Asian Development Bank

Board of Directors

SUMMARY PROCEDURE

FOR OFFICIAL USE ONLY

R56-10
31 March 2010

Proposed Supplementary Grant
Northern Greater Mekong Subregion Transport Network Improvement Project
(Lao People's Democratic Republic)

1. The Report and Recommendation of the President (RRP: LAO 41656-02) on the proposed supplementary grant to the Lao People's Democratic Republic for the Northern Greater Mekong Subregion Transport Network Improvement Project is circulated herewith, together with the (Draft) Amendment Agreement

2. This Report and Recommendation should be read with *Lao People's Democratic Republic: Country Strategy and Program Midterm Review 2007-2011*, which was circulated to the Board on 3 September 2009 (DOC.IN.246-09).

3. In the absence of any request for discussion and in the absence of a sufficient number of abstentions or objections (which should be communicated to The Secretary by the close of business on 21 April 2010), the recommendation in paragraph 43 of the Paper will be deemed to have been approved, to be so recorded in the minutes of a subsequent meeting of the Board. Any notified abstentions or objections will also be recorded in the minutes.

For Inquiries: J. Miller, Southeast Asia Department
(Ext. 6826)
E. Fischelis, Office of the General Counsel
(Ext. 5898)

The attached document has a restricted distribution until it has been approved by the Board of Directors. Following such approval, the document will be available to the public.

ADB

Report and Recommendation of the President to the Board of Directors

Project Number: 41656-02
March 2010

Proposed Supplementary Grant
Lao People's Democratic Republic: Northern Greater Mekong Subregion Transport Network Improvement Project

Asian Development Bank

CURRENCY EQUIVALENTS
(as of 22 March 2010)

Currency Unit	–	kip (KN)
KN1.00	=	$0.000118
$1.00	=	KN8,475.50

ABBREVIATIONS

ADB	–	Asian Development Bank
DOR	–	Department of Roads
EIRR	–	economic internal rate of return
GDP	–	gross domestic product
GMS	–	Greater Mekong Subregion
ICB	–	international competitive bidding
IEE	–	initial environmental examination
km	–	kilometer
Lao PDR	–	Lao People's Democratic Republic
m	–	meter
MPWT	–	Ministry of Public Works and Transport
NCB	–	national competitive bidding
OFID	–	OPEC Fund for International Development
PRC	–	People's Republic of China
STI	–	sexually transmitted infection
TA	–	technical assistance
VOC	–	vehicle operating cost

NOTES

(i) The fiscal year (FY) of the government and its agencies ends on 30 September. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY 2010 ends on 30 September 2010.

(ii) In this report, "$" refers to US dollars.

Vice-President	C. Lawrence Greenwood, Jr., Operations 2
Director General	K. Senga, Southeast Asia Department (SERD)
Director	J. Lynch, Transport and Urban Development Division, SERD
Team leader	J. Miller, Principal Transport Specialist, SERD
Team members	M. Buendia, Social Development Specialist (Resettlement), SERD P. Chanthirath, Project Implementation Officer (Infrastructure), SERD N. Farrofo, Operations Officer, SERD E. Fischelis, Counsel, Office of the General Counsel A. Velasquez, Safeguards Specialist (Environment), SERD

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.

CONTENTS

SUPPLEMENTARY GRANT AND PROJECT SUMMARY

Borrower	Lao People's Democratic Republic (Lao PDR)
Classification	Targeting classification: General intervention Sector: Transport, and information and communication technology (road transport) Themes (subthemes): **Regional cooperation and integration** (cross-border infrastructure), economic growth (widening access to markets and economic opportunities), social development (other vulnerable groups)
Environment Assessment	Category B. An initial environmental examination (IEE) was undertaken for the supplementary grant.
Project Description	The proposed supplementary grant will fulfill the expected outcome and outputs of the project. It will improve about 367 kilometers (km) of Route 4 (the project road) from Xiang-Ngeun to Nakha, construction of a bridge over the Mekong River on the project road, and improvement of about 100 km of rural access roads in the project area. The project will also (i) support maintenance of the national road network by providing financing for periodic road maintenance, (ii) improve road safety by financing consulting services to continue the ongoing road safety assistance program, and (iii) finance a program to reduce the risks of HIV/AIDS/sexually transmitted infections and human trafficking that may develop during the improvement and operation of the project road. The project will support regional cooperation between the Lao PDR and Thailand by facilitating cross-border traffic movement on border crossings between the two countries. The supplementary grant will finance cost and quantity overruns for the improvement of Route 4, including road widening of 60 km.
Rationale	Poor basic infrastructure is a major impediment to subregional economic cooperation. The Lao PDR is pivotal to the Greater Mekong Subregion transport corridors linking northern Thailand, northern Viet Nam, and the southern provinces of the People's Republic of China. Improving routes that connect provinces in the Lao PDR will enhance subregional connections between the northern Lao PDR and surrounding countries, as well as economic growth and poverty reduction within the Lao PDR. The project was approved on 27 September 2007, and procurement activities were started in 28 June 2007. Invitations to bid on civil works packages for sections 2, 3, 4 and 5 were issued in March 2008. The closing date for bids was July 2008. The four civil works contracts were signed on 3 December 2008.

The proposed supplementary grant will finance the increase in costs of civil works for sections 2–5 of the project road. The increase in project costs results from (i) price increases, and (ii) the increase in civil works quantities between those used at appraisal based on the preliminary project preparatory technical assistance design and those in the detailed designs carried out by the civil works contractors, and for widening 60 km of section 5.

Impact and Outcome

The project will facilitate regional cooperation and increased economic growth in the Greater Mekong Subregion by improving the national highway linking the Louangphrabang area with the Lao PDR–Thailand border. Improvement of this road, much of which currently has a gravel and earth surface, and rural access roads will facilitate increased exports to Thailand of agricultural goods produced in the project area and increased tourism from Thailand to Louangphrabang. The impact of the project will be increased trade and economic growth in the project area and the region. The outcome will be more efficient transport on the regional and national road networks.

Revised Project Investment Plan

The revised investment cost of the project is estimated at $118.6 million, including taxes and duties of $8.1 million.

Revised Financing Plan

Source	Base	Supp	Total	%
Asian Development Bank	27.0	27.0	54.0	45.5
OPEC Fund for International Development	11.0	0.0	11.0	9.3
Government of Australia	14.5	0.0	14.5	12.2
Government of the Republic of Korea	22.4	0.0	22.4	18.9
Government of the Lao PDR[a]	13.6	3.1	16.7	14.1
Total	**88.5**	**30.1**	**118.6**	**100.0**

[a] Includes $8.1 million in taxes and duties.

Base: As stated in Asian Development Bank. 2007. *Report and Recommendation of the President to the Board of Directors: Proposed Asian Development Fund Grant to the Lao People's Democratic Republic for the Northern Greater Mekong Subregional Transport Network Improvement Project.* Manila (Grant 0082-LAO).
Lao PDR = Lao People's Democratic Republic.
Source: Asian Development Bank estimates.

Period of Utilization

Until 30 June 2014.

Estimated Project Completion Date

31 December 2013.

Executing Agency

Ministry of Public Works and Transport—formerly the Ministry of Communications, Transport, Posts, and Construction

Implementing Arrangements

The Department of Roads (DOR) in the Ministry of Public Works and Transport will continue to be the implementing agency. The Project Management Division of DOR, which is responsible for managing all DOR projects, will carry out the functions of a project management unit.

Procurement

The procurement plan was updated during the fact-finding mission in November 2009.

Consulting Services

The procurement of the supervision consultants for sections 2–5 has been completed. The supervision consultants were selected in accordance with the Guidelines on the Use of Consultants (2007, as amended from time to time) of the Asian Development Bank (ADB). The supervision consultants have been mobilized and will continue to function in accordance with their original terms of reference. Consulting services for the HIV/AIDS awareness and prevention of human trafficking program will be recruited using the quality- and cost-based selection method and biodata technical proposal. A national consultant will be recruited as an individual consultant for the external resettlement monitor assignment. All consulting services will be recruited in accordance with ADB's Guidelines on the Use of Consultants.

Project Benefits and Beneficiaries

Project benefits include vehicle operating cost savings, time savings, diverted traffic, saving from improved road safety, and savings from reduced maintenance costs. An estimate of the project's economic viability was prepared, based on assessment of the direct benefits and costs. The project's revised economic internal rate of return is estimated at 19.4%.

Risks

The major risks identified for the original grant also apply to the supplementary grant. The project is formulated to minimize these risks during and after project implementation. The most identifiable risk is that the road may not be properly maintained, but the emphasis of ADB and other international institutions on and the commitment of the government to road maintenance will address this risk. Compensation, assistance, and income restoration measures relating to involuntary resettlement might not be delivered on time, thereby delaying the start of civil works. The gender strategy includes consultation workshops for the affected households to increase their understanding of resettlement issues such as entitlements, compensation, and the grievance process. The project supervision consultants will include specialists to help MPWT manage resettlement, environmental impacts, and ethnic minority specific activities and ensure that ADB's safeguard policies are complied with. Upgrading of the road will increase the mobility of goods and people along the route and could increase risks of HIV/AIDS and sexually transmitted infections and human trafficking in local communities, especially among women and children. There is also potential for increased road traffic accidents. To minimize the potential risks of traffic accidents, HIV/AIDS, and human trafficking, the project includes a road safety program and an HIV/AIDS and human trafficking program.


LAO PEOPLE'S DEMOCRATIC REPUBLIC
NORTHERN GREATER MEKONG SUBREGION
TRANSPORT NETWORK
IMPROVEMENT PROJECT
101°00'E
103°00'E
20°00'N
18°00'N
N
0 10 20 30 40
Kilometers
to Xai
Ban Ta Fa
Houayxay
BOKEO
Ban Kheun
Beng
Houn
Nga
Ban Namnga
Ban Lat-Hay
OUDOMXAI
Pakbeng
Chomphet
Louangphrabang
Xiang-Ngeun
Hongsa
Khop
Xianghon
Ngeun
LOUANGPHRABANG
XIANGKHOUANG
Ban Pak Khone
Ban Thadeua
Nan
Phoukhoun
Vienthong
XAIGNABOULI
Xaignabouli
Phonbeng
Kasi
Phun
Phoulongmad
Phiang
Ban Phatang
Nakouan
Khoua Lek
Sone
Thaviang
VIENTIANE
Vangvieng
Houaykham
Thong Thoun
Xaisomboun
Met
Ban Nale
Sop Phouan
Homthat
Sopyouak
Houaymo
Hinheup
Hom
Xiengmi
Muang Pa
Fuang
Phonkeo
Keo-Oudom
Long Xan
Nam Giang
Phonhong
Phonsavan
BOLIKHAMXAI
Pakxan
Phonmi
Viengkham
Thaphabat
Ban Namxong
Phonsavang
Thoulakhom
Ban Na Hat
Phu Nio
Paklay
Keng Chan
Nady
VIENTIANE
MUNICIPALITY
B. Khoutsambath
Mai Pak-Ngum
Na Sack
Vang
Sikhottabong
VIENTIANE
Chanthabouli
Xaisettha
Hatxayfong
Sisattanak
Xanakham
Boten
Kenethao
National Capital
Provincial Capital
City/Town/Village
Border Crossing Point
Greater Mekong Subregion Transport Corridor
Project Road
National Highway
Provincial Road
Other Road
River
Provincial Boundary
Boundaries are not necessarily authoritative.

10-0592 HR

I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed supplementary grant to the Lao People's Democratic Republic (Lao PDR) for the Northern Greater Mekong Subregion (GMS) Transport Network Improvement Project. The design and monitoring framework is in Appendix 1. Coordination among development partners is described in Appendix 2.

II. THE APPROVED PROJECT

A. Project Rationale

2. Enhanced subregional economic cooperation requires improved connections across countries and between centers of economic activity. The Lao PDR is pivotal to the GMS transport corridors linking northern Thailand, northern Viet Nam, and the southern provinces of the People's Republic of China (PRC). Improving routes that connect provinces in the Lao PDR to each other and to borders will enhance subregional connections between the northern Lao PDR and surrounding countries. The GMS Transport Sector Strategy Study[1] identified the project as a high priority transport project that will link the northern Lao PDR with Thailand.

3. Future development of the Lao PDR economy will depend on expanding and upgrading connections with its neighboring GMS countries[2] to provide linkages that will enable transport of produce and goods to local and international markets. The project will form part of the new GMS Northeastern Corridor (encompassing Nanning in Guangxi Province, PRC; Hanoi and Thanh Hoa in Viet Nam; Louangphrabang, Lao PDR; and Bangkok, Thailand) which was identified in the GMS Transport Sector Strategy Study. The upgrading of the project road will connect (i) districts in central and southern Xaignabouli province, (ii) the provincial capitals of Louangphrabang and Xaignabouli with a sealed all-weather road, and (iii) the border crossing with Thailand near Kenethao with the GMS corridors that converge on Louangphrabang. These connections will reduce transport costs from the important agricultural areas in southern Xaignabouli to markets in Thailand. The government considers road access to be one of the keys to eradicating poverty, and it is a major focus of the National Growth and Poverty Eradication Strategy.[3]

B. Objectives and Scope

4. In September 2007, the government and ADB reached an agreement on the impact, outcome, outputs, cost estimates and financing plan, and the implementation arrangements for the Northern Greater Mekong Subregional Transport Network Improvement Project.[4] The project will improve about 367 kilometers (km) of Route 4, including a new bridge over the Mekong River, and improvement of about 100 km of rural access roads in the project area. The main project outcome will be more efficient transport on the regional and national road networks. The project consists of (i) civil works to improve five sections of Route 4 from Xiang-Nguen in the north to Nakha at the border with Thailand in the south, and a new bridge over the Mekong River; (ii) civil works to improve about 100 km of rural access roads; (iii) provision of funding for

---

1 ADB. 2004. *Technical Assistance for the Greater Mekong Subregion Transport Sector Strategy Study*. Manila.
2 Cambodia, PRC, Myanmar, Thailand, and Viet Nam.
3 Lao PDR. 2004. *National Growth and Poverty Eradication Strategy*. Vientiane.
4 ADB. 2007. *Report and Recommendation of the President to the Board of Directors: Proposed Asian Development Fund Grant to the Lao People's Democratic Republic Northern Greater Mekong Subregion Transport Network Improvement Project*. Manila (Grant 0082-LAO).

periodic road maintenance; (iv) procurement of equipment for use in operating and facilitating the recently constructed border crossing at Kenthao, and for enforcement of axle-load controls on the project road; (v) consulting services for construction supervision and monitoring and evaluation, and detailed design of rural access roads; (vi) consulting services to continue an ongoing road safety assistance program; and (vii) a program to reduce the risks of HIV/AIDS/sexually transmitted infections (STIs) and human trafficking in the project area. The project will lead to increased trade between Thailand and the Lao PDR; increased gross domestic product (GDP) in project area districts; increased exports to Thailand, primarily agricultural products; increased tourism from Thailand to Louangphrabang; and an overall reduction in the poverty level in project area districts.

C. Cost Estimate and Financing Plan

5. The cost of the project was originally estimated at $88.5 million, including taxes and duties of $6.24 million, physical and price contingencies, interest and other charges. The original project investment plan is shown in Table 1.

Table 1: Original Project Investment Plan[a]
($ million)

Item			Amounts[a]
A.	**Base Cost**[b]		
	1.	Civil works	
		A. Route 4	64.9
		B. Rural roads	2.1
		C. Periodic maintenance	0.8
	2.	Equipment	0.6
	3.	Land acquisition and resettlement	0.4
	4.	Consultants for implementation and monitoring	6.8
	5.	Road safety program	0.4
	6.	HIV/AIDS and human trafficking program	0.4
	7.	Project administration	0.5
		Subtotal (A)	**76.9**
B.	**Contingencies (B)**		**10.4**
C.	**Financing Charges During Implementation**		**1.2**
	Total (A+B+C)		**88.5**

[a] Based on the latest reallocation of grant and loan proceeds from the Asian Development Bank, Government of Australia, and OPEC Fund for International Development.
[b] Includes taxes and duties of $6.24 million based on a tax rate of 10% on civil works and 1% on consulting services contracts.
Source: Asian Development Bank estimates.

6. Grant 0082-LAO: Northern Greater Mekong Subregion Transport Network Improvement Project was approved on 27 September 2007 in the amount of $27 million from ADB's Special Funds, was signed on 26 November 2007, and became effective on 15 January 2008. The project closing date is 31 December 2013. The original project financing plan is shown in Table 2.

Table 2: Original Project Financing Plan
($ million)

Source	Total	%
Asian Development Bank	27.0	30.5
OPEC Fund for International Development	11.0	12.4
Government of Australia	14.5	16.4
Government of the Republic of Korea	22.4	25.3
Government of the Lao People's Democratic Republic[a]	13.6	15.4
Total	**88.5**	**100.0**

[a] Includes $6.24 million in taxes.
Source: Asian Development Bank estimates.

D. Status and Progress of Project Implementation

7. The project is being implemented largely as programmed, and is expected to be completed as scheduled by 31 December 2013. The government has complied with all grant assurances for which compliance is due. The Project Management Division of the Department of Roads (DOR) of the Ministry of Public Works and Transport (MPWT) is responsible for managing the project. The construction supervision consultant was mobilized in September 2008. Invitations for bid for sections 2–5 were issued in March 2008.[1] The closing date of all bids was in July 2008. Civil works contracts for sections 2–5 were signed on 3 December 2008. Detailed design of the civil works contractors commenced shortly thereafter, and was largely completed by mid-2009. At appraisal, the cost of the total length of the four sections, 308.1 km, was estimated at $37.2 million. The total of the winning bids (based on preliminary design level quantities) for the four sections totaled $47.4 million, an increase of 27% over the estimated amount. The detailed design for the four sections ultimately totaled 306.9 km in length, and required significantly higher quantities of many items. The estimated construction cost rose to $67.4 million—an overall increase between appraisal and completion of detailed design of 81%.

III. THE PROPOSED SUPPLEMENTARY GRANT

8. The proposed supplementary grant will finance the increased costs of the civil works contracts for sections 2–5. The increase in civil works costs is due to (i) unit price increases, and (ii) the increase in civil works quantities between those used at appraisal based on the preliminary project preparatory technical assistance[2] (TA) design and those specified in the detailed designs carried out by the civil works contractors, and widening of 60 km of section 5. The unit price increases comprise about 30% of the increase in civil works costs, while the increase in civil works quantities comprise about 70%.

A. Cost Overruns

1. Unit Price Increases

9. Unit prices used during the TA were based on prevailing material prices in the Lao PDR in July 2007. The final bid unit prices were based on representative domestic prices for July 2008, which was essentially at the peak of a large worldwide spike in crude oil prices. From July 2007 to July 2008, there were very significant increases in the cost of construction materials in the Lao PDR. For example, bitumen increased by 39%, cement rose by 11%, and

[1] Section 1 is financed by parallel financing from the Government of the Republic of Korea. There has been no cost overrun on this section.
[2] ADB. 2005. *Technical Assistance to the Lao People's Democratic Republic for Preparing the Northern GMS Transport Network Improvement Project*. Manila.

diesel fuel increased by 65%. Further details on unit prices for the civil works contracts are in Appendix 3.

2. Quantity Increases and Other Factors

10. Implementation of the project has been based on a design-build concept. The estimated costs of civil works in the original report and recommendation of the President were based on preliminary quantities as determined during the TA. Civil works bids were then based on these preliminary quantities. After bidding and award of the civil works contracts, the selected contractors carried out detailed designs that determined final contract bid quantities for each unit price item, and final civil works contract amounts. During the 1.5–2.0 year period between the completion of the preliminary designs and the completion of the detailed designs, there were very significant changes in the road condition. The causes of the extensive damage to the existing roadway between appraisal and detailed design were primarily due to (i) large increases in traffic volumes, particularly heavily loaded trucks; and (ii) two severe rainy seasons that damaged the unpaved road and increased the requirement for routine maintenance at the end of these two wet seasons, which the government was unable to provide. Changes in the road condition primarily affected final quantities for earthworks, the pavement structural section and drainage items. Among the most important was the widespread deterioration of the existing unsealed road, which required significant increases in embankment, subbase, and base course materials over original estimates. The deterioration of the existing roadway was most acute on section 5. During the preliminary design, a large number of existing drainage structures were considered to be adequate, only requiring cleaning and extension under the road improvement project. However, during the detailed design phase, it was determined that many of these drainage structures had also deteriorated and become damaged by heavy runoff flows.[3] Many of the drainage structures thought to be salvageable could not be salvaged, and needed to be replaced.

11. In addition, between the time of the TA and the period of detailed design the design vehicle axle load in the country was increased from 9.1 tons to 11.0 tons, an increase of 21%. The revised axle load is consistent with the standards on other GMS transport corridors. This increase required increased thickness of subbase and base courses of the project road to satisfy these new design criteria.

12. After completion of the detailed design by the civil works contractors, MPWT and the supervision consultants undertook a review of the detailed designs on sections 2–5. Taking into consideration the recent and forecasted increases in traffic volumes on section 5, MPWT decided to modify the cross-sectional design for section 5. The original detailed design for 60 km of section 5 was based on a 5.5 m formation: 5.5 m of pavement, with no provision for shoulders. Since it is contemplated that the pavement width of section 5 will have to be widened in the very near future to accommodate already increased traffic and projected traffic increases, the width of 60 km of section 5 will be increased under the present civil works contract, to a formation of 8.0 m, with a pavement width of 7.0 m and two 0.5 m wide shoulders[4]. Drainage structures will also be widened. In addition, a new 0.6 km bypass will be constructed and an existing 2.0 km bypass will be improved on section 5.

[3] Rainfall during 2008–2009 was higher than normal. The hydrology and runoff characteristics of many catch basins along the road have changed as a result of heavy recent deforestation, hence higher runoff volumes.

[4] The remaining 23 kilometers of section 5 already have a width of 8.0 meters.

3. Regional Cooperation

13. Since project appraisal in 2007, there has been a significant increase in cooperation between the governments of the Lao PDR and Thailand. This cooperation has included the provision of bilateral economic assistance to the Lao PDR from Thailand, much of which is being provided to the transport sector. A number of these cooperative initiatives are having, and will continue to have, a major impact on the project. Some of the most important project-related regional developments are (i) the recently approved new Phoudou border crossing, including the improvement of the 30 km road in the Lao PDR from Phoudou to Paklay, both components to be financed by a Government of Thailand grant, which is expected to be implemented by the end of 2011; (ii) the new Nong Pachip border crossing that is presently at the planning stage at the provincial level, and scheduled for opening in 2010; and (iii) the proposed new border crossing at the southern terminus of section 5, with the construction of the Nakha Lao–Thai Friendship Bridge over the Hueng River. The new bridge will be financed under a grant from Thailand, with tentative implementation in 2011–2012. All three of these projects will open new border crossings between the two countries, and will have a major influence on both traffic patterns and traffic volumes in the project area, particularly along sections 4 and 5. Not only will traffic be generated between the two countries, there will also be significant diverted traffic. Generated traffic will include traffic to and from northern Thailand and both Louangphrabang (along the project road) and Vientiane. There will also be diverted traffic from northern Thailand (Chiangmai, Nan, and Uttaradit) through the Lao PDR, destined for the provinces of Loei, Lom Sak, Udorn, and Nongkhai in northeastern Thailand.

B. Impact on the Project

14. The cost and quantity overruns have posed a major risk to the timely and successful completion of the project, particularly civil works on sections 2–5. The proposed supplementary grant will support the original project objectives, outcomes, and outputs.

C. Rationale

15. The proposed supplementary grant is in compliance with ADB's policy for supplementary financing.[5] The proposed supplementary grant is to cover the project cost overrun. The project will support the government to complete the improvement of Route 4, part of the GMS Northeastern Corridor, by 2013. Expanding and upgrading connections with neighboring GMS countries is crucial for future development of the Lao PDR economy. However, the cost overrun has jeopardized the project, increasing the risk of delays in implementation. There is a strong need for ADB to provide supplementary financial assistance to the government to ensure that the project is completed on time and successfully. The project remains economically viable and financially sustainable with the supplementary financing.

D. Revised Cost Estimate

16. The revised project cost is $118.6 million, including taxes and duties, and physical and price contingencies. This is an increase of 34.0% over the original cost estimate. The revised project investment plan is in Table 3. The detailed cost estimates by expenditure category and total cost estimates by financier are in Appendix 4.

[5] ADB. 2005. *A Review of the Policy on Supplementary Financing: Addressing Challenges and Broader Needs*. Manila.

Table 3: Revised Project Investment Plan
($ million)

Item		Amounts			
		Base[a]	Supp	Total[b]	%
A.	**Base Cost**				
1.	Civil Works				
	a. Route 4	64.9	18.3	83.2	70.2
	b. Rural Roads	2.1	0.0	2.1	1.8
	c. Periodic Maintenance	0.8	0.0	0.8	0.7
2.	Equipment	0.6	0.0	0.6	0.5
3.	Land Acquisition and Resettlement	0.4	0.3	0.7	0.6
4.	Consultants for Implementation and Monitoring	6.8	0.0	6.8	5.7
5.	Road Safety Program	0.4	0.0	0.4	0.3
6.	HIV/AIDS and Human Trafficking Program	0.4	0.0	0.4	0.3
7.	Project Administration	0.5	0.0	0.5	0.4
	Subtotal (A)	**76.9**	**18.6**	**95.5**	**80.5**
B.	**Contingencies**	10.4	11.5	21.9	18.5
C.	**Financing Charges During Implementation**	1.2	0.0	1.2	1.0
	Total (A+B+C)	**88.5**	**30.1**	**118.6**	**100.0**

[a] Based on the latest reallocation of grant and loan proceeds from the Asian Development Bank, Government of Australia, and OPEC Fund for International Development.
[b] Includes taxes and duties of $7.91 million.
Base = original grant, Supp = supplementary grant.
Note: Base: ADB. 2007. *Report and Recommendation of the President to the Board of Directors: Proposed Asian Development Fund Grant to the Lao People's Democratic Republic for the Northern Greater Mekong Subregional Transport Network Improvement Project*. Manila (Grant Number 0082-LAO).
Source: Asian Development Bank estimates.

E. Revised Financing Plan

17. The government has requested ADB to provide supplementary grant financing of $27.0 million from ADB's Special Funds resources. The government will provide supplementary counterpart financing of $3.1 million, including $1.67 million in taxes. The co-financiers of the original project (OPEC Fund for International Development [OFID] and the governments of Australia and the Republic of Korea) are unable to provide supplementary financing for the project. The revised project financing plan is in Table 4.

Table 4: Revised Financing Plan
($ million)

Source	Base[a]	Supp	Total	%
Asian Development Bank	27.0	27.0	54.0	45.5
OPEC Fund for International Development	11.0	0.0	11.0	9.3
Government of Australia	14.5	0.0	14.5	12.2
Government of the Republic of Korea	22.4	0.0	22.4	18.9
Government of the Lao People's Democratic Republic[b]	13.6	3.1	16.7	14.1
Total	**88.5**	**30.1**	**118.6**	**100.0**

[a] Based on the latest reallocation of grant and loan proceeds from the Asian Development Bank, Government of Australia, and OPEC Fund for International Development.
[b] Includes $8.13 million in taxes.
Source: Asian Development Bank estimates.

F. Remedial Steps

18. The project supervision consultants will strictly monitor costs for sections 2–5 to ensure that there are no further cost increases.

G. Implementation Arrangements

1. Project Management

19. MPWT (formerly the Ministry of Communications, Transport, Posts, and Construction) will continue to be the executing agency and will be responsible for the overall supervision and execution of the project. DOR is the implementing agency and is responsible for the direct supervision and execution of the project. The Project Management Division of DOR, which is responsible for managing all DOR projects, is carrying out the functions of a project management unit.

2. Implementation Period

20. The proposed supplementary financing will not require any extension of the implementation period. The project will be completed by 31 December 2013.

3. Procurement

21. Procurement of civil works for sections 2–5 of the project has been completed. All procurement financed by the ADB and the Government of Australia grants, and OFID loan, has been in accordance with ADB's Procurement Guidelines (2007, as amended from time to time).

22. Procurement of civil works for section 1, financed by the Government of the Republic of Korea, including the new Mekong River Bridge, has been completed. Procurement of the supervision consultant for section 1 has also been completed. The procurement followed Government of the Republic of Korea procedures. Detailed design was completed in May 2009. The civil works procurement has been tendered, and the civil works contract was executed on 31 August 2009. The civil works contractor is presently mobilizing its equipment and staff to the site. The total value of the civil works contract did not exceed the amount estimated at appraisal.

23. Procurement for three project components is still pending. MPWT has completed the initial selection exercise of about 100 km of rural access roads to be improved. Design of the rural roads is expected to begin in the second quarter of 2010, following agreement between MPWT and ADB on the selection of roads and scope of work. Selection of the roads on which periodic maintenance is to be carried out is under way. The maintenance component is expected to be carried out during the second half of 2010. MPWT has drafted the detailed list of equipment to be procured for the Kenthao border crossing. Procurement and installation are expected to take place during the second half of 2010.

4. Consulting Services

24. Procurement of the supervision consultants for sections 2–5 has been completed. The supervision consultants were selected in accordance with ADB's Guidelines on the Use of Consultants (2007, as amended from time to time). The supervision consultants have been mobilized and will continue to function in accordance with their original terms of reference. The terms of reference for the consulting services for the HIV/AIDS awareness and prevention of

human trafficking program have been finalized, and the consultants are expected to be selected during the second quarter of 2010. The consultants will be recruited using the quality- and cost-based selection method and biodata technical proposal. The terms of reference for the external resettlement monitor assignment have also been finalized. A national consultant is expected to be recruited as an individual consultant for the external resettlement monitor assignment during the second quarter of 2010. The recruitment of an international consultant for the consulting services for the road safety component is expected to take place during the second half of 2010. All consulting services will be recruited in accordance with ADB's Guidelines on the Use of Consultants and are financed by the Government of Australia.

5. Anticorruption Policy

25. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government. Consistent with its commitment to good governance, accountability and transparency, ADB reserves the right to investigate, directly or through its agents, any alleged corrupt, fraudulent, collusive, or coercive practices relating to the project. To support these efforts, relevant provisions of ADB's Anticorruption Policy are included in the grant regulations and the bidding documents for the project. In particular, all contracts financed by ADB in connection with the project shall include provisions specifying the right of ADB to audit and examine the records and accounts of MPWT and all contractors, suppliers, consultants and other service providers as they relate to the project.

26. The project incorporates several other measures, in addition to the standard ADB requirements, to deter corruption and increase transparency. The project includes (i) building the capacity of MPWT to comply with ADB and government procedures as outlined in the project administration manual, (ii) establishment of a project website to disclose information about project implementation, and (iii) establishment of a grievance redress mechanism to ensure greater accountability. The project website provides updated, detailed information on project implementation. For example, the website will include procurement-related information such as the list of participating bidders, name of the winning bidder, basic details on bidding procedures adopted, amount of contract awarded, and the list of goods and/or services procured. The grievance redress mechanism will receive and resolve complaints and act upon stakeholders' reports of irregularities on project-related matters, including grievances concerning resettlement. MPWT is publicizing the existence of this mechanism to ensure that stakeholders are aware that there is a venue to address concerns or grievances relating to fraud, corruption, abuse, and any other aspects of project implementation. Administration of the project will be delegated to the Lao PDR Resident Mission in 2010. The resident mission's proximity to the project area and Lao language capabilities will facilitate close interaction with MPWT and the project supervision consultants, as well close monitoring of project implementation.

6. Disbursement Arrangements

27. The current disbursement arrangements under the Northern Greater Mekong Subregional Transport Network Improvement Project (footnote 4), including provisions for the imprest account and statement of expenditures procedures, will continue to apply to the supplementary grant.

7. Accounting, Auditing, and Reporting

28. MPWT is maintaining separate accounts for the project, and will have such accounts and related financial statements audited annually by an external auditor in accordance with auditing standards acceptable to ADB. MPWT will submit to ADB, within 6 months of the close of the

fiscal year, certified copies of audited project accounts and financial statements and auditor's reports, all in English. The audit of such financial statements will include (i) an assessment of the adequacy of accounting and internal control systems with respect to project expenditures and other financial transactions, (ii) an assessment of compliance with financial grant covenants and ADB requirements for project management, (iii) an opinion on the use of the statement of expenditures procedure, and (iv) an opinion on the use of the imprest account.

29. MPWT is reporting the progress of project implementation by submitting quarterly progress reports to ADB and the co-financiers. MPWT will monitor project implementation in accordance with the project implementation schedule, and will keep ADB and the co-financiers informed of any significant deviations from the schedule. The quarterly reports include summary information on basic data, utilization of funds, achievement of immediate development objectives, compliance with covenants, implementation progress, land acquisition, resettlement progress, and major issues and problems. Within 3 months of the project's physical completion, MPWT will submit to ADB and the co-financiers a project completion report that will provide a detailed evaluation of the project design, costs, contractors' and consultants' performance, social and economic impact, economic internal rate of return (EIRR), and such other details as may be requested by ADB.

8. Project Performance Monitoring and Evaluation

30. A set of indicators for evaluating project performance in relation to its impacts, outcomes, outputs, and conditions has been agreed by MPWT and ADB. The baseline data include among others (i) economic development and socioeconomic indicators, (ii) transport costs and times, (iii) transport charges, (iv) accident rates, (v) international and total traffic levels, (vi) affected persons' incomes, (vii) access to social services, (viii) jobs created in construction and maintenance, (ix) incidence of STIs, and (x) incidence of human trafficking. The indicators will be measured and compared with the baseline at project inception, completion, and after 3 years. Where relevant, indicators are disaggregated by gender and ethnicity. The project implementation consultants will help train MPWT staff in using the monitoring and evaluation system. The main sources of data include (i) secondary data from government sources, (ii) a household socioeconomic sample survey, and (iii) participatory rapid appraisal. MPWT will submit to ADB a report summarizing the key findings of monitoring at inception, completion, and 3 years after physical completion of the project.

9. Project Reviews

31. ADB, the government, and the co-financiers will conduct regular annual reviews of the project, and will jointly undertake a midterm review of the project in mid-2011 to assess (i) implementation status, (ii) design and construction standards, (iii) performance of consultants and contractors, (iv) project impacts, (v) status of compliance with the covenants stipulated in the grant agreement, and (vi) the need for any changes in the project scope or schedule to achieve the project impact.

IV. PROJECT BENEFITS, IMPACTS, AND RISKS

A. Traffic Forecast

32. During preparation of the supplementary grant, new traffic counts were conducted at the same sites along the project road that were used during preparation of the original project. Substantial changes in traffic levels and composition have occurred since the original traffic

counts. Actual traffic levels are higher than were originally forecast. While the numbers of medium buses, light trucks, and motorcycles were lower than in the original forecast, there were substantial increases in the numbers of cars, medium trucks, and heavy trucks compared to the forecast. The numbers of four-wheel drive vehicles and light and heavy buses were also higher, although to a lesser extent. Traffic forecasts by vehicle type were prepared for the project road sections for 2010–2032 (Appendix 7). The forecasts are based on expected growth in GDP, income elasticities of demand, and analysis of regional trade and tourism patterns. Total traffic excluding motorcycles is higher than the original project forecast, based on the actual traffic levels since project approval. Total traffic including motorcycles is forecast to grow at annual rates of about 4.8%–5.7% during 2010–2032, except during 2011–2015, when growth rates are higher as a result of generated traffic. The projected growth rates are reasonable, considering expected economic growth in the project area and experience in other ADB-financed road projects. Generated traffic arises from increased shipments of agricultural commodities and other goods, and increased passenger traffic carrying tourists between Thailand and Louangphrabang. The improved road conditions will also generate demand by reducing vehicle operating costs (VOCs).

B. Economic Benefits

33. The economic analysis has been revised to incorporate updated project costs, the revised traffic forecast, and updated values of benefits (Appendix 7). The economic analysis was carried out for the project by comparing the with- and without-project scenarios. In the without-project scenario, the road is assumed to remain in its present condition. The with-project scenario includes routine and periodic maintenance according to international standards. The project preparatory TA (footnote 6) considered various mutually exclusive project alternatives such as different pavement types and alignments, and the proposed project is based on the most cost-effective and least-cost option. Project economic costs include the resource costs of road improvement and maintenance, equipment, and consulting services. The primary economic benefits for the project are VOC savings, time savings, diverted traffic, savings from improved road safety, and savings from reduced maintenance costs. Economic benefits were calculated using the same methodology used for costs. VOC savings will accrue primarily from improvements in the road surface, horizontal and vertical alignment, and increased average speed. VOC savings for normal traffic account for about 54% of total benefits while benefits from generated traffic account for about 16%. Generated traffic is defined as new traffic induced from the reduction in transport costs arising from the project, and includes both international and domestic generated traffic. Benefits for generated traffic are estimated at half the value of VOC savings for normal traffic. The project will result in improved average speeds along the project road, and the travel time for the entire length of the project road will be reduced from about 11 hours to about 6 hours. Time savings account for about 19% of total benefits. Benefits from improved road safety and reduced maintenance costs comprise smaller portions of total benefits. The project will also have other benefits, such as improved access to social services. However, these have not been quantified because of lack of sufficient data.

34. The EIRR for the project is 19.4%, and the net present value is $40.7 million, using a 12% discount rate. The EIRR and net present value have increased from those for the original project (EIRR of 16.6% and net present value of $22.3 million) primarily because of the change in composition of traffic and increased traffic forecast. In particular, the numbers of heavy vehicles, especially medium and heavy trucks, and cars, in the revised traffic forecast are significantly higher than in the original traffic forecast, in accordance with actual traffic levels since approval. Since these heavy vehicles have high operating costs, they generate large VOC savings with the improved road, providing substantial economic benefits. These additional

benefits exceed the negative impact on the economic return of the increased project costs. While total traffic is lower in the revised forecast, this is because the number of motorcycles is much lower than in the original forecast. Since motorcycles have very low VOCs relative to other vehicle types, reduction in their numbers has only a small effect on the level of project benefits.

35. Sensitivity analysis was carried out to test the effects of negative changes in the key parameters that determine the benefits and costs of the project. The sensitivity analysis for the project indicates that capital costs would have to increase by 51% or total benefits decrease by 39% for the EIRR to reach the level of 12%. Given ADB's experience with similar projects in the Lao PDR and the completion of detailed design work, such changes are not expected to occur. The sensitivity analysis shows that the EIRR exceeds 12% in all cases. A distribution analysis was carried out. Project benefits accruing to the Lao PDR are distributed among five groups: (i) users of freight transport, (ii) users of passenger transport, (iii) vehicle owners, (iv) labor, and (v) the government and/or economy of the Lao PDR. Users of passenger transport receive about 29% of total benefits, users of freight transport receive about 24%, vehicle owners receive about 14%, and the government and/or the economy receives about 31%.

C. Resettlement

36. The project is rated category B, and a short resettlement plan was prepared for the whole length of Route 4 and the Mekong River Bridge as part of the original grant. The resettlement plan is divided into five sections and it is currently being updated following detailed design. It is expected that road widening may increase the number of households but the impacts will not be significant. Specific to section 5, the draft updated resettlement plan shows that the number of households increased from 57 to 805, but only seven households will be required to relocate. Impacts on agricultural land are marginal and no household will lose 10% or more of its productive assets. Therefore, the project is still rated category B.

D. Social Impact and Gender

37. The project will provide direct social benefits in addition to the economic benefits, which will expand economic opportunities available to the poor. The project road passes through largely agricultural areas that are in transition from production for subsistence consumption and for local markets to more export and commercially oriented crops. Rural women in the project districts are engaged in both subsistence and commercial agriculture. Upgrading of the project road will provide a strategic all-weather link that will facilitate improved access for men and women to goods, markets, schools, medical facilities, and other social services for the project districts. The improved road access will lower the costs for the public sector to provide social services. The project will have a positive health impact on people from about 120 villages located along the road, by improving the very dusty and hazardous road conditions in which children walk several kilometers to school during the dry season. Increased access to transport in the project districts will increase enrollment of children from rural areas in the secondary schools in towns. Construction and operation of the road will provide significant employment opportunities for poor people. Poor men and women will also benefit through seasonal employment from road maintenance work. Increased tourism will generate additional demand for locally produced goods and services. Improvement of rural access roads will help to extend the project benefits and opportunities to rural communities.

38. Potential adverse social and gender impacts from the project, in addition to the project's resettlement impacts, include (i) increased traffic safety risks for people living and working along

the road caused by higher traffic levels and higher vehicle speeds along the improved road; and (ii) increased risks of exposure to HIV/AIDS and human trafficking of women and children during construction and operation because of the influx of construction workers and increased transit traffic. The project will address these risks through the road safety component and HIV/AIDS and human trafficking program.

E. Indigenous Peoples

39. In the project area, 82.3% of the population is classified Lao-Tai (the main ethnic group); 10.8% Mon-Khmer; 5.8% Hmong-Mien; and 0.3% Chinese-Tibetan. The indigenous peoples groups have been relocated to the project area since 1970 because of the Indochina war and as part of government relocation efforts. The groups now practice sedentary agriculture and rice farming, and have been involved in commercialization of agriculture. Although they retain their traditional culture, religion, and social organization, they have adopted mainstream language, education, and agricultural practices. The literacy rate among the Mon-Khmer is close to the national average, but the Hmong-Mien have a literacy rate about half the national average. The village consultation indicates that indigenous peoples groups support the road improvement. The Khmou live along the project road and account for 40% of the 255 households potentially affected by resettlement. The impact on their agricultural land is minor. These groups will benefit from the economic development arising from the project, including improved access to markets and social services and greater opportunities for their roadside small businesses. The project is rated category B. Specific actions are already included in the resettlement plan and the HIV/AIDS and human trafficking prevention program to ensure that they are not marginalized and become vulnerable by resettlement activities and changes brought by upgrading of the project road.

F. Environmental Assessment

40. The project classification is environment category B. An initial environmental examination (IEE) for the supplementary grant was carried out and reviewed by ADB. The IEE concluded that the project will not have any major adverse environmental impacts and only short-term air and water pollution, noise, traffic disturbance, and soil erosion impacts during the construction period. The mitigation measures identified in the IEE's environmental management plan include (i) restoration of affected areas, e.g., borrow pits, after project completion; (ii) implementation of slope stabilization measures; (iii) controlling sewage discharge and other waste fluids from construction sites, and hazardous and toxic materials from bitumen plants and from construction equipment; (iv) maintaining proper drainage to avoid stagnation and controlling downstream water pollution; (v) topsoil removal and reinstallation for re-vegetation upon completion of road improvement works; (vi) minimizing noise, dust, emissions, and other pollutants associated with civil works; and (vii) provision of adequate road access during construction. The project will eliminate heavy road dust emissions, thereby reducing safety risks caused by extremely poor road visibility under current road conditions. The road improvement will also reduce associated health risks to roadside communities. The project will have overall beneficial environmental impacts and will have minor negative impacts, which will be carefully monitored and adequately mitigated.

G. Risks

41. The major risks identified for the original grant also apply to the supplementary grant. The project is formulated to minimize potential risks during and after project implementation. The traffic forecast may not materialize, but the project remains viable even with substantially

lower traffic levels. There is a risk that the road may not be properly maintained, but this will be addressed by the emphasis of ADB and other international institutions, and the commitment of the government to road maintenance. Compensation, assistance, and income restoration measures relating to involuntary resettlement might not be delivered on time, thereby delaying the start of civil works. The gender strategy includes consultation workshops for the affected households to increase their understanding of resettlement issues such as entitlements, compensation, and the grievance process. Upgrading of the road will increase the mobility of goods and people along the route and could increase risks of HIV/AIDS and human trafficking in local communities, especially among women and children. To minimize the potential risks of increased road traffic accidents, HIV/AIDS, and human trafficking, the project includes a road safety program and an HIV/AIDS and human trafficking mitigation and awareness program.

V. ASSURANCES

42. In addition to the standard assurances, the government has assured its continued compliance with the covenants set forth in the Grant Agreement dated 26 November 2007. In particular, the government will ensure that the widening of section 5 complies with all covenants relating to implementation of the updated resettlement plan and environmental and social safeguards.

VI. RECOMMENDATION

43. I am satisfied that the proposed supplementary grant would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve the grant not exceeding the equivalent of $27,000,000 to the Lao People's Democratic Republic from ADB's Special Funds resources, for the Northern Greater Mekong Subregion Transport Network Improvement Project, on terms and conditions substantially in accordance with those set forth in the draft grant agreement presented to the Board.

Haruhiko Kuroda
President

Date: 29 March 2010

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and Indicators	Data Sources and Reporting Mechanisms	Assumptions and Risks
Impact Trade in the region and economic growth in the project area increase	1. Trade between Thailand and project area increases by 5% per year from 2013 to 2018 2. GDP in the project area districts increases from KN1,217 billion in 2005 to KN3,843 billion in 2022 3. Exports from project area districts to other parts of the Lao PDR and other countries increase from KN14 billion in 2005 to KN31 billion in 2012 4. Tourism from Thailand to Louangphrabang increases by 8% per year from 2013 to 2018	1. Provincial and district statistics offices 2. Baseline and follow-up surveys in project area 3. Annual, monthly progress, and project completion reports	**Assumptions** Government investment projects implemented as planned Investments by private sector in tourism and agriculture implemented as expected **Risk** Inequitable development impact and widening of income disparities
Outcome Transport on the regional and national road networks becomes more efficient	1. Traffic increases from 1,073 vehicles per day in 2008 to 2,652 by 2017 2. Vehicle operating costs for cars decrease from $0.23 per vehicle-km in 2009 to $0.19 costs in 2014 and for medium-sized trucks decrease from $0.51 to $0.35 in 2014 3. Reduction in travel time on Route 4 from 11 hours to about 6 hours by December 2013 4. Traffic accident growth rate on project road sections increases by less than 5% per year (lower rate than the growth rate for total	1. MPWT surveys 2. Government statistics 3. Project completion report	**Assumptions** The project road is maintained adequately There is continued government emphasis on improving road safety No external shocks to tourism in Southeast Asia **Risk** Departure of trained staff from MPWT

Design Summary	Performance Targets and Indicators	Data Sources and Reporting Mechanisms	Assumptions and Risks
	traffic during 2013–2022)		
Outputs 1. Route 4 and rural access roads upgraded	1. Physical completion of Route 4 (367 km) and rural access roads (100 km) to all-weather status by December 2013	1. Project administration missions; and monthly, annual, and project completion reports	
2. Road maintenance performed	2. Periodic maintenance performed on national highways in accordance with Road Maintenance Fund procedures by December 2013	2. Road maintenance fund and executing agency reports	
3. Road safety capacity improved	3. Training in carrying out road safety audits provided to all Provincial Departments of Public Works and Transport. Training in conducting inspections of vehicle standards provided to 15 traffic police officers in Vientiane by December 2013		
4. HIV/AIDS and human trafficking awareness increased	4. Number of cases of HIV in Xaignabouli Province reduced from 17 during 2007–2009 to 2 in 2013. Incidence of human trafficking in the project area decreases from 8 in 2008 to 2 in 2013.		
Activities with Milestones 1.1 Implementation of civil works		Civil works contracts completed by December 2013	**Inputs** ADB: $54.0 million grant Civil works: $39.3 million Equipment: $0.6 million Contingencies: $12.7 million Other: $1.4 million
1.2 Procurement of equipment		Equipment is procured by December 2010	

Activities with Milestones		**Inputs**
1.3 Project supervision consulting services	Consultants are recruited by July 2010 and services are completed by December 2013	OFID: $11.0 million loan Civil works: $11.0 million Australia: $14.5 million grant Civil works: $7.1 million Consultants: $5.5 million Other: $1.9 million Republic of Korea: $22.4 million loan Civil works: $18.7 million Consultants: $2.1 million Other: $1.6 million Government of the Lao PDR: $16.7 million Civil works: $2.1 million Taxes: $7.9 million Project administration: $0.5 million Contingencies: $5.7 million Other: $0.5 million
1.4 Updating and implementation of resettlement plan	For each road subsection, all affected households resettled and compensated, without loss of livelihoods before civil works begin.	
1.5 Implementation of ethnic minority specific activities	Ethnic minority specific activities are addressed in the implementation of resettlement plan	
1.6 Implementation of project specific gender strategy	Gender-specific activities are included in the implementation of the resettlement plan	
1.7 Implementation of HIV/AIDS awareness and prevention of human trafficking program	HIV/AIDS awareness and prevention of human trafficking program begins by May 2010 and is completed by December 2013 Campaign materials on HIV/AIDS awareness and prevention of human trafficking program prepared and implemented at the community level as well as through communication media Capacity building training of implementing agencies for HIV/AIDS awareness and prevention of human trafficking program HIV/AIDS medical kits are distributed to the local health facilities	
1.8 Implementation of road safety program	Road safety consultants recruited by April 2010 and program completed by December 2012	

ADB = Asian Development Bank, GDP = gross domestic product, km = kilometer, Lao PDR = Lao People's Democratic Republic, MPWT = Ministry of Public Works and Transport, OFID = OPEC Fund for International Development.
Source: Asian Development Bank.

DEVELOPMENT COORDINATION

Sector: Transport, and information communication technology
Subsector: Road transport
Themes: Regional cooperation and integration, sustainable economic growth, inclusive social development
Subthemes: Cross-border infrastructure, widening access to markets and economic opportunities other vulnerable groups

A. Major Development Partners and Key Activities

1. The major development partners active in the Lao People's Democratic Republic (Lao PDR) transport sector are the Asian Development Bank (ADB), Japan (through Japan International Cooperation Agency), and the World Bank. Other multilateral donors finance smaller projects or provide cofinancing for ADB or World Bank projects. Several other bilateral donors provide assistance as well. ADB, Japan, and other bilateral donors provide substantial assistance for projects addressing regional cooperation and integration. ADB assistance in this area is provided through Greater Mekong Subregion transport corridor projects. Japan and other bilateral donors have provided cofinancing for these projects. Japan, Australia, and Thailand have also financed bridges connecting the Lao PDR with its neighbors. The World Bank, ADB, and Japan have financed many projects addressing economic growth through rehabilitation or maintenance of national roads, with the World Bank focusing on maintenance in recent years. The World Bank, ADB, the Swedish International Development Agency (Sida), and others have provided a smaller amount of financing for projects addressing economic growth through rehabilitation or maintenance of provincial or rural roads.

Table A2.1: Major Development Partners

Sectors and Themes	Source of Funds	Projects	Loan/Grant Amount ($ million)	Road Sections/ Bridges	Length (km)	Completion (Expected)
Transport, and information and communication technology; regional cooperation and integration	ADB	East–West Corridor	L-32.0	NR 9: M.Phin–Daen Savane	78.0	2005
	JICA	East-West Corridor	G-59.0	NR 9: Xeno-Phalan–Phin	160.6	2003
	JICA	East–West Corridor	L-41.2	2nd Mekong Bridge–Savannakhet		2006
	ADB/THA/ PRC	Northern Economic Corridor	L-90.0	NR3: Houayxai–Boten	220.0	(2008)
	ADB/OFID/ Republic of Korea/ Australia	Northern Greater Mekong Subregion Transport Network Improvement	G-27.0 G-14.5 (Aus) L-22.4 (Kor)	NR 4: Xiang Ngeun–Nakha	367.0	(2013)
	THA	Road NR2	L-20.0	NR2: Pakbeng–Thai Border (M. Ngeun)	46.0	(2008)
		Bridge at Kenthao	L-1.52	Bridge at Kenethao (junction with NR4)		2005
	Australia	Friendship Bridge	G-32.0	Vientiane–Mekong Bridge		1994
		11 Bridges	G-8.6	NR 13S and NR 1		1999
Transport, and information and communication technology; economic growth (national roads)	ADB/ UNDP	Vientiane Plain Road Improvement	L-8.0	NR 10: Thangone–Thalad Junction	76.5	1989
	ADB	Second Road Improvement	L-12.0	NR 16: Houayhe–Saravane–Paksong	136.0	1996
	ADB	Third Road Improvement	L-19.0	NR 13N: Vientiane–Vangvieng	162.0	1993

Sectors and Themes	Source of Funds	Projects	Loan/Grant Amount ($ million)	Road Sections/ Bridges	Length (km)	Completion (Expected)
	ADB	Fourth Road Improvement	L-39.0	NR 13N: Vangvieng–Louangphrabang	226.1	1996
	ADB	Fifth Road Improvement	L-34.0	NR 13N: Louangphrabang–Pakmong	111.8	1997
	ADB	Sixth Road Improvement	L-26.0	NR 1: Thateng–Xekong–Attapu	142.0	2001
	ADB	Champassak Road Improvement	L-48.0	NR 16: Chongmek–Pakse	39.0	2000
				NR 13S: Pakse–Veunkham	154.0	2000
	ADB/OFID	Xieng Khouang Road Improvement	L-46.0	NR 7: Phoukhoun–Namkan	267.0	2003
				NR 1: Phonsavan–Thatom	128.0	2003
	IDA	Highway Improvement Project	L-32.1	NR 13S: Pakkading–Savannakhet	266.0	1997
		Second Highway Improvement	L-30.0	NR 9: Savannakhet–Xeno	55.7	1999
		Third Highway Improvement	L-51.9	NR 13S: Lak 35–Pakse	199.3	2002
		Road Maintenance Project	L-28.8	Periodic Maintenance		2004
		Road Maintenance Program (Phase 2)	L-22.3	Periodic Maintenance		(2009)
	JICA	Equipment for NR 8 Construction	G-6.5	NR 8: Ban Lao–Nam Theun Bridge		1997
		26 bridges on NR 13S	G-23.0	NR 13S: Pakkading–Ban Lao–Thakhek		2000
		51 bridges on NR 13S	G-26.0	NR 13S: Thakek–Pakse		2000
		Pakse–Mekong Bridge	G-50.0	NR 16: Pakse		2002
	NDF/ Sida	9 bridges on NR 13S	L-9.5	NR 13S: Thabok		1997
	UNDP	UN Capital Development Fund	G-7.44	NR 4: Junction with NR 13	168.0	1996
			G-12.31	Xaignabouli–Paklai		
			G-4.61	NR 4: Paklai–Kenthao	65.5	2000
	Russian Federation	Nam Theun bridge	G-5.0	NR 8		1996
	Sida	Sida1	G-21.8	NR 13S: Vientiane–Thabok	84.0	1996
		Sida2	G-19.2	NR 13S: Thabok–Pakkading	96.0	1996
		Road 8	L-13.3	NR 8: Lak Sao–Viet Nam border	52.9	2004
			G-4.0			
	KfW/WB		G-11.0	NR 6: Phoulao–Xam Neua–Nameo	271.0	2002

Sectors and Themes	Source of Funds	Projects	Loan/Grant Amount ($ million)	Road Sections/ Bridges	Length (km)	Completion (Expected)
Transport, and information and communication technology; economic growth (provincial roads)	ADB/ OFID/ NDF	Roads for Rural Development	L-31.0	Roads in Bolikhamxai, Attapu, Vientiane, and Xaignabouli	266.0	(2009)
	IDA	Provincial Infrastructure Project	L-31.1	Sections of NR2 in Oudomxai and NR19 and NR1A in Phongsali		2006
	US		4.0	Agna–Samphan	52.0	...
	Sida	Lao–Swedish Road Sector Project I	L-23.6	Provincial and community roads	455.0	...
		Lao–Swedish Road Sector Project II	L-20.1		186.0	...
		Lao–Swedish Road Sector Project III	L-18.7			
	OFID/KfW		10.0	Houayxay–Muang Mom	78.0	…
	Lux Dev		0.13	Borikhan–Muanghuang	27.0	...
	EU		6.0	Pak Xuang–Pak Xeng	64.0	...
	IDA		17.0	Hinheup–Ban Done– Sanakham	200.0	...

… = not available, ADB = Asian Development Bank, EU = European Union, IDA = International Development Association (World Bank), G = grant, JBIC = Japan Bank for International Cooperation, JICA = Japan International Cooperation Agency, km = kilometer, L = loan, Lux Dev = Luxembourg Development, NDF = Nordic Development Fund, NR = national route, OFID = OPEC Fund for International Development, PRC = People's Republic of China, Sida = Swedish International Development Cooperation Agency, THA = Thailand, UN = United Nations, UNDP = United Nations Development Programme, US = United States, WB = World Bank.
Source: Asian Development Bank.

B. Institutional Arrangements and Processes for Development Coordination

2. There is substantial coordination among the major donors in the Lao PDR transport sector. The Ministry of Public Works and Transport arranges joint project review missions and strategy discussions twice per year, in which the World Bank, Sida, and ADB regularly participate; and at times other donors. Frequent informal communications are maintained among the donors. The World Bank and ADB cooperate closely in formulation of projects. For example, while the World Bank has taken the lead in addressing road maintenance, ADB projects have included components for road maintenance, which are designed to follow Road Maintenance Fund procedures established with World Bank assistance. ADB coordinates closely with bilateral and other multilateral donors. Financing for the Northern Greater Mekong Subregion Transport Network Improvement Project includes cofinancing from Australia, the Republic of Korea, and the OPEC Fund for International Development. Previous ADB projects have included cofinancing from Sida, the Nordic Development Fund, the People's Republic of China, and Thailand.

PRICE CHANGES: JULY 2007 (TIME OF APPRAISAL) COMPARED WITH 2008 AND 2009

Item	July 2007 Preliminary Design Basis Used at Appraisal	July 2008 Median Unit Price as Bid by Civil Works Contractors	Percentage Increase July 2007 to July 2008	October 2009 Fact-Finding for Supplementary Grant	Percentage Increase July 2007 to October 2009
Material costs ($)					
Bitumen (liter)	$0.67	$0.93	38.8	$1.01	50.7
Aggregate subbase, type a (m^3)	$6.50	$14.80	127.7	$7.00	7.7
Aggregate base, type b (m^3)	$22.00	$23.64	7.5	$23.00	4.5
Diesel Fuel (liter)	$0.85	$1.44	69.4	$0.83	(2.4)
Reinforcing Steel (ton)	$750.00	$1,240.00	65.3	$657.00	(12.4)
Cement (ton)	$76.20	$84.82	11.3	$86.14	13.0
Unskilled labor costs (person-hour)	$0.92	$0.92	0.0	$1.81	96.7
Appreciation of the kip against the US dollar	$1 = 9,617	$1 = 8,606	10.5	$1 = 8,450	12.1
Average annual inflation (%)[a]	4.5%	7.6%	…	0.7%	…

( ) = negative, … = not available, m^3 = cubic meter.
[a] As measured by the consumer price index (%).
Sources: Department of Roads of the Ministry of Public Works and Transport, and the Asian Development Bank.

REVISED DETAILED PROJECT COST ESTIMATES (2007 versus 2009)

Table A4: Road 4, Sections 2–5[a]

Road Section		August 2007 Appraisal		July 2008 Awarded Bids		October 2009 Completion Detailed Engineering		Difference between Appraisal and Completion of Detailed Design		
		Length (km)	Cost ($million)	Length (km)	Cost ($ million)	Length (km)	Cost ($ million)	Length (km)	Cost[b] ($ million)	%
5	Hoauy Pet–Kenthao–Botene–Nakha	82.58	6.93	82.58	9.90	82.20	21.70	(0.38)	14.77	213.00
4	Paklay–Houay Pet	45.62	4.98	45.62	7.62	45.52	9.94	(0.10)	4.96	100.00
3	Nam Pui–Paklay	99.93	12.59	99.93	14.58	99.40	18.05	(0.53)	5.46	43.00
2	Xaignabouli via Thadeua–Nam Pui	79.94	12.69	79.94	15.32	79.75	17.71	(0.19)	5.02	40.00
Total		**308.07**	**37.19**	**308.07**	**47.42**	**306.87**	**67.40**	**(1.20)**	**30.21**	**81.00**

( ) = negative, km = kilometer.
[a] Includes taxes and contingencies.
[b] Reflects reduction in shoulder widths from 1.0 meter (m) to 0.5 m on all sections; and widening of embankment to 8 m on section 5, with 7.0 m pavement width.
Source: Asian Development Bank estimates.

REVISED COST ESTIMATES BY EXPENDITURE CATEGORY AND FINANCIER

Table A5.1: Revised Cost Estimates by Expenditure Category
($ million)

Item		Base[a]	Supp	Total	%
A.	**Investment Cost**				
	1. Civil works	61.60	16.65	78.25	65.98
	2. Equipment	0.60	0.00	0.60	0.51
	3. Land acquisition and resettlement	0.37	0.30	0.67	0.56
	4. Taxes and duties	6.16	1.67	7.83	6.60
	Subtotal (A)	**68.73**	**18.62**	**87.35**	**73.65**
B.	**Project Management and Administration**				
	1. Consulting services	7.57	0.00	7.57	6.38
	2. Project administration	0.53	0.00	0.53	0.45
	3. Taxes and duties	0.08	0.00	0.08	0.06
	Subtotal (B)	**8.18**	**0.00**	**8.18**	**6.89**
	Total Base Cost (A+B)	**76.91**	**18.62**	**95.52**	**80.54**
C.	**Contingencies**	**10.44**	**11.46**	**21.90**	**18.47**
D.	**Interest During Construction**	**1.18**	**0.00**	**1.18**	**0.99**
	Total Project Cost (A+B+C+D)	**88.53**	**30.08**	**118.60**	**100.00**

Supp = supplementary grant.
[a] Based on the latest reallocation of grant and loan proceeds from the Asian Development Bank, Government of Australia, and the OPEC Fund for International Development.
Note: Base (original grant): ADB. 2007. *Report and Recommendation of the President to the Board of Directors: Proposed Asian Development Fund Grant to the Lao People's Democratic Republic for the Northern Greater Mekong Subregional Transport Network Improvement Project.* Manila (Grant 0082-LAO).
Source: Asian Development Bank estimates.

Table A5.2: Revised Cost Estimates by Financier

Item		ADB				OFID				Australia				Republic of Korea				Government				Total		
		Base	Sup	Total	%	Base	Sup	Total	%	Base	Sup	Total	%	Base	Sup	Total	%	Base	Sup	Total	%	Base	Sup	Total
A.	**Investment Cost**[a]																							
1.	Civil works																							
a.	Route 4, Sec 2–4	21.95	4.13	26.08	70	11.00	0.00	11.00	30	0.00	0.00	0.00	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0	32.95	4.13	37.08
b.	Mekong bridge	0.00	0.00	0.00	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0	18.73	0.00	18.73	90	2.08	0.00	2.08	10	20.81	0.00	20.81
c.	Route 4, sec 5	0.00	12.52	12.52	70	0.00	0.00	0.00	0	5.24	0.00	5.24	30	0.00	0.00	0.00	0	0.00	0.00	0.00	0	5.24	12.52	17.76
d.	Rural roads	0.00	0.00	0.00	0	0.00	0.00	0.00	0	1.88	0.00	1.88	100	0.00	0.00	0.00	0	0.00	0.00	0.00	0	1.88	0.00	1.88
e.	Periodic maintenance	0.72	0.00	0.72	100	0.00	0.00	0.00	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0	0.72	0.00	0.72
1.	**Total civil works**	**22.67**	**16.65**	**39.32**	**50**	**11.00**	**0.00**	**11.00**	**14**	**7.12**	**0.00**	**7.12**	**9**	**18.73**	**0.00**	**18.73**	**24**	**2.08**	**0.00**	**2.08**	**3**	**61.60**	**16.65**	**78.25**
2.	Equipment	0.60	0.00	0.60	100	0.00	0.00	0.00	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0	0.60	0.00	0.60
3.	Land Acquisition and Resettlement	0.26	0.00	0.26	39	0.00	0.00	0.00	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0	0.11	0.30	0.41	61	0.37	0.30	0.67
4.	Taxes and Duties	0.00	0.00	0.00	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0	6.16	1.67	7.83	100	6.16	1.67	7.83
	Subtotal (A)	**23.53**	**16.65**	**40.18**	**46**	**11.00**	**0.00**	**11.00**	**13**	**7.12**	**0.00**	**7.12**	**8**	**18.73**	**0.00**	**18.73**	**21**	**8.35**	**1.97**	**10.32**	**12**	**68.73**	**18.62**	**87.35**
B.	**Project Management and Administration**																							
1.	Project administration	0.00	0.00	0.00	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0	0.53	0.00	0.53	100	0.53	0.00	0.53
2.	Consulting costs	0.00	0.00	0.00	0	0.00	0.00	0.00	0	5.49	0.00	5.49	73	2.08	0.00	2.08	27	0.00	0.00	0.00	0	7.57	0.00	7.57
3.	Taxes and duties	0.00	0.00	0.00	0	0.00	0.00	0.00	00	0.00	0.00	0.00	0	0.00	0.00	0.00	0	0.08	0.00	0.08	100	0.08	0.00	0.08
	Subtotal (B)	**0.00**	**0.00**	**0.00**	**0**	**0.00**	**0.00**	**0.00**	**0**	**5.49**	**0.00**	**5.49**	**67**	**2.08**	**0.00**	**2.08**	**25**	**0.61**	**0.00**	**0.61**	**7**	**8.18**	**0.00**	**8.18**
C.	**Contingencies**[b]	**2.31**	**10.35**	**12.66**	**58**	**0.00**	**0.00**	**0.00**	**0**	**1.89**	**0.00**	**1.89**	**9**	**1.61**	**0.00**	**1.61**	**7**	**4.63**	**1.11**	**5.74**	**26**	**10.44**	**11.46**	**21.90**
D.	**Interest During Construction**	**1.16**	**0.00**	**1.16**	**98**	**0.00**	**0.00**	**0.00**	**0**	**0.00**	**0.00**	**0.00**	**0**	**0.02**	**0.00**	**0.02**	**1**	**0.00**	**0.00**	**0.00**	**0**	**1.18**	**0.00**	**1.18**
	Total Project Cost (A+B+C+D)	**27.00**	**27.00**	**54.00**	**46**	**11.00**	**0.00**	**11.00**	**9**	**14.50**	**0.00**	**14.50**	**12**	**22.44**	**0.00**	**22.44**	**19**	**13.59**	**3.07**	**16.66**	**14**	**88.53**	**30.08**	**118.60**

ADB = Asian Development Bank, OFID = OPEC Fund for International Development, Sec = section, Sup = supplementary.

[a] The supplementary grant does not change the financing share of the OFID Loan (35% net of tax) and the ADB grant will finance 100% net of tax after the OFID Loan has been fully utilized.

[b] The supplementary grant will be used after the grant from Australia has been fully utilized.

Source: Asian Development Bank estimates.

REVISED PROCUREMENT PLAN

Basic Data

Project Name: Northern Greater Mekong Subregion Transport Network Improvement Project	
Country: Lao People's Democratic Republic	**Executing Agency**:
Loan Amount: $27,000,000	**Loan (Grant) Number:** 0082-LAO
Date of First Procurement Plan 27 September 2007	**Date of this Procurement Plan**: 5 November 2009

A. Process Thresholds, Review, and 18-Month Procurement Plan

1. Project Procurement Thresholds

1. Except as the Asian Development Bank (ADB) may otherwise agree, the following process thresholds shall apply to procurement of goods and works.

Procurement of Goods and Works

Method	Threshold
ICB for Works	Above $2,000,000
ICB for Goods	Above $1,000,000
NCB for Works	Below $2,000,000 and above $100,000
NCB for Goods	Below $1,000,000 and above $100,000
Shopping for Works	Below $100,000
Shopping for Goods	Below $100,000
Direct Purchase	Below $10,000

ICB = international competitive bidding, NCB = national competitive bidding.

2. ADB Prior or Post Review

2. Except as ADB may otherwise agree, the following prior or post review requirements apply to the various procurement and consultant recruitment methods used for the project.

Procurement Method	Prior or Post	Comments
Procurement of Goods and Works		
ICB Works	Prior	
ICB Goods	Prior	
NCB Works	Post	Prior review for first document
NCB Goods	Post	Prior review for first document
Shopping for Works	Prior	
Shopping for Goods	Prior	
Recruitment of Consulting Firms		
Quality- and Cost-Based Selection	Prior	
Quality-Based Selection	Prior	
Other selection methods: Consultants' Qualifications Selection, Least-Cost Selection, Fixed Budget Selection, and Single Source Selection	Prior	
Recruitment of Individual Consultants		
Individual Consultants	Prior	

ICB = international competitive bidding, NCB = national competitive bidding.

3. Goods and Works Contracts Estimated to Cost More Than $1 Million

3. The following table lists goods and works contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

General Description	Contract Value ($ million)	Procurement Method	Prequalification of Bidders (y/n)	Advertisement Date (quarter/year)	Comments
None					

4. Consulting Services Contracts Estimated to Cost More Than $100,000

4. The following table lists consulting services contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

General Description	Contract Value ($ million)	Recruitment Method	Advertisement Date (quarter/year)	International or National Assignment	Comments
HIV/AIDS and Anti-Trafficking Program	0.40	QCBS	Q1/2010	5 international 84 national	80:20
Road Safety	0.40	SSS	Q1/2010	9 international, 9 national	

Q = quarter, QCBS = quality- and cost-based selection, SSS = single source selection.

5. Goods and Works Contracts Estimated to Cost Less than $1 Million and Consulting Services Contracts Less than $100,000

5. The following table groups smaller-value goods, works, and consulting services contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

General Description	Value of Contracts (cumulative)	Number of Contracts	Procurement/ Recruitment Method	Comments
Equipment	0.6	1	ICB	Cross-border equipment
Periodic Maintenance	0.8	1	NCB	Civil works
External Resettlement Monitor	0.02	1	Individual	

ICB = international competitive bidding, NCB = national competitive bidding.

B. Indicative List of Packages Required Under the Project

6. The following table provides an indicative list of all procurement (goods, works, and consulting services) over the life of the project. Contracts financed by the borrower and others should also be indicated, with an appropriate notation in the comments section.

General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Procurement Method	Domestic Preference Applicable	Comments
Goods	0.60	1	ICB	yes	
Works	0.80	1	NCB	no	

General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Recruitment Method	Type of Proposal	Comments
Consulting Services	0.82	3	QCBS, SSS, Individual	Biodata	

ICB = international competitive bidding, NCB = national competitive bidding, QCBS = quality- and cost-based selection, SSS = single source selection.

C. National Competitive Bidding

1. General

7. The procedures to be followed for national competitive bidding (NCB) shall be those set forth for "Public Bidding" in Prime Minister's Decree No. 03/PM of the Lao People's Democratic Republic, effective 09 January 2004, and Implementing Rules and Regulations effective 12 March 2004, with the clarifications and modifications described in the following paragraphs required for compliance with the provisions of the ADB's Procurement Guidelines (2007, as amended from time to time).

2. Application

8. Contract packages subject to NCB procedures will be those identified as such in the project procurement plan. Any changes to the mode of procurement from those provided in the procurement plan shall be made through updating of the procurement plan, and only with prior approval of ADB.

3. Eligibility

9. Bidders shall not be declared ineligible or prohibited from bidding on the basis of barring procedures or sanction lists, except individuals and firms sanctioned by ADB, without prior approval of ADB.

4. Advertising

10. Bidding of NCB contracts estimated at $500,000 or more for goods and related services or $1,000,000 or more for civil works shall be advertised concurrently with the general procurement notices on ADB's website.

5. Procurement Documents

11. The standard procurement documents provided to the Ministry of Finance, Procurement Monitoring Office shall be used to the extent possible. The first draft English language version of the procurement documents shall be submitted for ADB review and approval, regardless of the estimated contract amount, in accordance with agreed review procedures (post and prior review). The ADB-approved procurement documents will then be used as a model for all procurement financed by ADB for the project, and need not be subjected to further review unless specified in the procurement plan.

6. Preferences

(i) No preference of any kind shall be given to domestic bidders or for domestically manufactured goods.

(ii) Suppliers and contractors shall not be required to purchase local goods or supplies or materials.

7. Rejection of all Bids and Rebidding

12. Bids shall not be rejected and new bids solicited without ADB's prior concurrence.

8. National Sanctions List

13. National sanctions lists may be applied only with prior approval of ADB.

9. Corruption Policy

14. A bidder declared ineligible by ADB, based on a determination by ADB that the bidder has engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing an ADB-financed contract shall be ineligible to be awarded ADB-financed contract during the period of time determined by ADB

10. Disclosure of Decisions on Contract Awards

15. At the same time that notification on award of contract is given to the successful bidder, the results of the bid evaluation shall be published in a local newspaper or well-known freely accessible website identifying the bid and lot numbers and providing information on (i) name of each bidder who submitted a bid; (ii) bid prices as read out at bid opening; (iii) name of bidders whose bids were rejected and the reasons for their rejection; (iv) name of the winning bidder, and the price it offered, as well as the duration and summary scope of the contract awarded. The executing agency/implementing agency shall respond in writing to unsuccessful bidders who seek explanations on the grounds on which their bids are not selected.

11. Member Country Restrictions

16. Bidders must be nationals of member countries of ADB, and offered goods, works, and services must be produced in and supplied from member countries of ADB.

REVISED TRAFFIC AND ECONOMIC ANALYSIS

A. Traffic Forecasts

1. During preparation of the supplementary grant, new traffic counts were conducted at the same sites along the project road that were used during preparation of the original project. Substantial changes in traffic levels and composition have occurred since the original traffic counts. Actual traffic levels are higher than originally forecast. While the numbers of medium buses, light trucks, and motorcycles were lower than in the original forecast, there were substantial increases in the numbers of cars, medium trucks, and heavy trucks compared to the forecast. The numbers of four-wheel drive vehicles and light and heavy buses were also higher, although to a lesser extent. Traffic forecasts by vehicle type were prepared for the project road sections for 2010–2032. The forecasts are based on expected growth in gross domestic product, income elasticities of demand, and analysis of regional trade and tourism patterns. Total traffic excluding motorcycles is higher than the original project forecast, based on the actual traffic levels since project approval. Total traffic including motorcycles is forecast to grow at annual rates of about 4.8%–5.7% during 2010–2032, except during 2011–2015, when growth rates are higher as a result of generated traffic developing. The projected growth rates are reasonable considering expected economic growth in the project area and experience in other road projects financed by the Asian Development Bank. Generated traffic arises from increased shipments of agricultural commodities and other goods, and increased passenger traffic carrying tourists between Thailand and Louangphrabang. The improved road conditions will also generate demand by reducing vehicle operating costs (VOCs). The original and revised traffic forecasts and the differences between them are in Tables A7.1, A7.2, and A7.3.

Table A7.1: Original Traffic Forecast
Total Traffic (vehicles/day)

Year	Cars	Four-Wheel Drive Vehicles	Light Buses	Medium Buses	Heavy Buses	Light Trucks	Medium Trucks	Heavy Trucks	Motor-cycles	Total	Total Excl Motor-cycles
2008	4	25	21	28	8	218	43	12	761	1,001	240
2012	4	29	28	37	9	286	57	13	1,113	1,576	462
2017	5	33	39	52	10	401	79	15	1,793	2,429	635
2022	5	38	55	73	12	563	111	18	2,888	3,764	876
2027	6	44	78	102	13	789	156	21	4,651	5,862	1,210
2032	7	52	109	144	16	1,107	219	24	7,491	9,145	1,655

Source: Asian Development Bank estimates.

Table A7.2: 2009 Traffic Forecast
Total Traffic (vehicles/day)

Year	Cars	Four-Wheel Drive Vehicles	Light Buses	Medium Buses	Heavy Buses	Light Trucks	Medium Trucks	Heavy Trucks	Motor-cycles	Total	Total Excl Motor-cycles
2008	130	39	48	15	15	130	138	137	420	1,073	653
2012	143	51	69	21	21	173	195	168	631	1,474	843
2017	160	88	118	22	28	183	362	285	1,379	2,625	1,246
2022	170	106	150	25	31	213	451	304	1,946	3,397	1,451
2027	181	131	193	29	36	247	565	326	2,752	4,459	1,707
2032	193	164	247	34	42	286	709	350	3,893	5,883	1,991

Source: Asian Development Bank estimates.

Table A7.3: Difference in Traffic Forecasts (2009–2006)
Total Traffic (vehicles/day)

Year	Cars	Four-Wheel Drive Vehicles	Light Buses	Medium Buses	Heavy Buses	Light Trucks	Medium Trucks	Heavy Trucks	Motor-cycles	Total	Total Excl Motor-cycles
2008	127	14	27	(13)	7	(88)	95	125	(340)	73	413
2012	139	23	41	(16)	13	(114)	139	155	(482)	(102)	380
2017	155	55	79	(30)	18	(218)	283	270	(415)	196	611
2022	164	68	95	(48)	20	(350)	340	286	(942)	(367)	575
2027	174	87	115	(73)	22	(543)	409	305	(1,899)	(1,403)	496
2032	186	112	138	(109)	26	(821)	490	325	(3,598)	(3,262)	336

( ) = negative number.
Source: Asian Development Bank estimates.

B. Economic Analysis

2. The economic analysis has been revised to incorporate updated project costs, the revised traffic forecast, and updated values of benefits. The economic analysis was carried out for the project by comparing the with- and without-project scenarios. In the without-project scenario, the road is assumed to remain in its present condition. The with-project scenario includes routine and periodic maintenance according to international standards. The project preparatory technical assistance considered various mutually exclusive project alternatives, such as different pavement types and alignments, and the proposed project is based on the most cost-effective and least-cost option. The economic analysis covers 25 years (2008–2032), based on a 6-year implementation period. The economic prices are expressed using the world price numeraire.

C. Costs

3. Project economic costs include the resource costs of road improvement and maintenance, equipment, and consulting services. Price contingencies, interest during construction, and taxes and duties are excluded. Costs were divided into tradable and non-tradable portions. A standard conversion factor of 0.9 was applied to the non-tradable portion. To take into account local unemployment and underemployment, costs for unskilled labor were adjusted by a shadow wage rate factor of 0.9 to arrive at the economic opportunity cost.

D. Benefits

4. The primary economic benefits for the project are VOC savings from normal, generated, and diverted traffic; time savings; savings from improved road safety; and savings from reduced maintenance costs. Economic benefits were calculated using the same methodology used for costs. VOCs were recalculated using 2009 prices. VOC savings will accrue primarily from improvements in the road surface, and horizontal and vertical alignment. Unit economic VOCs for nine types of vehicles were estimated using the Highway Design and Maintenance Standards Model-IV and representative VOCs are shown in Table A7.4. VOC savings for normal traffic account for about 54% of total benefits while benefits from generated traffic account for about 16%. Generated traffic is defined as new traffic induced from the reduction in transport costs arising from the project, and includes both international and domestic generated traffic. Benefits for generated traffic are estimated at half the value of VOC savings for normal traffic. Benefits from diverted traffic arise from the diversion of traffic from other roads in the Lao

People's Democratic Republic (Lao PDR), particularly Route 13 from Vientiane to the northern Lao PDR.

Table A7.4 Representative Vehicle Operating Costs by Vehicle Type ($ per vehicle-km)

Vehicle Type	Without Project[a]	With Project[b]	VOC Savings
Rolling terrain			
Car	0.191	0.233	0.042
Four-wheel drive	0.205	0.317	0.112
Light bus	0.181	0.223	0.042
Light truck	0.170	0.219	0.049
Medium truck	0.352	0.511	0.159
Heavy truck	0.599	0.846	0.247

km = kilometer, VOC = vehicle operating cost.
[a] Corresponding to an international roughness index of 10 for a gravel road.
[b] Corresponding to an international roughness index of 2.
Source: Consultants estimates.

5. Time savings account for about 19% of total benefits, and include savings in passenger and freight time. The project will result in improved average speeds along the project road, e.g., from 56.1 kilometers per hour (km/hour) to 82.8 km/hour for a car. The travel time for the entire length of the project road will be reduced from about 11 hours to 6 hours. The value of time saved by passengers traveling during work time was calculated at $0.28 per hour, based on an estimate of passengers' average annual income. This value was also used for people traveling during leisure time since no data on people's willingness to pay for travel time savings in the Lao PDR was available. The value of time saved for freight is assumed at $1.58/vehicle-hour for light trucks, $7.09/vehicle-hour for medium trucks, $9.45/vehicle-hour for heavy trucks, and $0.24/vehicle-hour for motorcycles and motorized tricycles. Benefits from improved road safety and reduced maintenance costs comprise smaller portions of total benefits. Savings in road maintenance costs are based on the routine maintenance necessary to maintain an international roughness index of 10, including grading of the current earth surface of the road. Savings from improved road safety arise from the reduced number of accidents per vehicle-kilometer on the improved road, and in the severity of accidents. The cost per accident was estimated at $1,165, based on government statistics. The project will also have other benefits, such as improved access to social services, but these have not been quantified because of the lack of sufficient data.

E. Results of Economic Analysis

6. The economic internal rate of return (EIRR) was recalculated for the project. The EIRR for the project is 19.4%, and the net present value is $40.7 million, using a 12% discount rate (Table A7.5). The EIRR and net present value have increased from those for the original project (EIRR of 16.6% and net present value of $22.3 million) primarily because of the change in composition of traffic and the increased traffic forecast. In particular, the numbers of heavy vehicles, especially medium and heavy trucks, cars, and light buses, in the revised traffic forecast are significantly higher than in the original traffic forecast, in accordance with actual traffic levels since approval. Since these heavy vehicles have high operating costs, they generate large VOC savings with the improved road, providing substantial economic benefits. These additional benefits exceed the negative impact on the economic return of the increased project costs. While total traffic is lower in the revised forecast, this is because the number of motorcycles is much lower than in the original forecast. Since motorcycles have very low VOCs

relative to other vehicle types, their reduction has only a small effect on the level of project benefits.

Table A7.5: Economic Internal Rate of Return
($ million)

				Benefits							
Year	Capital Costs	Maint Costs	Total Costs	Normal Traffic	Generated Traffic	Time Savings	Diverted Traffic	Road Safety	Maint Savings	Total Benefits	Net Benefits
2008	0.479	0.000	0.479	0.000	0.000	0.000	0.000	0.000	0.000	0.000	(0.479)
2009	13.377	0.000	13.377	0.000	0.000	0.000	0.000	0.000	0.000	0.000	(13.377)
2010	17.908	0.000	17.908	0.000	0.000	0.000	0.000	0.000	0.000	0.000	(17.908)
2011	21.704	0.000	21.704	0.000	0.000	0.000	0.000	0.000	0.000	0.000	(21.704)
2012	20.235	0.000	20.235	5.487	0.650	1.576	0.255	0.004	0.000	7.971	(12.264)
2013	24.171	0.000	24.171	10.144	1.828	3.082	0.465	0.008	2.230	17.757	(6.414)
2014	0.000	2.169	2.169	11.581	2.832	3.721	0.525	0.009	2.230	20.898	18.729
2015	0.000	2.169	2.169	11.906	3.720	4.046	0.533	0.009	2.230	22.445	20.277
2016	0.000	2.169	2.169	12.247	3.863	4.186	0.542	0.010	2.230	23.078	20.909
2017	0.000	2.169	2.169	12.603	4.016	4.333	0.551	0.010	2.230	23.744	21.575
2018	0.000	7.540	7.540	12.953	4.171	4.481	0.565	0.011	2.230	24.411	16.870
2019	0.000	2.169	2.169	13.317	4.335	4.635	0.580	0.011	2.230	25.109	22.940
2020	0.000	2.169	2.169	13.697	4.509	4.798	0.595	0.012	2.230	25.841	23.672
2021	0.000	2.169	2.169	14.093	4.694	4.968	0.611	0.012	2.230	26.609	24.440
2022	0.000	2.169	2.169	14.506	4.891	5.148	0.627	0.013	2.230	27.415	25.246
2023	0.000	2.169	2.169	14.936	5.100	5.337	0.644	0.013	2.230	28.260	26.092
2024	0.000	7.540	7.540	15.386	5.322	5.535	0.661	0.014	2.230	29.149	21.608
2025	0.000	2.169	2.169	15.855	5.559	5.745	0.678	0.015	2.230	30.082	27.913
2026	0.000	2.169	2.169	16.345	5.810	5.965	0.697	0.016	2.230	31.063	28.894
2027	0.000	2.169	2.169	16.857	6.079	6.197	0.715	0.016	2.230	32.095	29.926
2028	0.000	2.169	2.169	17.385	6.359	6.438	0.735	0.017	2.230	33.165	30.996
2029	0.000	2.169	2.169	17.930	6.652	6.689	0.755	0.018	2.230	34.275	32.106
2030	0.000	7.540	7.540	18.492	6.959	6.949	0.775	0.019	2.230	35.425	27.885
2031	0.000	2.169	2.169	19.071	7.280	7.220	0.796	0.020	2.230	36.618	34.449
2032	(36.851)	2.169	(34.682)	19.669	7.616	7.501	0.818	0.021	2.230	37.855	72.537
										EIRR =	19.43%
										NPV =	40.692

( ) = negative, EIRR = economic internal rate of return, Maint = maintenance, NPV = net present value.
Source: Asian Development Bank estimates.

F. Sensitivity Analysis

7. Sensitivity analysis was carried out to test the effects of negative changes in the key parameters that determine the benefits and costs and to test that the detailed design has been completed and the contracts of the project awarded. The sensitivity analysis, shown in Table A7.6, indicates that capital costs would have to increase by 51% or total benefits decrease by 39% for the EIRR to reach the level of 12%. Given the Asian Development Bank's experience with similar projects in the Lao PDR, such changes are not expected to occur. The sensitivity analysis shows that the EIRR exceeds the level of 12% in all cases. Even if there were no generated traffic, the EIRR remains above 12%. To determine the degree of uncertainty of the project, a risk analysis was carried out. Key variables, e.g., costs and traffic

growth rates, were assigned a random value within defined limits based on assumed probability distribution functions. A Latin Hypercube type random sampling was used, and the simulation run was made with 500 iterations to generate the probability distribution of the EIRR. The results show that the probability that the EIRR will fall below 12% is less than 1.0% and that the EIRR is thus robust.

Table A7.6: Sensitivity Analysis

Item	**EIRR** (%)	**ENPV**	**Switching Value** (%)
Base case	19.4	40.692	
1 year implementation delay	17.5	34.000	
Normal traffic –20%	17.4	28.723	72
Generated traffic –20%	18.9	37.056	256
Total benefit –20%	15.6	18.552	39
Capital costs +20%	16.5	28.420	51
Normal traffic –20%; capital costs +20%	14.7	16.452	31
Maintenance at 50%	17.8	27.389	226

EIRR = economic internal rate of return, ENPV = economic net present value.
Source: Asian Development Bank estimates.

G. Distribution Analysis

8. Distribution analysis was carried out to examine the project's impact on beneficiaries, using the same EIRR methodology and assumptions for discount rate, price numeraire, constant price, and standard conversion factor adjustment. The distribution of benefits is shown in Table A7.7. The project benefits are distributed among five national groups: (i) users of passenger transport, (ii) users of freight transport, (iii) vehicle owners, (iv) labor, and (v) the government and economy of the Lao PDR. Users of passenger transport receive about 29% of total benefits, users of freight transport receive about 24%, vehicle owners receive about 14%, and the economy receives about 31%.

Table A7.7: Distribution of Net Benefits
($ million)

Item	Financial PV	Economic PV	Economic - Financial	Passenger Users	Freight Users	Vehicle Owners	Labor	Economy	Net Benefits
Benefits									
Normal Traffic		59.84	59.84	23.94	23.94	11.97			59.84
Generated		18.18	18.18					18.18	18.18
Time		20.55	20.55	10.27	5.14	5.14			20.55
Diverted		2.63	2.63	1.31	0.66	0.66			2.63
Safety		0.05	0.05	0.03		0.03			0.05
Maintenance		9.45	9.45					9.45	9.45
Costs									
Investment and maintenance	(70.75)	(59.51)	11.25					11.25	11.25
Labor	(12.49)	(10.50)	1.98				1.98		1.98
NPV	(83.24)	40.69	123.93	35.55	29.73	17.79	1.98	38.88	123.93

( ) = negative number, NPV = net present value, PV = present value.
Sources: Asian Development Bank and technical assistance consultants estimates.