tables A6.3–A6.5.

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[2] The RED Model was originally developed by the Sub-Sahara Africa Transport Policy Program sponsored by the World Bank. HDM-4 software is the successor of the HDM III model originally developed by the World Bank and now managed by a consortium.

[3] An economic analysis for the additional route national (RN) 11 was not undertaken. At the time of completion, RN11 was not evaluated as it had not been part of the appraisal scope and was not envisaged. The PCR team then thought that the related Emergency Flood Rehabilitation Project (Loan 1824-CAM) was to be responsible for evaluating the economic return.

[4] In reality, many prices are from 2007 and therefore constant prices should be called 2007 constant prices.

[5] Construction was spread over many years with some even in 2006, determining a proper construction price index was not readily available. The consumer price index has been used instead, but this could introduce a bias because the construction industry is very competitive and prices will generally not closely follow the consumer price index, which is dominated by fuel and food price changes.

[6] Cambodia: 1.2; Lao People's Democratic Republic: 1.146; Viet Nam (National Highway [NH] 9): 1.07; and Viet Nam (NH22): 1.26.

[7] On occasion, reports differ on IRI before road completion.

Table A6.3: Recalculation of Net Economic Benefits for Phnom Penh to Ho Chi Minh City Highway Project (Route National 1 and National Highway 22)
($ million in constant 2008 prices)

Year	Investment Costs	Maintenance Costs	VOC Savings			Time Savings			Road Safety	Total
			Normal	Generated	Total	Normal	Generated	Total		
2000	(16.39)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(16.39)
2001	(21.20)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(21.20)
2002	(30.27)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(30.27)
2003	0.00	0.55	4.27	0.24	4.51	1.28	0.10	1.38	0.02	6.46
2004	0.00	0.56	4.61	0.26	4.87	1.40	0.11	1.51	0.02	6.96
2005	0.00	0.57	4.87	0.31	5.18	1.52	0.12	1.64	0.02	7.41
2006	0.00	0.58	5.16	0.33	5.49	1.66	0.13	1.79	0.02	7.89
2007	0.00	0.60	5.48	0.36	5.84	1.81	0.14	1.95	0.02	8.41
2008	0.00	0.61	5.84	0.39	6.22	1.97	0.16	2.13	0.02	8.99
2009	0.00	0.63	6.23	0.42	6.65	2.15	0.17	2.33	0.03	9.63
2010	0.00	0.65	6.72	0.46	7.17	2.33	0.19	2.52	0.03	10.36
2011	0.00	0.67	7.25	0.49	7.74	2.52	0.20	2.72	0.03	11.16
2012	0.00	0.70	7.82	0.53	8.35	2.72	0.22	2.94	0.03	12.02
2013	0.00	0.72	8.44	0.57	9.01	2.94	0.24	3.18	0.03	12.94
2014	0.00	0.75	9.11	0.62	9.72	3.18	0.26	3.43	0.04	13.94
2015	0.00	0.78	9.75	0.66	10.41	3.41	0.27	3.68	0.04	14.90
2016	0.00	0.81	10.44	0.70	11.14	3.65	0.29	3.95	0.04	15.94
2017	0.00	0.84	11.18	0.75	11.93	3.92	0.32	4.23	0.05	17.04
2018	0.00	0.87	11.97	0.81	12.77	4.20	0.34	4.54	0.05	18.23
2019	0.00	0.91	12.82	0.86	13.68	4.50	0.36	4.87	0.05	19.51
					Economic Internal Rate of Return (%)				**=**	**11.25**
					Net Present Value at 12% ($ million)				**=**	**(3.07)**

VOC = vehicle operating cost.
Source: Operations Evaluation Mission estimates based on Road Economic Decision Model.

Table A6.4: Recalculation of Net Economic Benefits for Cambodia Component (RN1 only)
($ million in constant 2008 prices)

Year	Investment Costs	Maintenance Costs	VOC Savings			Time Savings			Road Safety	Total
			Normal	Generated	Total	Normal	Generated	Total		
2000	(8.46)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(8.46)
2001	(11.28)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(11.28)
2002	(8.46)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(8.46)
2003	0.00	0.30	1.93	0.10	2.04	0.48	0.04	0.51	0.01	2.85
2004	0.00	0.30	2.14	0.11	2.25	0.53	0.04	0.57	0.01	3.13
2005	0.00	0.31	2.26	0.14	2.40	0.58	0.04	0.62	0.01	3.34
2006	0.00	0.32	2.40	0.15	2.55	0.63	0.05	0.68	0.01	3.56
2007	0.00	0.32	2.56	0.17	2.72	0.70	0.05	0.75	0.01	3.80
2008	0.00	0.33	2.74	0.18	2.91	0.77	0.06	0.83	0.01	4.08
2009	0.00	0.34	2.94	0.20	3.13	0.85	0.07	0.92	0.01	4.40
2010	0.00	0.35	3.17	0.21	3.38	0.92	0.07	0.99	0.01	4.73
2011	0.00	0.36	3.41	0.23	3.64	1.00	0.08	1.08	0.01	5.08
2012	0.00	0.37	3.68	0.24	3.92	1.08	0.08	1.16	0.01	5.47
2013	0.00	0.38	3.96	0.26	4.23	1.17	0.09	1.26	0.02	5.88
2014	0.00	0.39	4.27	0.28	4.55	1.27	0.10	1.36	0.02	6.32
2015	0.00	0.40	4.53	0.30	4.83	1.34	0.10	1.44	0.02	6.69
2016	0.00	0.41	4.80	0.32	5.12	1.42	0.11	1.53	0.02	7.08
2017	0.00	0.43	5.09	0.34	5.42	1.51	0.12	1.62	0.02	7.49
2018	0.00	0.44	5.39	0.36	5.75	1.60	0.12	1.72	0.02	7.92
2019	0.00	0.45	5.71	0.38	6.09	1.69	0.13	1.82	0.02	8.38
					Economic Internal Rate of Return (%)				**=**	**11.95**
					Net Present Value at 12% ($ million)				**=**	**(0.10)**

RN = route national, VOC = vehicle operating cost.
Source: Operations Evaluation Mission estimates based on Road Economic Decision Model.

Table A6.5: Recalculation of Net Economic Benefits for Viet Nam Component (NH22 only)
($ million in constant 2008 prices)

Year	Investment Costs	Maintenance Costs	VOC Savings			Time Savings			Road Safety	Total
			Normal	Generated	Total	Normal	Generated	Total		
2000	(7.93)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(7.93)
2001	(9.92)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(9.92)
2002	(21.81)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(21.81)
2003	0.00	0.25	2.34	0.14	2.48	0.80	0.06	0.87	0.01	3.61
2004	0.00	0.26	2.47	0.15	2.62	0.87	0.07	0.95	0.01	3.83
2005	0.00	0.26	2.61	0.17	2.78	0.95	0.08	1.02	0.01	4.07
2006	0.00	0.27	2.76	0.18	2.94	1.02	0.08	1.11	0.01	4.33
2007	0.00	0.27	2.92	0.19	3.12	1.11	0.09	1.20	0.01	4.60
2008	0.00	0.28	3.10	0.21	3.31	1.20	0.10	1.30	0.01	4.90
2009	0.00	0.29	3.29	0.23	3.52	1.30	0.11	1.41	0.01	5.23
2010	0.00	0.30	3.55	0.25	3.80	1.41	0.12	1.52	0.02	5.64
2011	0.00	0.31	3.84	0.26	4.10	1.52	0.13	1.64	0.02	6.07
2012	0.00	0.33	4.15	0.29	4.43	1.64	0.14	1.78	0.02	6.55
2013	0.00	0.34	4.48	0.31	4.79	1.77	0.15	1.92	0.02	7.06
2014	0.00	0.36	4.84	0.33	5.17	1.91	0.16	2.07	0.02	7.61
2015	0.00	0.38	5.22	0.36	5.58	2.06	0.17	2.24	0.02	8.21
2016	0.00	0.39	5.64	0.39	6.03	2.23	0.19	2.42	0.02	8.86
2017	0.00	0.41	6.09	0.42	6.51	2.41	0.20	2.61	0.03	9.56
2018	0.00	0.44	6.58	0.45	7.03	2.60	0.22	2.82	0.03	10.31
2019	0.00	0.46	7.10	0.49	7.59	2.81	0.23	3.04	0.03	11.12
									Economic Internal Rate of Return (%)	**= 10.71**
									Net Present Value at 12% ($ million)	**= (2.97)**

NH = national highway, VOC = vehicle operating cost.
Source: Operations Evaluation Mission estimates based on Road Economic Decision Model.

12. A few important observations and conclusions can be drawn from Tables A6.4 and A6.5:

(i) The three reassessed project road components are found to be marginally economically justifiable.

(ii) The economic assessment carried was out on the urban part of the Phnom Penh–HCMC Highway, along national highway 1A (NH1A). Before the Project, this road was congested and roughness was not a major issue. The road widening was very expensive because of the resettlement cost. Traditional road economic analysis using RED is inadequate to evaluate the economic benefits of the investment such as decrease in congestion. This accounts for the negative results.

(iii) Economic analysis was not carried out on the Viet Nam V3 road component.[8]

(iv) Generally at the beginning of the Project and up to now (2008), traffic (here referred to as normal traffic) has not increased as fast as expected. This is why the simulations—appraisal and PCR—are generally higher than the economic reevaluation estimate.

(v) The reestimated EIRRs are substantially lower than the EIRRs presented at appraisal and for the PCR. The absence of substantial diverted traffic, which was included in the appraisal calculation could account partly for the difference. The high values for VOC savings found at appraisal and for the PCR were found to be optimistic and not realistic.

13. Findings from the different simulations using RED are summarized in Table A6.6. The discount rate for the NPV is 12%.

[8] A short section within V1 comprising several bridges with short road stretches between them.

Table A6.6: EIRR and NPV Comparison

Road Project	PPER EIRR (%)	NPV (12%) ($ million)	Appraisal EIRR (%)	PCR EIRR (%)
Cambodia				
RN1 (Consultant)	12	(0.11)	22	24.10
RN1 (Appraisal, PCR)	13	1.5		
Viet Nam				
NH22 (Consultant)	11	(3.32)	18	25.40
NH22 (Appraisal, PCR)	14	4.44		
NH1A (Consultant)	(2)	(36.4)	34	28.70
NH1A (Appraisal, PCR)	(1)	(34.5)		

EIRR = economic internal rate of return, NH = national highway, NPV = net present value, PCR = project completion report, PPER = project performance evaluation report, RN = route national.
Source: Operations Evaluation Mission estimates.

14. The new economic analysis, which reflects the observed traffic situation, uses growth prospects after 2008 identical to those envisaged at appraisal and for the PCR. In Table A6.6, the two first columns are the EIRR and NPV from the consultant simulations and for the "appraisal and PCR" simulation. The "appraisal and PCR" simulation, estimated by the consultant used new VOCs and adjusted construction prices, but allows traffic to grow as expected at appraisal (and at PCR). The last two columns state results displayed by the appraisal and PCR reports. While the recalculated EIRRs show lower returns, the project components are still considered acceptable; these are conservative estimates.[9] For example, the economic reevaluation used 2007/08 prices and the equivalent of a long-run oil price of $80/barrel. A higher oil price would almost certainly push the 11% EIRR above 12%. In addition, the quantified analyses did not capture benefits from key growth in informal trade in the area.

15. A sensitivity analysis was also undertaken for the Project and two of its component routes. Table A6.7 analyzes the impact on the EIRR of improvements in economic benefits and higher construction cost. The inclusion of the cost of border facilities in Cambodia and a higher allocation of the cost for resettlement and supervision to the V2 component in Viet Nam could increase the investment costs for the selected project components.[10]

Table A6.7: Results of Sensitivity Analysis (%)

Item	Total Project	Cambodia RN1	Viet Nam NH22
Base Case	11.3	12.0	10.7
Sensitivity Analysis			
(i) Economic benefits are 25% higher	15.0	16.0	14.0
(ii) Border-related costs (border facilities and equipment, supervision) included	10.7	10.7	10.7
(iii) Resettlement and supervision cost for V2 are assumed at 50% of these costs	9.6	12.0	8.1
(iv) Both (ii) and (iii)	9.2	10.7	8.1

NH = national highway, RN = route national.
Source: Operations Evaluation Mission estimates.

[9] The PPER traffic growth rates are similar to the PCR, but they are applied to a lower traffic base in Viet Nam. Thus, the long-term traffic forecast is much lower for Viet Nam. For Cambodia, any difference in traffic is small. There are differences in VOC savings, but the proportionate reduction used for the PPER (i.e., 10%) is in line with the proportion reported in the PCR text (PCR, para. 55). However, in Table A10.4 in the PCR, much larger proportionate reductions are shown. Hence, the PCR is inconsistent on this point, which makes it suspicious.

[10] V2 comprises a 50-km stretch from Hoc Mon to the Moc Bai border post.

16. Improvement in the economic benefits is a key factor to a robust evaluation of the EIRR. But the base case is a conservative estimate, that does not quantify or capture corresponding benefits of informal trade growth in the area, savings in time taken to cross the border, and incremental benefits of ensuring imports and exports continue to be handled efficiently at the border.

17. The second economic assessment carried out was on net economic benefits for Cambodia and Viet Nam.[11] Table A6.8 summarizes the net economic benefits for each participating country for the Project. Costs and benefits are expressed in economic terms and discounted by a 12% rate.

Table A6.8: Benefits Distribution of Phnom Penh−HCMC Highway Project by Country

Item	Total Project	Cambodia (RN1)	Viet Nam (NH22)
Discounted Economic Cost ($ million)	55.83	23.35	32.48
Discounted Economic Benefits ($ million)	52.39	23.24	29.15
Net Economic Benefits ($ million)	(3.44)	(0.11)	(3.33)
Benefit/Cost Ratio	0.94	1.00	0.90
Economic Internal Rate of Return (%)	11.25	11.95	10.71

HCMC = Ho Chi Minh City, NH = national highway, RN = route national.
Note: NH1A and additional works are not included.
Source: Operations Evaluation Mission estimates.

18. Cambodia is benefiting slightly more than Viet Nam[12] from the Project (Table A6.8). The EIRR of the Project is now around the 12% threshold, indicating that it is not an exceptional or robust project. Traffic has not yet materialized as expected, given the appraisal and PCR simulation of 13%–14%. Cambodia is benefiting slightly more than Viet Nam since Viet Nam is contributing to 58% of the cost, while getting 56% of the benefits.

19. Beyond the overall results, one could attempt to assign the total distribution of benefits by type and by country once assumptions are made on the percentage distribution of economic benefits among consumers, producers, and transporters, reflecting information collected on Vietnamese vehicle movements in Cambodia (Table A6.8). Consumers using the Project are expected to get the largest share of the economic benefits (60% for Cambodia and 70% for Viet Nam). Viet Nam consumers are, in fact, getting 85% more economic benefits than Cambodian consumers (Table A6.9).

Table A6.9: Phnom Penh–Ho Chi Minh City Road Project Benefit Distribution ($ million)

Item	Total VOC	Total VOT	CAM TRANS VOC+ VOT Benefit	CAM PROD VOC+ VOT Benefit	CAM CONS VOC+ VOT Benefit	VIE TRANS VOC+ VOT Benefit	VIE PROD VOC+ VOT Benefit	VIE CONS VOC+ VOT Benefit	CAM Total VOC+ VOT Benefit	VIE Total VOC+ VOT Benefit
RN1	17.91	5.12	4.78	3.33	12.98	0.05	0.83	1.06	21.09	1.94
NH22	21.02	8.15	0.05	0.37	0.14	5.32	3.31	20.03	0.56	28.66
Total	**38.93**	**13.27**	**4.83**	**3.70**	**13.12**	**5.37**	**4.14**	**21.09**	**21.65**	**30.60**

CAM = Cambodia, CONS = consumer, HCMC = Ho Chi Minh City, NH = national highway, RN = route national, PROD = producer, TRANS = transporter, VIE = Viet Nam, VOC = vehicle operating cost, VOT= value of time.
Source: Operations Evaluation Mission estimates.

20. Compared to the East−West Corridor Project in the Lao People's Democratic Republic and Viet Nam, the total economic benefits (VOC plus vehicle operating time) in Phnom Penh–HCMC Highway is higher, reflecting higher vehicle traffic and higher proportion of passenger

[11] The methodology is in line with the approach discussed by Ramesh Adhikari and John Weiss in their 1999 paper "Economic Analysis of Subregional Projects" with special attention to the noncommercial application (highways).
[12] Probably the largest benefit in terms of congestion reduction is not included as it will occur on NH1A.

vehicles. For the Phnom Penh–HCMC Highway, Viet Nam is getting more benefits when using RN1 than the reverse because of the relatively high proportion of Vietnamese buses traveling in Cambodia and the trucking movements related to the special economic zone in Bavet.

21. Consumers on the Phnom Penh–HCMC Highway Project are expected to get the largest share of the economic benefits, accounting for 74% of the total (61% in Cambodia and 82% in Viet Nam). Viet Nam consumers in total volume are getting twice as much economic benefit as Cambodian consumers.

22. Great caution needs to be applied when making comparisons with previous studies. This applies to EIRR, and even more to NPV, comparisons. However, some attempt could be made to compare the relative gains of the participating countries as presented at appraisal and for the PCR. For the Phnom Penh–HCMC Highway Project, appraisal and PCR results are summarized in Table A6.10.

Table A6.10: Comparison with Appraisal and Project Completion Report Estimates ($)

	Cambodia		Viet Nam		Total	
Item	**Appraisal**	**PCR**	**Appraisal**	**PCR**	**Appraisal**	**PCR**
NPV Benefits	39.03	37.69	103.33	130.75	142.36	168.44
NPV Costs	24.09	23.30	71.26	74.10	107.32	97.41
NPV Net Benefits	14.95	14.39	53.83	56.65	68.78	71.03
Benefit/Cost Ratio	1.62	1.62	1.45	1.76	1.33	1.73
EIRR (%)	22.00	24.00	24.00	26.00	23.00	25.00

EIRR = economic internal rate of return, NPV = net present value, PCR = project completion report.
Source: Operations Evaluation Mission estimates.

23. At appraisal, the road Project had a high EIRR: 23% for the overall Project based on an EIRR of 22% for the Cambodia component and 24% for the Viet Nam component. But the EIRR must be considered with the NPV of net benefits, they are both positive with a discount rate of 12%, but Viet Nam received more than three times the benefits of Cambodia. This is not surprising as the Viet Nam component includes significant urban road development likely to bring high benefits because of the heavy traffic. However, the cost-benefit ratio indicates that Cambodia scores better than Viet Nam (1.62 instead of 1.45). In short, at appraisal, Viet Nam was expected to receive more benefits but at a higher cost; this would provide a win-win situation for both countries. In Cambodia, the PCR findings in terms of NPV calculated in 2006 are quite close to the appraisal figures. Findings for Viet Nam diverge more because traffic has been growing faster than expected. This has caused the EIRR and the benefit-cost ratio to be higher than at appraisal (EIRR at 26% instead of 24% and benefit-cost ratio at 1.76 instead of 1.45). Viet Nam's net benefits are now four times greater than in Cambodia. While the Project remains profitable for both countries, the PCR predicts that Viet Nam will profit more from the Project over time. However, conclusions based on NH22 would not support this view.

IMPACTS FROM TRANSPORT AND TRADE FACILITATION IMPROVEMENTS

1. **Cross-Border Movement.** Road completion has had a significant effect on the number of passengers crossing the border in buses going from Phnom Penh to Ho Chi Min City (HCMC) and the number of people going to casinos in Bavet. The number of passengers increased five times between 2005 and 2007, reaching an average of 1,660 per day (both directions).[1] Data obtained from the Cambodian Department of Immigration for the Bavet border reveals that the number of Vietnamese and other international tourists crossing the border has increased significantly in number and in proportion. Vietnamese tourists accounted for 29% of total movements in 2003 and 37% in 2008; other international tourists accounted for 25% in 2003 and 30% in 2008.

2. The cross-border transport agreement has not yet been implemented at the border-crossing point, and the number of vehicles crossing remains low. Most of these vehicles are cars and buses. Subregional traffic along route national (RN) 1 consists mostly of Viet Nam buses operating between Phnom Penh and HCMC. They account for about 10.4% of the total number of vehicles surveyed. As a consequence, trade volume is still low accounting for only 3% of total Vietnamese exports to Cambodia and less than 1% of total Vietnamese imports from Cambodia (2005). About 40,000 tons are estimated to transit through the border crossing. This may be a noteworthy increase from 2003 when the road was still under construction, but less significant if compared with 1996.

3. The numbers are similar for the Viet Nam side. Table A7.1 shows a consistent increase in number of people crossing the border after project completion between 2004 and 2007. On the other hand, the number of vehicles crossing the border, while increasing significantly from 2004, was only slightly higher than in 1997.

Table A7.1: Cross-Border Movement through the Viet Nam Border (Moc Bai Crossing)

	People Crossing (number)			**Vehicle Crossing** (number)		
Year	**Outbound**	**Inbound**	**Total**	**Outbound**	**Inbound**	**Total**
1997	26,631	27,759	54,390	6,799	6,839	13,638
2000	37,267	38,397	75,664	2,042	2,040	4,082
2003	64,504	67,508	132,012	2,888	1,468	4,356
2007	541,989	165,641	707,630	7,442	7,605	15,047

Source: Viet Nam Tay Ninh Customs Office.

4. Because of restrictions in the bilateral agreement being enforced, the number of vehicles crossing per day is limited. Most freight is transshipped with the total volume still being on the low. The crossing time at Bavet–Moc Bai is reported have improved slightly (processing and queuing time). However, trucks' waiting time and transshipment time in common control area are not accounted for. The traffic has not yet picked up as expected on both sides of the border, and the corridor has yet to graduate into a full economic corridor. This is not surprising since moving from a transport and logistics corridor to an effective economic corridor will take time. In addition to the absence of CBTA implementation, the Phnom Penh–HCMC Highway cannot fully function as an efficient corridor without a bridge on the Mekong along the Phnom Penh to Neak Loeung section—at evaluation it was still under construction.

[1] In 2003, 41,465 travelers (18,659 Khmer, 12,440 Vietnamese, and 10,366 international visitors) crossed the Bavet border into Cambodia. By 2007, this increased to 309,749 travelers (98,066 Khmer, 113,813 Vietnamese, and 97,870 international visitors). For the other direction, 80,181 travelers (37,694 Khmer, 22,653 Vietnamese, and 19,834 international visitors) crossed the Bavet border going to Viet Nam in 2003. By 2007, outbound travelers totaled 295,808 travelers (103,099 Khmer, 109,432 Vietnamese, and 83,277 international visitors). In early 2008, 26,854 inbound travelers arrived per month (9,303 Khmer, 8,334 Vietnamese, and 9,217 international visitors), while 26,355 travelers were outbound per month (8,598 Khmer, 8,670 Vietnamese, and 9,087 international visitors).

5. **Trade Growth.** Table A7.2 reflects the distinct growth in trade experienced by Cambodia and Viet Nam in the last 8 years.

Table A7.2: Growth in Export and Import Values, 2000–2007

	Exports		Imports	
Country	**2000–2006**	**2007**	**2000–2006**	**2007**
Cambodia	18.6	9.5	17.0	14.1
Viet Nam	20.0	21.5	22.2	35.5

Source: Asian Development Bank. Various years. *Asian Development Outlook*. Manila.

6. In addition to cultural and socioeconomic ties, geography influences the relative pace of trade development between the Greater Mekong Subregion (GMS) countries (Table A7.3). Among GMS countries, the Lao People's Democratic Republic (Lao PDR) has been most dependent on intra-GMS trade, given that it is landlocked. On the other hand, Cambodia, with its own major seaport, has largely depended on intra-GMS trade for imports and much less on exports. Viet Nam, with its large economy and several seaports, has been able to take advantage of opportunities for intra-GMS trade, but this has been relatively small at about 10% of imports and about 5% of exports in 2006.

Table A7.3: Direction of Trade of GMS Countries, 2006 (% of total)

	GMS		Other Asia[a]		United States		Europe		Rest of the World	
Country	**Exports**	**Imports**	**Exports**	**Imports**	**Exports**	**Imports**	**Exports**	**Imports**	**Exports**	**Imports**
Cambodia	2.5	23.1	20.1	66.0	53.3	0.9	0.4	0.2	23.6	9.8
Lao PDR	54.7	76.5	9.3	15.4	0.7	0.5	0.8	0.3	34.4	7.3
Thailand	4.1	1.2	38.7	38.4	15.0	7.5	1.9	1.6	40.3	51.2
Viet Nam	5.0	10.2	19.3	60.3	21.2	2.6	2.3	1.8	52.2	25.1
Guangxi, PRC	22.3	24.3	37.6	23.3	11.3	5.8	18.1	12.0	10.7	34.6
Yunnan, PRC	15.4	6.7	63.0	26.1	6.4	4.4	10.7	12.9	4.5	49.8

GMS = Greater Mekong Subregion, Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China.
Note: GMS here excludes Myanmar.
[a] Other Asia includes the People's Republic of China, except Guangxi and Yunnan provinces.
Sources: International Monetary Fund, Direction of Trade Statistics CD-ROM (March 2008); Guangxi Statistical Yearbook 2007; and Yunnan Provincial Government. 2007. Yunnan Statistical Yearbook 2007. Yunnan.

7. Table A7.3 partly explains the relative development of the Bavet−Moc Bai crossing points between Cambodia and Viet Nam compared with the Lao Bao−Dansavanh border-crossing points between the Lao PDR and Viet Nam. Table A7.4 compares trade values at the two border points. At the Lao PDR and Viet Nam border, trade value recovered to $136 million in 2006 and $148 million in 2007, or just above the 1999 level after a slowdown associated with the construction. On the other hand, trade at Bavet−Moc Bai started from a small base and has exhibited a strong upside in recent years. Trade data confirm a progressive increase in trade value from only $10 million in 1999. After completion of the project road, trade value averaged $43 million during 2003−2005, $43 million in 2006, and $68 million in 2007.

Table 7.4: Comparative Trade Values at Two Key Border Points, 1999−2007

Year	Lao Bao–Dansavanh Border Crossing Trade Value ($ million)	Bavet–Moc Bai Border Crossing Trade Value ($ million)	Lao PDR % of Trade Value at Dansavanh to Lao PDR's Total Trade Volume	Cambodia % of Trade Value at Bavet to Cambodia's Total Trade Volume	Viet Nam % of Trade Value at Lao Bao and Moc Bai to Viet Nam's Total Trade Volume
1999	129	10	10.15%	0.44%	0.60%
2000	58	8	5.37%	0.31%	0.22%
2001	46	7	4.20%	0.25%	0.17%
2002	22	5	1.99%	0.16%	0.07%
2003	29	24	2.33%	0.69%	0.12%
2004	46	22	2.89%	0.52%	0.12%
2005	68	22	3.46%	0.40%	0.13%
2006	136	43	4.91%	0.66%	0.21%
2007	148	68	4.53%	0.72%	0.20%

Lao PDR = Lao People's Democratic Republic.

Source: Trade values at Lao Bao–Dansavanh obtained from Lao Bao Customs and trade values at Bavet–Moc Bai obtained from Tay Ninh Customs Office. Total trade volumes obtained from the International Monetary Fund Direction of Trade Statistics CD ROM.

8. **Transport Pricing.** Bus fares operating on national highway (NH) 1A and NH22 in Viet Nam are reported to have reduced their fares. Using survey data, a detailed analysis of taxi and bus fares was conducted on the N1 in Cambodia. Fares before and after road completion were collected at Phnom Penh central market, Svay Rieng market, and Bavet (Table A7.5). "Before fares" were then adjusted for inflation using the consumer price index. The difference between the "after fares" and the "before fares" were then attributed to consumer gains. Bus, taxi, and van passengers benefitted on most routes. Fare reductions varied between 4% and 14% for bus passengers, and 4% to 8% for taxi and van passengers. More specifically, bus fares were reduced by 6.5% for Phnom Penh–HCMC and by 14% for Phnom Penh–Svay Rieng at project completion in 2005. Correspondingly, the vehicle operating cost savings increased by 6.37% in 2005 and 5% in 2006. Transport cost reductions must then be passed to consumers. In a different perspective, vegetables[2] originating from the project road area and sold in Phnom Penh market benefited from cost reductions that could be attributed to transport cost reductions.

Table A7.5: Passenger Fares ($)

Destination	2002	2003	2004	2005	2006	2007	2008 (June)
Phnom Penh–Svay Rieng or Bavet	6	6	6	6	8	8	8
Phnom Penh–Ho Chi Minh					12	12	10

Note: Buses did not run through Bavet border check point before 2005.
Buses have been run through Bavet border check point after 2005.
Bus fares were $4 from Bavet to Ho Chi Minh City before 2005.
Bus fares in 2008 are lower than bus fares in 2006 and 2007, because of competition between passenger transport companies.

Source: Operations Evaluation Mission survey result.

9. **Cross-Border Survey on Trade Facilitation.** As part of the Operations Evaluation Mission, a team of national consultants conducted interviews at the Bavet–Moc Bai border to assess improvements made at the border-crossing point. The survey revealed that the total time taken to cross the border into Viet Nam from Cambodia was about 45 minutes based on a queuing time of 23 minutes and processing time of 22 minutes (Table A7.6).[3] On the other hand,

[2] For instance, 1 kilogram of tomatoes is now $0.45 in Bavet and $0.50 in Phnom Penh, before it was $0.37 and $0.20, respectively. Tomato products are sourced from Viet Nam. The reduction of the gap between Phnom Penh and Bavet market is a measure of the saving in transport cost largely passed to consumers.

[3] The Operations Evaluation Mission estimate of total time taken to cross the border excludes transshipment time at the "neutral area" between the two border areas.

total time taken to cross the border into Cambodia from Viet Nam is now estimated at 69 minutes with a queuing time of 31 minutes and processing time of 38 minutes.[4] The longer time taken going into Cambodia from Viet Nam is attributable to a longer outbound time from Moc Bai.

10. In general, actual time to cross the border has been reduced as shown in the Operations Evaluation Mission border-crossing survey in 2008 and an earlier time release study conducted by ADB at the border crossing in 2006 (Table A7.6).

Table A7.6: Estimated Time Taken to Cross the Border (mean, minutes)

	Shipment to CAM from VIE			Shipment to VIE from CAM		
Item	**Bavet** (inbound)	**Moc Bai** (outbound)	**Total**	**Bavet** (outbound)	**Moc Bai** (inbound)	**Total**
OEM Border-Crossing Survey (in 2008)						
Total Time to Cross the Border	24	45	69	21	24	45
Queuing Time	10	21	31	11	12	23
Processing Time	14	24	38	10	12	22
ADB GMS Time Release Study (in 2006)						
Total Time to Cross the Border	108	35	143	166	15	181
Processing Time	73	28	101	110	10	120

ADB=Asian Development Bank, CAM = Cambodia, GMS = Greater Mekong Subregion, OEM = Operations Evaluation Mission, VIE= Viet Nam

Note: While this comparison shows a reduction in total time to cross the border, the method of calculating this could be different for the two studies, since these were carried out by different agencies. However, the overall reduction in the time is distinct.

Sources: ADB Time Release Study (2006) at the Bavet-Moc Bai border-crossing point and OEM survey results.

11. On the Viet Nam side, a significant number of people crossing the border provided a neutral response, which in part could indicate less openness. Notwithstanding, a key observation from the survey results is that Bavet has done relatively better when compared with Moc Bai. The share of affirmative and neutral respondents in Bavet range from 90% to 98% (inbound) and 96% to 100% (outbound) (Table A7.7). For Moc Bai, the share of affirmative and neutral responses range from 81% to 93% (inbound) and 67% to 98% (outbound). Moc Bai appeared to score low in terms of customer services and the processing of documentation for inbound and outbound respondents. This is also partly explained by a longer outbound time from Moc Bai going to Cambodia.

12. On both sides of the border, respondents indicated that cross-border costs included added transport costs in terms of unofficial fees. In terms of the adequacy of border facilities, a higher percentage of respondents on the Viet Nam side (96%−100%) provided affirmative and neutral responses as compared with respondents on the Cambodia side (79%−81%). At the same time, the percentage of affirmative and neutral responses ranged from 81% to 100% in favor of Bavet and 79% to 96% for Moc Bai.

13. In Cambodia, 83% of respondents now think that better training of custom officers and inspectors and single window inspection were a priority in terms of improving cross-border services. The situation has improved remarkably based on the satisfaction ratings and up to 86% of respondents now say that border services are either enough or need to look at other priorities. Only 2% of respondents said that preclearance of documentation needs to be a priority. Awareness has been gradually increasing in terms of use of electronic data with 6% of

[4] This represents a small improvement from “before” conditions of about 74 minutes with 37 minutes each for queuing and processing documentation.

respondents now saying this is a priority for improving cross-border services (as compared with 2% of respondents perceiving this before project). On the other hand, 33% of respondents in Viet Nam indicated use of electronic data as a priority in terms of improving cross-border services.

Table A7.7: Satisfaction Survey on Border-Crossing Services (% of total respondents)

	Cambodia (%)				**Viet Nam** (%)			
	Bavet		**Moc Bai**		**Moc Bai**		**Bavet**	
Item	(inbound)		(outbound)		(inbound)		(outbound)	
Processing of documents are fast and efficient	94 agree	2 neutral	63 agree	15 neutral	89 neutral	8 disagree	35 agree	65 neutral
Customer services are fast and efficient	88 agree	10 neutral	52 agree	15 neutral	81 neutral	12 disagree	15 agree	81 neutral
Immigration services are fast and efficient	83 agree	11 neutral	86 agree	8 neutral	12 agree	81 neutral	27 agree	73 neutral
Other services (quarantine, vehicle inspection) are fast and efficient	88 agree	2 neutral	73 agree	25 neutral	15 agree	73 neutral	31 agree	69 neutral
Cross-border fees included unofficial fees	84 agree	16 disagree	81 agree	11 neutral	92 agree	4 neutral	88 agree	4 neutral
Facilities at border-crossing point are adequate	54 agree	27 neutral	69 agree	10 neutral	52 agree	44 neutral	68 agree	32 neutral

agree = strongly agree/agree, disagree = strongly disagree/disagree.
Source: Operations Evaluation Mission report.

14. Cambodian respondents are divided in terms of the need for 24-hour cross-border services. Of those who gave affirmative responses, 33% indicated they could make 1−2 additional trips, while 22% said they could have 3−4 additional trips. At the same time, around 37% of respondents said they have no idea of the number of additional trips they will take if 24-hour cross-border services are provided.

15. In Viet Nam, other constraints highlighted by freight forwarders include (i) speed limit at 40 kilometers per hour on NH22; (ii) traffic congestion especially near HCMC port; and (iii) different working time between Viet Nam and Cambodia (for the project road) and language capacity, for example, of customs and traffic police (for both countries). In Cambodia, the survey of travellers and freight transportation companies indicates they are satisfied with cross-border procedures even with little improvement in border formalities and improvement in the efficiency of trade movements. However, if standards of trade and transport services are to be raised, they are of the view that border-crossing procedures need to improve, and these require the right policy and commitment from the Government. While the time for processing documentation was reduced satisfactorily, documentation to be completed for imports and exports remains complicated. The document forms that need to be filled in have not been improved. Many steps are required for approval in the Svay Rieng and Bavet offices. In summary, respondents indicate that the following may have to be considered to improve border-crossing services: (i) allow all people holding a national identification card to cross the border, (ii) improve border-crossing procedures or reduce paper work, (iii) facilitate people crossing the border to bring in small goods for family use, (iv) improve border police services to assist people crossing the border, (v) facilitate Cambodians crossing the border to work in Viet Nam as Vietnamese are working in Cambodia, (vi) provide special identification card for laborers working in Viet Nam, and (vii) provide more banking services.

SOCIOECONOMIC IMPACTS

A. Cambodia Component

1. The socioeconomic impact of the Phnom Penh–Ho Chi Minh City (HCMC) Highway Project has been positive and significant. Development along route national (RN) 1 and Bavet has increased. RN11 experienced similar positive impacts. The improved road and border facilities from the Cambodia component contributed to the development of the Bavet area, and enhanced living standards of the border community and communities along the completed project road.

2. **Bavet Border Community.** The population of Bavet (as of March 2008) increased by about 40% after completion of the project road. Of about 10,700 residents of its five villages, migrants totaled around 2,000 (19%). Completion of the project road provided more jobs and business opportunities, including about 2,000 people on average working in casinos and another 3,200 working at factories. The Bavet area experienced an economic transformation from rice fields and agricultural rice production before completion of the road to include a special economic zone (SEZ), cross-border check points, and a city. Several buildings and other services were introduced in the Bavet area after completion of the road: 5 factories in the Manhattan Special Economic Zone (MSEZ), 7 casinos, 7 hotels in the casinos, 20 rest houses, 1 dry port, 1 bank, 1 market, 2 primary schools, 1 secondary school, and 1 health center. In addition, government offices opened, including a border military office, border police force, and customs office. Three large buildings are now under construction for casinos and hotels. The cost of living in Bavet has become more expensive or twice that of Phnom Penh.

3. **Special Economic Zone.** The completion of the road has enabled opening of a SEZ to locate factories. The MSEZ, a joint venture by Taiwan and Singapore investors, was established in August 2005. Since its opening, five factories (shoe, garment, bicycle, crew/nut, and chemical products) were set up by investors from the People's Republic of China and Taipei,China. All products are for export. Three more factories are expected to start construction in 2008 (plastic foam cushions, hardware, and shoes). In addition, a general hospital (Guangxi Jianglin Hospital) with 100 beds is being planned in the near future. Since completion of the project road, a significant number of people have been employed in the MSEZ.

4. The MSEZ takes advantage of its proximity to the Viet Nam border (6 kilometers) and HCMC port, and the good road conditions between MSEZ to HCMC port (via RN1 in Cambodia and national highway 22 in Viet Nam). The Government provides duty-free privileges and low labor costs, and has set up a one-stop office in March 2006. The SEZ also generates reciprocal business to Viet Nam. Materials and supplies from Viet Nam have been sufficient, while power and water supply come from Viet Nam. The Bavet area is expected to include two more SEZs. MSEZ prefers that the Government build power and water supplies and a ring road in this area.

5. Since completion of the project road, the shipment of goods by freight companies is reported to have increased between 40% and 80%. Most products for exports are garments, textile, rubber, tobacco, bicycles, crews/nuts, shoes, and rice. The average cost of container transportation by road is $1,000 from Phnom Penh to HCMC, and $800 from HCMC to Phnom Penh. This average cost of transportation includes unofficial payments.

6. **Household Perception Survey on Social Impacts.** A household perception survey was conducted in three locations. The first two covered the original scope along RN1 from Neak Loeung to Bavet and the Bavet border community. The survey involved 100 households along

RN1 and 50 households in Bavet. A sample of 20 households was interviewed along RN11 under the extended scope of the Cambodia component. In general, the proportion of people who consider their living standards, income-earning capacities, and production to have improved after the completed road project has increased slightly. The survey indicates that all respondents agree with and support the Project. However, some affected people living along the completed road may not welcome the resettlement compensation rate and issues.

7. **Impact on Income and Expenditure.** The perception survey indicates a rise in average income per month (Table A8.1). While this has been positive, on a daily basis, average income is still estimated at around $5 per day in the Bavet community and $15 along RN1. Household income still comes from rice production, raising livestock, and small home businesses for subsistence. Average daily income along RN11 is about half that along RN1 at around $7. This is due to some differences between RN1 and RN11: (i) RN1 links directly from Phnom Penh to the Viet Nam border; (ii) RN1 is the main road within the Greater Mekong Subregion (GMS) program, while RN11 is a road in a subcorridor of the GMS program; (iii) RN1 is used as an international road with a neighboring country, while RN11 is used between provinces or areas in the northeast of the country; and (iv) a SEZ is located along RN1 or close to the border, while there is none along RN11.

Table A8.1: Changes in Income and Expenditure

Route National 1	Bavet Border Community	Route National 11
The surveyed households estimate average monthly income to have markedly improved from about $222 before the Project to $436 since completion of the road. At evaluation, 29% of respondents said their monthly income was less than $100, while 59% reported a monthly income of $100–$600. This compares favorably with the before project condition, whereas 54% of the respondents' reported a monthly income of less than $100. Forty three percent estimated their income to range from $100 to $600 per month. The increased income has stimulated higher consumption. Average monthly expenditures were estimated at about $236 after road completion as compared with $119 before. Overall, net savings from household income and expenditure improved with more robust growth in income.	The surveyed households estimate average income to have increased from about $133 before the Project to around $158 at evaluation. After completion of the road, 46% of household income ranged from $5 to $100 per month, while another 46% estimated income from $100 to $350 per month. This compares favorably with the before-project case where 66% of respondents indicated that household income ranged from $0 to 100 per month. Fourteen percent reported household income between $100 and $350. The increased income resulted in higher consumption. Net household savings were reduced as a result of higher average monthly expenditures of about $140 at evaluation as against $97 in the before-project case. Overall, 56% of surveyed households reported an increase in household income of 5%.	Surveyed households along route national (RN) 11 thought that estimated average monthly income improved from $108 during before-project conditions to $203 at evaluation. At the same time, average monthly expenditure increased to $121 after the Project as compared with $84 before the Project. Overall, as in the case of the RN1 survey, net savings from household income and expenditure improved due to more robust growth in income vis-à-vis expenditure.

Source: Operations Evaluation Mission survey result.

8. **Impact on Agricultural Activities.** The surveyed households along RN1 indicate no major change in production (rice only) (Table A8.2). The agricultural constraints in the road influence areas are (i) agriculture technology remains low with farmers still using agricultural methods from the past; farmers grow rice based on the weather and do not know how to use fertilizer, i.e., some places do not use fertilizer; (ii) insects are plentiful; (iii) crop or seed is not good; and (iv) not enough water is available for planting or agriculture. The plans to improve irrigation in the road influence areas are to (i) rehabilitate irrigation infrastructure, (ii) build new irrigation network and water basin, and (iii) identify water sources for storing water during rainy and dry seasons and for a whole year.

Table A8.2: Changes in Agriculture Activities

Route National 1	Bavet Border Community	Route National 11
Eighty percent of surveyed households are subsistence farmers and do not sell goods. Seventy-eight percent of households indicate no major change in production (rice) due to: low rice prices, poor rice production, poor transportation, bad road conditions, production destroyed by insects, insufficient water for planting, nonuse of fertilizer, occasions of drought, small land size, and household members getting other jobs. They attribute changes to market demand (increasing population after road improvement and development in Cambodia) and improved rice prices, good and fast transportation, good roads, adequate water for planting, use of fertilizer, and good weather.	Seventy-eight percent of surveyed households are subsistence farmers and do not sell goods. Eighty-six percent of respondents said that they have not increased production. Three of seven respondents who indicated an increase said this was less than 20%. Respondents said observed impacts include market demand, increased prices, new technology, people getting new jobs, and some people selling their land.	Seventy percent of surveyed households are subsistence farmers and do not sell goods. Eighty percent of surveyed households said their production had increased due to (i) demand from markets, (ii) increased selling prices, (iii) improved transport services, (iv) good road conditions, (v) adequate water and use of fertilizer, and (vi) good weather conditions.

Source: Operations Evaluation Mission survey result.

9. **Impact on Nonagricultural Activities.** The key impacts on nonagricultural activities, in particular along RN1, relate to job creation from livelihood diversification and increased trade: (i) some people are able to get second jobs as taxi drivers, construction workers, sellers, and small businesses providing good transportation in the SEZs along the road influence areas, Phnom Penh, and other towns; and (ii) affluent residents of Phnom Penh and small towns (market) along the project areas will take advantage of trade and commerce (Table A8.3).

Table A8.3: Changes in Nonagricultural Activities

Route National 1	Bavet Border Community	Route National 11
Eighty-one percent of the surveyed households said they are not "sellers." Some are wage workers, while others earn by driving taxis. Some households comprise subsistence farmers who have enough for eating, while others have household members with second jobs.	Some household members are able to get another job. Most of the people are not sellers. Some are wage and salary workers and some work as taxi drivers. Forty-two of 50 (84%) respondents said they do not have more goods to sell since road completion. Respondents said observed impacts include good road and fast cargo transport, market demand, and an increase in population after road completion.	Some household members are able to get another job.

Source: Operations Evaluation Mission survey result.

10. At the Bavet border, 33 or 66% of respondents said the price of their goods are lower than before; 15 or 30% said they received better prices for their goods than before; 44 or 88% said they never sell their goods across the border; only 4 or 8% said that they are selling more goods; 78% of 50 households of the Bavet border community are selling products on the market; and 22% of 50 households of the Bavet border community are not selling products on the market. The products selling on the market are rice, traditional medicine, cigarettes, beer, wine and bottled water, electronic appliances and compact discs, groceries, and plastic.

11. Meanwhile, present limitations that constrain Cambodian households from taking advantage of increased trade with Viet Nam are (i) higher prices of agricultural products; (ii) higher production costs; (iii) limited agricultural technology; (iv) product quality does not meet requirements; (v) materials for supporting production are more expensive (i.e., high operating costs); and (vi) small-scale family businesses lack economies of scale.

12. **Impacts on Land Prices.** Land prices have increased considerably (i.e., partly attributable to the Asian Development Bank project road, although other road improvements are ongoing in the area connecting from Viet Nam border to RN1). Under this circumstance, local people will not be able to buy land (Table A8.4). Meanwhile, affluent households from Phnom Penh and international investors will be able to buy the land for speculation, especially when the Government continues to develop for SEZs along the project road alignment. The situation is not favorable for low- and medium-class households, as they risk losing land with little in return for the future (i.e., low-income and limited job opportunities).

Table A8.4: Increase in Land Values

Route National 1	Bavet Border Community	Route National 11
For the before-project situation, all respondents estimated land prices to range from $300 to $8,000 per hectare. At the time of evaluation, about 32% of respondents estimated land prices to range from $10,000 to $20,000. The rest estimates land prices to be higher (i.e., 58% of respondents think that land prices ranged from $20,000 to $50,000).		The survey results indicate an increase in land values. Surveyed households reported that land prices ranged from $5,000 to $20,000 per hectare before the Project. At the time of evaluation, respondents thought that comparable land prices ranged from $30,000 to $40,000.

Source: Operations Evaluation Mission survey result.

13. **Impacts on Mobility and Social Interaction.** The survey results show the project road led to increased mobility (i.e., number of trips to Phnom Penh and other cities) or social interaction (Table A8.5).

Table A8.5: Travel to Phnom Penh and Other Cities

Route National 1	Bavet Border Community	Route National 11
Sixty-eight percent of the surveyed households said that the number of trips going to Phnom Penh and other cities was less than 5 trips per month before completion of the project road. After completion of the road, 62% of respondents said that the number of trips taken was more than five per month.	In the case of Bavet border community, the majority (62%) of surveyed households indicate that the completion of the road has not led to an increase in their trips to cities like Phnom Penh.	The survey results show an increase in number of trips to Phnom Penh and other cities. Before the Project, the number of trips made by all respondents ranged from 1 to 5 trips per month. After completion of the road, 60% of the surveyed households reported more than 5 trips per month to Phnom Penh and other cities.

Source: Operations Evaluation Mission survey result.

14. **Impacts on Health and Related Services.** Along RN1, health centers and facilities are inadequate. When people are seriously ill or need an operation, they go to the provincial town or Phnom Penh (Table A8.6).

Table A8.6: Access to Health Facilities and Quality of Health Facilities

Route National 1	Bavet Border Community	Route National 11
All surveyed households visit health centers and indicate an increase in frequency of these visits after completion of the road. Sixty-five percent said they made between 1 and 2 trips per month before project completion. After completion of the road, 61% reported they went to health centers 3 or more times per month.	Forty-two percent of all surveyed households said they made more trips to health centers after road completion. Of the households that made more trips, about 62% reported an increase of more than five trips per month.	Only 10 (50%) of the surveyed households said they usually go to the hospital when they are sick. One (5%) reported going to a Khmer (traditional medicine) doctor, while the rest either used family knowledge (20%) or could do nothing (25%) when a family member becomes sick. Along route national 11, survey indicates an increase in frequency of these visits after completion of the road. Before the Project, 70% of surveyed households reported making at most 3 trips per month to health centers. After completion of the road, 60% of the surveyed households said they have been going to health centers more than three times per month.

Source: Operations Evaluation Mission survey result.

15. In general, the surveyed households do not think they are vulnerable to infectious diseases such as HIV, Avian influenza, and dengue (Table A8.7). This reflects an increased awareness because of better information on health to protect against these diseases.

Table A8.7: Risks from Communicable Diseases

Route National 1	Bavet Border Community	Route National 11
The common illnesses reported by the surveyed households include typhoid (14%), cough and colds (14%), dengue (10%), and respiratory disease (8%). There was one case of HIV. Meanwhile, no cases of Avian influenza were reported, but some households had a consultation with a doctor to check for the disease. Information sources to protect and control key diseases were from television, radio, newspaper, poster, and billboards.	Ninety-four percent of surveyed households do not think that they are more vulnerable to infectious diseases. However, several expressed concerned over sexually transmitted diseases. Ninety-four percent of surveyed households said they are more informed about prevention and treatment of these diseases than before. Information sources include television, radio, village and community authorities, provincial hospitals, nongovernment organizations, public health department, local health center, word of mouth, pagoda, and school.	The survey indicated none of the respondents along route national 11 have caught HIV, Avian influenza, or dengue. However, some of the respondents said they have had consultations with doctors to check their blood. The survey results indicate that television and radio served as the main source of information for protection and control of diseases.

Source: Operations Evaluation Mission survey result.

16. **Access to Credit.** Local residents have started to use the banking system to keep their money safely. Training on banking skills is important for local residents.

17. **Impacts on Environment.** In the GMS, one of the negative impacts from transport improvement is deforestation. This has been caused mainly by new demand from the People's Republic of China, Thailand, and Viet Nam for hardwood logs and lumber. Upgrading of roads has facilitated illegal logging in the Lao People's Democratic Republic. In the case of the project road, this does not appear to be a significant issue. The project completion report does not cite this as a problem in its assessment of environmental impacts. At the time of evaluation, the household perception survey in Cambodia indicates only a small percentage or 17% believe that logs and unprocessed wood have been transported by the road in the last 2 years. At least one third of respondents think this is not the case, while nearly half of respondents have indicated a lack of awareness of logs and unprocessed wood being transported (Table A8.8).

Table A8.8: Perception on Transport of Logs and Unprocessed Wood in the Last 2 Years
(% of total respondents)

Item	Before	After
Yes, there is an big increase	0	4
No change	0	0
No, there is a decline	13	13
Don't know	50	48
Did not have the transportation of logs and wood	37	35

Note: Total number of respondents is 52.
Source: Operations Evaluation Mission survey result.

18. In Cambodia, the main constraints to commerce and trade relate to (i) high transport fees; (ii) bed condition of bridge and bridge-loading limitation; (iii) bed condition of road under construction between Phnom Penh to Neak Loeung; (iv) waiting time and goods transferred at the border and at Neak Loeung Ferry port; (v) high unofficial payment in Cambodia; and (vi) inability to overcome tariffs, foreign technical regulations, transportation, and other business impediments. To sustain the increase in development, more industries need to be developed to generate jobs, the road needs to be widened, travel time (including border crossing time) reduced, relations between Cambodia and Viet Nam improved, competitive export of goods increased, and requirement for passports removed.

B. Viet Nam Component

19. **Special Economic Zone.** In Viet Nam, the road improvement influenced the development and expansion of new industrial estates along the route. Two large industrial zones were specifically planned along the project road alignment as a direct result of the Project. These provide employment for residents of Tay Ninh province, as well as those from outside the province. They are an important factor in increasing employment and stimulating economic growth in the region.

20. The two SEZs are the 700 hectare Trang Bang Industrial Park, and the 21,293 hectare Moc Bai economic zone. The larger Moc Bai economic zone includes a 400-hectare industrial zone, a 286-hectare residential area, and a 152-hectare trade and ecotourism area. The trade and ecotourism area includes a duty-free market and a large ecological forest park. Moc Bai now has three large duty-free shopping centers. Customs data show increasing trade coming through the Moc Bai border crossing—from 14.6 million tons in 1997 to 39.6 million tons in 2005. In terms of value, total trade increased from $7.3 million in 1997 to $42. 8 million in 2005. Total export value increased from $5.8 million in 1997 to $27.5 million in 2005, while total imports grew from $1.5 million in 1997 to $15.3 million in 2005. A summary assessment of socioeconomic impacts is provided in Table A8.9.

Table A8.9: Exports and Imports through Viet Nam Border (Moc Bai Crossing)

	Volume (million ton)			**Value** ($ million)		
Year	**Export**	**Import**	**Total**	**Export**	**Import**	**Total**
1997	4.9	9.7	14.6	5.8	1.5	7.3
2000	7.6	2.1	9.7	5.9	2.3	8.2
2005	30.6	9.0	39.6	27.5	15.3	42.8

Source: Viet Nam Tay Ninh Customs Office.

21. In Viet Nam, total trade going through the Moc Bai crossing increased by an average compound growth of 24.7% from $7.3 million in 1997 to $42.8 million in 2005. Likewise, trade volume increased from 14.6 million tons in 1997 to 39.6 million tons in 2005.

22. **Household Perception Survey on Social Impacts.** In Viet Nam, community interviews were conducted on two locations of the project road—at the border and along the road. A commonality in project impacts is seen in both Cambodia and Viet Nam since completion of the road. Two key impacts relate to increased mobility and increased household income. The survey results on project impacts are compared in Table A8.10. In contrast to the experience along National Highway (NH) 9 under the East–West Corridor Project, trade across the border has increased significantly along NH22 in Viet Nam and RN1 in Cambodia. In Viet Nam, only 24% of respondents indicated that they are trading goods over the border. In Bavet community, despite 58% of total respondents reporting household members crossing the border more often, only a small percentage of total respondents (16%) said they were trading goods over the border.

Table A8.10: A Comparison of Project Road Impacts (% of total respondents)

	Viet Nam (%)		**Cambodia** (%)			
Item	**NH22**	**NH9**	**RN1**	**Bavet Border**	**RN11**	**Remarks**
Household income increased since road completion	36	88		56		Except in Bavet community, net savings from household income and expenditure improved due to a more robust growth in income as against expenses.
Households making more trips to cities since road completion	62	86		38		Except in Bavet community, survey shows increase in number of trips to Phnom Penh and other cities.
Production increased since road completion	29	86	22	14	80	Seventy to eighty percent of households along RN1 and Bavet community are subsistence farmers. Seventy percent of households along RN11 are subsistence farmers.
Able to sell more goods since road completion	29	86	8	16	30	Majority of households said they are not “sellers.” Eighty percent of households along RN1 are subsistence farmers, while others have members who were able to get a second job.
Average selling price of products increased since road completion	48	100	19	30	10	
Getting a better price for goods than before	45	63		30		
Easier to pass the border than 2−3 years before	57	39		64		
Trading goods over the border	24	88		16		Majority of Bavet respondents said they do not sell their goods across the border.
Household members crossing the border more often	28	98		58		
More vulnerable to infectious diseases (HIV, Avian influenza, dengue)	60	51		6		In general, surveyed households do not think they are vulnerable to infectious diseases like HIV, Avian influenza, dengue.
More informed about prevention and treatment of diseases than before	90	98		94		Awareness is increased because of information received from many sources to protect against these diseases.

HIV = human immunodeficiency virus, NH = national highway, RN = route national.
Source: Operations Evaluation Mission survey results.

23. **Impact on Land Prices.** Generally, increase in land price is significant following project implementation. However, smaller increases are noted for locations further away from HCMC. Data show real land value was decreasing for all areas between 1993 and 1998 on the average. Since around 1998, the year from which the road project would have started to impact on demand for land, land prices in the areas along the project road increased in real terms. The increase in prices is most significant in areas around NH1A and for the first kilometers (from HCMC direction) of NH22. The adjustments are considerably less further away from HCMC. The uneven increases show differences in land prices between areas in the HCMC vicinity and land farther away from the city. This shows concentration of commercial activity and demand for land in and around HCMC (Table A8.11).

Table A8.11: Land Prices (D'000 per square meter, nominal prices)

	Tay Ninh		Ho Chi Minh City		
Year	**Rural**	**Urban**	**Thu Duc−Binh Phuoc Bridge** (Urban)	**Binh Phuoc Bridge−Hoc Mon** (Urban)	**Cu Chi** (Urban)
1993	200	450	800	750	500
1998	240	350	900	800	500
2005	380	600	3,500	3,000	1,500
Average Annual Increase in Nominal Prices (%)					
1993−1998	3.7	(4.9)	2.4	1.3	0.0
1998−2005	6.8	8.0	21.4	20.8	17.0
Average Annual Increase in Constant 1995 Prices (%)					
1993−1998	(2.2)	(10.3)	(3.5)	(4.5)	(5.7)
1998−2005	3.1	4.3	17.3	16.7	13.0

( ) = negative number.

Source: Operations Evaluation Mission estimate.

24. Mixed results are noted in terms of production in the area. Only a small percentage of respondents along RN1 (22%) and Bavet community (14%) reported an increase in their production. This is below the 80% of respondents who reported an increase in production along RN11. The same case was observed along RN22 (29%), which was well below the 86% reported along RN9. In Bavet and along RN1, the majority of households comprised subsistence farmers and said they are not "sellers."

ROAD SAFETY ON THE PROJECT ROADS

1. Improvement of roads has a direct correlation with deterioration of road safety. While household survey respondents found the improved road safer and more convenient or easier to travel on, local villagers perceive a significant increase in risk of accidents due to high vehicle running speeds. This safety issue is common among rural road improvement projects in other countries. The issue could have been better addressed during project formulation by including additional signage and pavement markings in design and construction.

2. With expectations of a sustained increase in vehicle traffic, in particular of heavy vehicles, several road safety issues are likely to persist. These include (i) lack of enforcement of posted speed limits and lack of appreciation by drivers of the rationale for speed limits; (ii) increased pedestrian traffic crossing and along the roadway; (iii) lack of adequate shoulder width for vehicular stops and parking; and (iv) continued breakdown of the edges of the shoulders. A number of earlier project performance evaluation reports highlighted road safety as an integral part of all road designs. This evaluation identifies a similar lesson for future road projects.

3. **Cambodia Component.** With the increase in vehicle traffic along route national 1 (RN1), the number of reported road accidents increased from an annual average of 120 cases from 2003 to 2005 to 180 incidents during 2006–2007. While the number of deaths as a result of these was constant, bodily injuries increased significantly for both light and serious cases. Incidence of road accidents involved mainly light vehicles such as cars and, in particular, motorcycles. This suggests outstanding issues on enforcing speed limits and road courtesy (Table A9.1).

Table A9.1: Road Accidents on Route National 1 from Neak Loeung to Bavet
(annual average)

			Injuries		Damaged Vehicles				
Period	Accidents	Deaths	Light	Serious	MC	C	HT	OTH	Total
2003–2005	120	31	84	79	135	39	8	11	193
2006−2007	180	32	205	131	232	43	8	11	294

C = car, HT = heavy truck, MC = motorcycle, OTH = other.
Sources: Public Works of Prey Vang Province and Police of Svay Rieng Province.

4. On the other hand, despite an increase in traffic along RN11, reported road accidents declined slightly from an annual average of 50 during 2003–2005 to 43 from 2006 to 2007. The number of reported deaths and injuries show similar declines. As in the case of RN1, motorcycles were involved in a significant number of accidents (Table A9.2).

Table A9.2: Road Accidents on Route National 11 from Neak Loeung to Bavet
(annual average)

			Injuries		Damaged Vehicles				
Period	Accidents	Deaths	Light	Serious	MC	C	HT	OTH	Total
2003–2005	50	5	42	18	87	7	5	2	101
2006−2007	43	2	21	17	79	2	4	0	85

C = car, HT = heavy truck, MC = motorcycle, OTH = other.
Source: Public Works of Prey Vang Province.

5. **Viet Nam Component.** Despite the increase in traffic, traffic accident statistics show a minor decline in the number of reported accidents from 567 per year between 1997 and 2000 and to 515 per year during 2001−2004. While the incidence of road accidents has decreased

slightly, the severity of some has increased. This is reflected in increased number of deaths from an annual average of 101 during 1997–2000 to 261 during 2001−2004, particularly in 2003 and 2004. Multiple vehicle accidents increased as the number of damaged vehicles per accident increased slightly from 1.3 during 1997–2000 to 1.45 during 2001–2004. On the positive side, the number of body injuries declined from 1.35 per accident during 1997–2000 to 1.10 per accident during 2001–2004. Motorcycles comprise an important part of Viet Nam traffic (Table A9.3).

Table A9.3: Traffic Accidents on National Highway 22
(both Ho Chi Minh and Tay Ninh portions)

Year	Accidents	Death	Injured	Damaged Vehicles
1997−2000	567	101	767	739
2001−2004	515	261	564	746

Source: Louis Berger Group. 2006. Benefit Monitoring and Evaluation Report for the Phnom Penh to Ho Chi Minh Highway Improvement Project. Hanoi.

MANAGEMENT RESPONSE TO THE PROJECT PERFORMANCE EVALUATION REPORT FOR THE GREATER MEKONG SUBREGION: PHNOM PENH TO HO CHI MINH CITY HIGHWAY PROJECT IN THE KINGDOM OF CAMBODIA AND THE SOCIALIST REPUBLIC OF VIET NAM (Loan 1659-CAM[SF] and Loan 1660-VIE[SF])

On 31 March 2009, the Director General, Independent Evaluation Department, received the following response from the Managing Director General on behalf of Management:

I. General Comments

1. We appreciate the Project Performance Evaluation Report's (PPER) evaluation of the Phnom Penh-Ho Chi Minh City Highway Project. The PPER is significant because it is the first comprehensive evaluation of an ADB-assisted multi-country subregional transport project. The Phnom Penh-Ho Chi Minh City Highway project is a test case for implementing a subregional/multi-country infrastructure project, which is a more complex undertaking than is the case with national projects.

2. We appreciate the PPER's rating the project "successful" based on the evaluation criteria of relevance, effectiveness, efficiency, and sustainability. This generally positive evaluation result reflects the overall soundness of the Greater Mekong Subregion (GMS) approach of building cross-border transport links that improve connectivity and accelerate subregional development. We also appreciate the satisfactory rating on ADB's performance.

II. Comments on Specific Recommendations

3. **Recommendation 1: Ratification and Implementation of Cross Border Transport Agreement.** We agree. ADB is working with GMS governments for the expedient ratification by all six countries of the Cross-Border Transport Agreement's (CBTA) annexes and protocols, as well as the full implementation of the CBTA. However, since the CBTA is a complex agreement, with 20 annexes and protocols and involving six countries, its full implementation will take time.[1] In many cases, the CBTA's ratification will entail a change in laws and regulations in the GMS member countries.

4. A diagnostic review of the CBTA and other transport and trade facilitation (TTF) measures is being undertaken under ADB TA 6450 (Enhancing Transport and Trade Facilitation in the Greater Mekong Subregion). This will identify key issues impeding the CBTA's implementation, and will come out with an action-oriented strategy and work plan for the CBTA and other key TTF measures in the GMS. The findings of the review will be presented for the consideration of the 15th GMS Ministerial Conference to be held in Chiang Mai, Thailand in June 2009.

[1] At the Bavet-Moc Bai border crossing point (bcp) between Cambodia and Viet Nam along the Phnom Penh-Ho Chi Minh City Highway, authorities of the two countries are still working on the resolution of a number of issues toward the implementation of the CBTA at the said bcp, including the specific modality by which border authorities will implement single-window inspection, the location of the common control areas, and the establishment of the appropriate customs data platform.

5. **Recommendation 2: Conversion of Transport Corridors into Economic Corridors.** We agree. The establishment of cross-border transport links is only the initial step toward the development of economic corridors. Economic corridor development involves an integrated and holistic approach where infrastructure improvements are directly linked with production, trade, investment, and other economic opportunities.

6. GMS Ministers adopted the economic corridor approach as early as 1998, during their 8th GMS Ministerial Meeting held in Manila in that year. The approach was reaffirmed by the GMS Leaders at the Third GMS Summit in March 2009. The Leaders also endorsed the establishment of the Economic Corridors Forum (ECF) as a platform to strengthen and effectively coordinate all efforts toward the development of economic corridors. ADB is helping the six GMS countries prepare strategies and action plans (SAP) for the development of the GMS economic corridors. The SAP for the Southern Corridor, which includes the Bangkok-Phnom Penh-Ho Chi Minh City-Vung Tau route, will be prepared in the third quarter of 2009. In addition, the indicative loan/grant programs for Cambodia and Viet Nam for 2010-2011 include water supply and sanitation, and border towns development projects in towns along the Phnom Penh-Ho Chi Minh City highway. These projects will improve the physical, social, and environmental infrastructure, and will enhance institutional capacities in key towns along the highway.

7. **Recommendation 3: Ensuring Adequate Financing for Road Maintenance.** We agree. We note that inadequate financing for road maintenance is a common problem in developing countries such as Cambodia that have low population densities and traffic levels, but relatively large road networks. Although funding for road maintenance was inadequate in the past, it has improved significantly in recent years. Road maintenance expenditures in 2007 were about $26 million, approximately 10 times higher than the expenditures during 2002-2003, which were only about $3 million. ADB has engaged and will continue to engage in policy dialogue with the Government to ensure that adequate financing is allocated to road maintenance and that the funds are used more efficiently. The ADB-financed Road Asset Management Project in Cambodia, which was approved in January 2008 with cofinancing from the World Bank and the Australian Government, will provide analytical tools and capacity building to enable the Ministry of Public Works and Transport to prioritize and quantify its maintenance needs.

8. In Viet Nam, the Government recently decided to address the situation by upgrading the Vietnam Road Administration (VRA) to a new Department of Roads (DOR) within the Ministry of Transport. Among the responsibilities of the new DOR will be strengthening planning of construction, operation, and maintenance of roads and highways. The Government has requested ADB to provide TA to support the establishment of the new DOR and to develop a road asset management system, which will facilitate improved road maintenance. In response to this request, ADB is processing a TA for Capacity Building in the Transport Sector for approval in 2009. ADB is preparing three new road sector projects in Viet Nam for approval in 2010. Preparation of these projects will include policy dialogue to develop agreed actions to ensure adequate road maintenance financing, as well as use of the road asset management system which will be developed under the TA.