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IDA/R2016-0279/1

November 22, 2016

**Closing Date: Tuesday, December 13, 2016
at 6 p.m.**

FROM: Vice President and Corporate Secretary

Lao People's Democratic Republic - Lao Road Sector Project 2

Project Appraisal Document

Attached is the Project Appraisal Document regarding a proposed credit to Lao People's Democratic Republic for the Lao Road Sector Project 2 (IDA/R2016-0279), which is being processed on an absence-of-objection basis.

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Report No: PAD1809

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 18 MILLION
(US\$25 MILLION EQUIVALENT)

TO THE

LAO PEOPLE'S DEMOCRATIC REPUBLIC

FOR A

LAO ROAD SECTOR PROJECT 2

OCTOBER 18, 2016

Transport & ICT Global Practice
EAST ASIA AND PACIFIC REGION

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CURRENCY EQUIVALENTS

(Exchange Rate Effective September 30, 2016)

Currency Unit = Lao Kip (LAK)

LAK 8,091 = US\$1

US\$1.39581 = SDR 1

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

ACCPAC	Accounting Software
ADB	Asian Development Bank
AEC	ASEAN Economic Community
AWPB	Annual Work Plan and Budget
ARAP	Abbreviated Resettlement Action Plan
ASEAN	Association of South East Asian Nations
CBA	Cost Benefit Analysis
COP	Conference of the Parties
CPS	Country Partnership Strategy
CQS	Selection Based on Consultants' Qualifications
DA	Designated Account
DLI	Disbursement Linked Indicator
DoF	Department of Finance, MPWT
DoI	Department of Inspection, MPWT
DONRE	Provincial Department of Natural Resource and Environment
DOP	Department of Personnel, MPWT
DoR	Department of Roads, MPWT
DOT	Department of Transport, MPWT
DPC	Department of Planning and Cooperation, MPWT
DPWT	Provincial Department of Public Works and Transport
ECOP	Environmental Code of Practice
EEP	Eligible Expenditure Program
EGDP	Ethnic Groups Development Plan
EGPF	Ethnic Groups Policy Framework
EIB	European Investment Bank
EIRR	Economic Internal Rate of Return
ERM	Emergency Response Manual
ESD/PTRI	Environment and Social Division, PTRI, MPWT
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESOM	Environment and Social Operations Manual
ESU	Environmental and Social Unit
EU	European Union
GDP	Gross Domestic Product

GHG	Green House Gas
GoL	Government of the Lao People's Democratic Republic
GRM	Grievance Redress Mechanism
GRS	Grievance Redress Service
HDM4	Highway Development and Management Model, Version 4
ICB	International Competitive Bidding
ICR	Implementation Completion and Results Report
ICT	Information and Communication Technology
IDA	International Development Association
IFR	Interim Financial Report
INDC	Intended Nationally Determined Contribution
IRAM	Integrated Road Asset Management
JICA	Japan International Cooperation Agency
KfW	German KfW Development Bank (KfW <i>Entwicklungsbank</i>)
LCS	Least Cost Selection
LRSP/LRSP2	Lao Road Sector Project/ Lao Road Sector Project 2
MDG	Millennium Development Goals
MPI	Ministry of Planning and Investment
MPWT	Ministry of Public Works and Transport
NCB	National Competitive Bidding
NDF	Nordic Development Fund
NPV	Net Present Value
NRSC	National Road Safety Committee
NSCC	National Strategy on Climate Change
NSEDP	National Socio-Economic Development Plan
ODA	Official Development Assistance
OP/BP	Operational Policy/Bank Procedures
OPWT	Office of Public Works and Transport (at district level)
PBC	Performance-based Contracts
PDO	Project Development Objective
POM	Project Operational Manual
PONRE	Provincial Department of Natural Resource and Environment
PPP	Public Private Partnership
PROMMS	Provincial Road Maintenance Management System
PTTI	Public Works and Transport Training Institute, MPWT
QCBS	Quality-Cost Based Selection
RMF	Road Maintenance Fund
RMS	Road Management System
RoW	Right of Way
RPF	Resettlement Policy Framework
SDG	Sustainable Development Goal
SDR	Special Drawing Rights
STEP	Systematic Tracking of Exchanges in Procurement
TA	Technical Assistance
VOC	Vehicle Operating Cost
WBG	World Bank Group

Regional Vice President:	Victoria Kwakwa
Country Director:	Ulrich Zachau
Senior Global Practice Director:	Pierre Guislain
Practice Manager:	Almud Weitz
Task Team Leader:	Sombath Southivong

LAO PEOPLE’S DEMOCRATIC REPUBLIC
Lao Road Sector Project 2

TABLE OF CONTENTS

	Page
I. STRATEGIC CONTEXT	1
A. Country Context.....	1
B. Sectoral and Institutional Context.....	2
C. Higher Level Objectives to which the Project Contributes	5
II. PROJECT DEVELOPMENT OBJECTIVES	6
A. PDO.....	6
B. Project Beneficiaries	6
C. PDO Level Results Indicators and Disbursement Linked Indicator	6
III. PROJECT DESCRIPTION	7
A. Project Components	7
B. Project Cost and Financing	9
C. Lessons Learned and Reflected in the Project Design.....	10
IV. IMPLEMENTATION	11
A. Institutional and Implementation Arrangements	11
B. Results Monitoring and Evaluation	12
C. Sustainability.....	13
V. KEY RISKS	13
A. Overall Risk Rating and Explanation of Key Risks.....	13
VI. APPRAISAL SUMMARY	14
A. Economic Analysis	14
B. Technical.....	15
C. Financial Management.....	16
D. Procurement	17
E. Social (including Safeguards)	18
F. Environment.....	19
G. World Bank Grievance Redress.....	20

Annex 1: Results Framework and Monitoring	21
Annex 1 (B): Disbursement Linked Indicators	25
Annex 2: Detailed Project Description.....	28
Annex 3: Implementation Arrangements	32
Annex 4: Implementation Support Plan	58
Annex 5: Economic and GHG Analysis	63
Annex 6: Building Climate Resiliency.....	66

PAD DATA SHEET
Lao People's Democratic Republic
Lao Road Sector Project 2 (LRSP2) (P158504)
PROJECT APPRAISAL DOCUMENT

EAST ASIA AND PACIFIC
Transport & ICT Global Practice

Report No.: PAD1809

Basic Information			
Project ID P158504	EA Category A - Full Assessment	Team Leader(s) Sombath Southivong	
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints ☐		
	Financial Intermediaries ☐		
	Series of Projects ☐		
Project Implementation Start Date 13-Dec-2016	Project Implementation End Date 28-Feb-2022		
Expected Effectiveness Date 01-Mar-2017	Expected Closing Date 31-Aug-2022		
Joint IFC No			
Practice Manager/Manager Almud Weitz	Senior Global Practice Director Pierre Guislain	Country Director Ulrich Zachau	Regional Vice President Victoria Kwakwa
Borrower: Lao People's Democratic Republic (Lao PDR)			
Responsible Agency: Ministry Of Public Works and Transport			
Contact:	Dr. Bounchanh Sinthavong	Title:	Minister
Telephone No.:	856-20-99901325	Email:	bounchanh.s@hotmail.com
Project Financing Data(in USD Million)			
☐ Loan	☐ IDA Grant	☐ Guarantee	
☒ Credit	☐ Grant	☐ Other	

Total Project Cost:		47.40			Total Bank Financing:		25.00			
Financing Gap:		0.00								
Financing Source					Amount					
BORROWER/RECIPIENT					10.00					
International Development Association (IDA)					25.00					
Nordic Development Fund (NDF)					12.40					
Total					47.40					
Expected Disbursements (in USD Million)										
Fiscal Year	2016	2017	2018	2019	2020	2021	2022	2023	0000	0000
Annual	0.00	0.50	2.50	6.00	7.00	7.00	2.00	0.00	0.00	0.00
Cumulative	0.00	0.50	3.00	9.00	16.00	23.00	25.00	25.00	0.00	0.00
Institutional Data										
Practice Area (Lead)										
Transport & ICT										
Contributing Practice Areas										
Social, Urban, Rural and Resilience Global Practice										
Proposed Development Objective(s)										
The Project Development Objective (PDO) is to strengthen maintenance systems to improve reliable road connectivity in Lao PDR, and to provide immediate and effective response in case of an Eligible Crisis or Emergency.										
Components										
Component Name						Cost (USD Millions)				
Component 1: Climate Resilient Road Maintenance						36.90				
Component 2: Institutional Strengthening						8.50				
Component 3: Project Management						2.00				
Component 4: Contingent Emergency Response						0.00				
Systematic Operations Risk- Rating Tool (SORT)										
Risk Category								Rating		
1. Political and Governance								Substantial		
2. Macroeconomic								Substantial		
3. Sector Strategies and Policies								Moderate		

4. Technical Design of Project or Program	Moderate		
5. Institutional Capacity for Implementation and Sustainability	Substantial		
6. Fiduciary	Substantial		
7. Environment and Social	Substantial		
8. Stakeholders	Moderate		
9. Other	Low		
OVERALL	Substantial		
Compliance			
Policy			
Does the project depart from the CAS in content or in other significant respects?	Yes [] No [X]		
Does the project require any waivers of Bank policies?	Yes [] No [X]		
Have these been approved by Bank management?	Yes [] No []		
Is approval for any policy waiver sought from the Board?	Yes [] No [X]		
Does the project meet the Regional criteria for readiness for implementation?	Yes [X] No []		
Safeguard Policies Triggered by the Project	Yes	No	
Environmental Assessment OP/BP 4.01	X		
Natural Habitats OP/BP 4.04	X		
Forests OP/BP 4.36	X		
Pest Management OP 4.09		X	
Physical Cultural Resources OP/BP 4.11	X		
Indigenous Peoples OP/BP 4.10	X		
Involuntary Resettlement OP/BP 4.12	X		
Safety of Dams OP/BP 4.37		X	
Projects on International Waterways OP/BP 7.50		X	
Projects in Disputed Areas OP/BP 7.60		X	
Legal Covenants			
Name	Recurrent	Due Date	Frequency
Institutional Arrangements (Section I.A, Schedule 2 of Financing Agreement)	X		CONTINUOUS

Description of Covenant			
Obligations of the Recipient to maintain, at all times during the implementation of the Project, Project implementation structures within MPWT, DPWT and OPWT with functions and resources satisfactory to the Association, and with staff in adequate numbers and with qualifications, experience and terms of reference satisfactory to the Association.			
Name	Recurrent	Due Date	Frequency
Project Operational Manual (Section I.B, Schedule 2 of Financing Agreement)	X		CONTINUOUS
Description of Covenant			
Obligation of the Recipient to carry out the Project in accordance with the Project Operational Manual, and not amend, waive or abrogate any provisions of the manual unless the Association agrees otherwise in writing.			
Name	Recurrent	Due Date	Frequency
Memoranda of Understanding (Section I.C, Schedule 2 of Financing Agreement)		Three months after effectiveness	
Description of Covenant			
Obligations of the Recipient to enter into an MOU with each Target Province for the purpose of implementing the Project, on terms and conditions satisfactory to the Association.			
Name	Recurrent	Due Date	Frequency
Annual Work Plans and Budgets (Section I.D, Schedule 2 of Financing Agreement)	X	June 1 of each year	Yearly
Description of Covenant			
Obligations of the Recipient to furnish to the Association an annual work plan and budget for the Project, in form and substance satisfactory to the Association, covering the activities and expenditures proposed for each government fiscal year, including sources of funding, and implement the activities under the Project in accordance with such plan and budget.			
Name	Recurrent	Due Date	Frequency
Technical and Procurement Audits (Section I.E, Schedule 2 of Financing Agreement)	X		Yearly
Description of Covenant			
The Recipient shall: (i) not later than March 31, 2018, appoint and thereafter maintain independent technical and procurement auditor(s), with terms of reference and qualifications satisfactory to the Association; and (ii) not later than June 30 of each year, commencing June 30, 2018 furnish the reports of the independent technical and procurement auditor(s), all in accordance with the verification protocol and procedures in the POM.			
Name	Recurrent	Due Date	Frequency
Environmental and Social Safeguards (Section I.F, Schedule 2 of Financing Agreement)	X		CONTINUOUS

Description of Covenant			
Obligation of the Recipient to ensure that (i) the Project is carried out in accordance with the provisions of the ESMF, RPF and EGPF and all site-specific safeguard instruments, and not amend, waive or abrogate any of these instruments unless the Association agrees otherwise in writing, and report on the status of implementation as part of the semi-annual progress reports; and (ii) all terms of reference for any technical assistance or studies and capacity building activities developed under the Project are consistent with, and pay due attention to, the Association’s environmental and social safeguards policies in accordance with the ESMF guidelines.			
Name	Recurrent	Due Date	Frequency
Contingent Emergency Response (Section I.H, Schedule 2 of Financing Agreement)	X		CONTINUOUS
Description of Covenant			
Obligation of the Recipient to adopt a satisfactory Emergency Response Manual for Component 4 of the Project and, in the event of an Eligible Crisis or Emergency, ensure that the activities under said component are carried out in accordance with such plan and all relevant safeguard requirements.			
Conditions			
Source Of Fund	Name		Type
IDA	Effectiveness Conditions (Article IV 4.01 of the Financing Agreement)		Effectiveness
Description of Condition			
The Additional Condition of Effectiveness is that the Co-financing Agreement between Lao PDR and NDF has been executed and delivered and all conditions precedent to its effectiveness or to the right of the Recipient to make withdrawals under it (other than the effectiveness of this Agreement) have been fulfilled.			
Source Of Fund	Name		Type
IDA	Withdrawal Conditions (Section IV.B, Schedule 2 of Financing Agreement)		Disbursement
Description of Condition			
Disbursement conditions specifying that the Recipient may not withdraw the proceeds of the Financing as may be allocated to Component 4 unless an Eligible Crisis or Emergency has occurred, all related safeguards instruments and requirements have been completed, the emergency response implementing entities have adequate staff and resources, and the Recipient has adopted the Emergency Response Manual, acceptable to the Association.			
Source Of Fund	Name		Type
IDA	Withdrawal Conditions (Section IV.B, Schedule 2 of Financing Agreement)		Disbursement
Description of Condition			
Disbursement conditions specifying that the Recipient may not withdraw the proceeds of the Financing allocated to the DLI sub-component unless and until it has furnished evidence that it has achieved the respective DLI targets and incurred eligible expenditures.			

Team Composition				
Bank Staff				
Name	Role	Title	Specialization	Unit
Sombath Southivong	Team Leader (ADM Responsible)	Senior Infrastructure Specialist	Infrastructure	GTI02
Simon B. Chenjerani Chirwa	Senior Procurement Specialist	Senior Procurement Specialist	Procurement	GGO08
Khamphet Chanvongnaraz	Procurement Specialist (ADM Responsible)	Procurement Specialist	Procurement	GGO08
Frederick Yankey	Senior Financial Management Specialist	Senior Financial Management Specialist	Financial Management	GGO20
Siriphone Vanitsaveth	Financial Management Specialist	Sr Financial Management Specialist	Financial Management	GGO20
Asif Faiz	Team Member	Consultant	Transport	GTIDR
Chanin Manopiniwes	Team Member	Infrastructure Economist	Economic Analysis	GTI02
Chaohua Zhang	Safeguards Specialist	Lead Social Development Specialist	Social Safeguards	GSU06
Christopher R. Bennett	Team Member	Lead Transport Specialist	Infrastructure	GTI02
Geoffrey John Kurgan	Team Member	Consultant	Traffic Safety	GTI02
Imogene B. Jensen	Team Member	Consultant	Transport	GTIDR
Juana Veronica Guillermin Mendizabal Joffre	Team Member	Consultant	Institutional	GSURR
Manush Hristov	Counsel	Senior Counsel	Legal	LEGES
Paul Vallely	Team Member	Program Leader	Transport	ECCU8
Reaksmey Keo Sok	Team Member	Consultant	Financial Management	GGO20
Satoshi Ishihara	Safeguards Specialist	Senior Social Development Specialist	Social Safeguards	GSU02
Simon David Ellis	Peer Reviewer	Lead Transport Specialist	Infrastructure	GTI03
Van Anh Thi Tran	Team Member	Sr Transport. Spec.	Traffic Safety	GTI02
Vatthana Singharaj	Team Member	Program Assistant	Program Assistant	EACLF

Vilayvanh Phonepraseuth	Team Member	Operations Analyst	Operations Analyst	GEE02	
Waraporn Hirunwatsiri	Safeguards Specialist	Senior Environmental Specialist	Environmental Safeguards	GEN2B	
Wasittee Udchachone	Environmental Specialist	Consultant	Environmental Safeguards	GEN2A	
Extended Team					
Name	Title	Office Phone	Location		
Locations					
Country	First Administrative Division	Location	Planned	Actual	Comments
Lao People's Democratic Republic	Xiengkhouang	Xiengkhouang	X		
Lao People's Democratic Republic	Xayabouly	Xayabouly	X		
Lao People's Democratic Republic	Phongsaly	Phongsaly	X		
Lao People's Democratic Republic	Oudomxay	Oudomxay	X		
Lao People's Democratic Republic	Houaphan	Houaphan	X		
Lao People's Democratic Republic	Bolikhamxay	Bolikhamxay	X		

I. STRATEGIC CONTEXT

A. Country Context

1. The economy of Lao PDR has been expanding at an average of 7.5 percent per annum for the past 15 years. Growth has been boosted by the resource sector and by accommodative macroeconomic policies on both the fiscal and monetary fronts, and Gross Domestic Product (GDP) growth is projected to remain stable at around seven percent in 2016 when key power generation plants and new power projects come fully on stream.
2. Despite strong economic growth, poverty remains high in Lao PDR, especially in rural areas and among ethnic groups. Lao PDR achieved the Millennium Development Goal (MDG) target of halving extreme poverty by 2015 and while poverty declined from 33.5 percent in 2002/03 to 23 percent in 2012/13, poverty reduction and growth in consumption have not been commensurate to economic growth.
3. The country has made significant progress in becoming more integrated both internally, and with the regional and international trading system. Lao PDR completed its accession to the World Trade Organization in February 2013. The country is also a member of the Association of Southeast Asian Nations (ASEAN) Economic Community (AEC) established in December 2015.
4. Lao PDR is one of the ASEAN region's most vulnerable countries to natural hazards with the highest 100-year Probable Maximum Loss relative to GDP (as high as 11.7 percent). Five major storms or tropical cyclones have affected the country over the past two decades. In 2009, Typhoon Ketsana resulted in estimated damages and losses of US\$58 million. In 2011, Typhoon Haima and Tropical Storm Nok-Ten caused damages of US\$66 million and US\$72 million, respectively. In 2013, a series of storms caused extensive flooding affecting 350,000 people in 12 provinces (out of a total of 18). Global and regional climate change projections suggest that natural disasters in Lao PDR are likely to intensify and become more frequent. The increase in intensity and in frequency of extreme events (primarily flooding and landslides) is expected to have implications for agriculture, food security, infrastructure, and lives.
5. The Government of Lao PDR (GoL) recognizes the strong link between economic development, sustainability, and the need to mainstream environmental considerations, including incorporating action on climate change into its development plans. A Climate Change and Disaster Law is currently being developed with expected approval in 2017. The National Strategy on Climate Change (NSCC) was approved in early 2010. The financial needs for implementing the NSCC's identified mitigation and adaptation policies and actions stand at approximately US\$2.4 billion until 2020, out of which US\$190 million is for adaptation in the transport sector. The NSCC forms the basis for the country's Intended Nationally Determined Contribution (INDC) presented to the Conference of the Parties in 2015 (COP21).
6. Since the 2000s Lao PDR has progressively devolved administrative responsibilities for public service delivery to local levels. Central government focuses on policy, financing, regulatory frameworks and oversight, while planning and implementation responsibilities are delegated to provinces and districts. The process is intended to help improve service delivery and

respond to local needs. It has nonetheless faced important challenges, particularly weak monitoring and regulatory capacity at the central level, inadequate technical and managerial capacities at local levels, and poor coordination between the two. These problems have had a negative impact on fiscal stability, with provincial investments expanding unchecked and becoming a heavy contributor to government debt. The Constitution of Lao PDR was amended in 2015 and changes include the establishment of provincial assemblies that have the mandate to review, approve, and oversee implementation of provincial socio-economic development and budget plans.

B. Sectoral and Institutional Context

7. The transport sector in Lao PDR is dominated by the road sub-sector, which represents 98 percent of total passenger-km traveled, and 86 percent of freight moved in the country. Road transport remains at the core of the country's policy "from land-locked to land-linked" and central to economic development and poverty reduction. Therefore, the road network is the key priority for the transport sector, linking people to resources, markets, and public services.

8. The road sector is under the overall jurisdiction of the Ministry of Public Works and Transport (MPWT). With the ongoing devolution of responsibilities, MPWT has progressively delegated maintenance and operational tasks for local roads (Provincial, District, and Rural roads) to the Department of Public Works and Transport (DPWT) of each province, while retaining a mandate for policy making, financing, strategic planning, oversight, and management for the road sector. Maintenance and operational tasks for National roads remain with MPWT.

9. **Road Infrastructure.** Lao PDR's road density (per sq.km. of land area) is about 30 percent lower than the ASEAN average, closer to that of Philippines and Myanmar. However, due to low population density (29 people per sq.km.), its road length per population is among the highest in ASEAN. The road network has a total length of 51,600 km, consisting of National (14 percent), Provincial (18 percent), District (12 percent), Rural (44 percent), Urban (7 percent), and Special roads (5 percent). National roads (7,400km), a large share of which were built 15 to 20 years ago, are 78 percent paved with 62 percent in good and fair condition. However, only 9 percent of the Local roads (comprised of Provincial, District and Rural roads; 38,184km) are paved, with 50 percent in good and fair condition. The GoL faces important and interrelated challenges in maintaining the road asset in good and fair condition to enable continued economic growth, access to services, and shared prosperity.

10. **Climate impacts and emergency repair.** Lao PDR is highly susceptible to natural hazards (mainly floods, drought, and storms), and the local transport infrastructure—especially unsealed roads—is particularly vulnerable to the climate change threat as a result of generally low design and construction standards, lack of adequate maintenance, and technical designs that have not accounted for increased climate variability. Lao PDR has a total land area of approximately 236,800 square kilometers, 80 percent of which is mountainous. The vulnerability of the road network is higher in the northern mountainous region with high risk of slope failure, and flash flood. The growing impacts of natural disasters and climate change on the road network have resulted in a growing maintenance backlog and increased the need for emergency repair, which at present accounts for approximately 30 percent of the overall annual road maintenance budget. The importance of increased climate resilience for roads is now recognized

as a potentially significant factor in reducing emergency repair expenditures. More detailed information on the climate change vulnerability context is included in Annex 6.

11. **Road Sector Financing.** Financing of the transport sector as a whole has three main sources including (i) Government budget, (ii) Road Maintenance Fund (RMF), and (iii) ODA (Table 1). The annual budget for the road sector increased from US\$82 million in FY11/12 to US\$213 million in FY14/15. This budget covers both construction and maintenance (Table 2). Development partners currently funding the road sector in Lao PDR as part of official development assistance include the World Bank Group (WBG), Japan International Cooperation Agency (JICA), German (KfW) Development Bank, Asian Development Bank (ADB), China, and Thailand. Most of the official development assistance is allocated to construction and rehabilitation.

Table 1: Government Roads Sector Budget for the Period 2011-2015 (in US\$ million)

Funding sources	FY 10-11	FY 11-12	FY 12-13	FY 13-14	FY 14-15
Government Budget	8	13	17	18	15
RMF	45	38	52	49	46
ODA	29	193	158	127	152
Total	82	244	227	195	213

Source: Ministry of Public Works and Transport

Notes: Includes budget for maintenance and new construction.

Table 2: Financing of National and Local Roads (in US\$ million)

Activity	FY 10-11	FY 11-12	FY 12-13	FY 13-14	FY 14-15
Construction	31	204	174	138	168
Maintenance	30	33	50	37	43
Others	21	7	4	20	2
Total	82	244	227	195	213

Source: Ministry of Public Works and Transport

Notes: Includes GoL, RMF, and ODA funding.

Maintenance includes routine maintenance, periodic maintenance, emergency repair, and disaster recovery.

12. **Road Maintenance Fund (RMF).** The RMF is the key mechanism to ensure predictable and sustained allocations of funds for road maintenance. Its main source of funds is a fuel levy and the annual revenue generated by the RMF has been increasing steadily from US\$2 million in 2002 (when the fund became operational) to US\$46 million in 2015 and expects to be increased up to US\$ 70 million in 2016. As per Prime Minister Decree 130/PM of 2016, national roads receive 80 percent the RMF allocation and local roads the remaining 20 percent.

13. **Arrears.** Arrears and liabilities related to new road construction and disaster emergency repair on existing roads have accumulated in recent years, reaching an estimated US\$150 million for road emergency repair alone, while the total amount of arrears is being verified by GoL. Arrears have resulted from the widespread use of IOU contracts under which contractors pre-finance civil works without receiving GoL's payments for the initial period. Clearing arrears, as well as financing and managing liabilities, remain core issues for the overall financial

sustainability of the sector. As part of the actions to address the issue, GoL issued Prime Minister Decree 60/PM in 2015 stopping new IOU contracts, with the next step being the development of sector financing and policy frameworks and enhancement of the prioritization systems to increase efficiency. While the halt of new IOU contracts has been an important step, a problem remains with delayed settlement of payments to contractors of up to four years for emergency maintenance and disaster recovery. Further, as government expects the arrears to be paid largely out of RMF proceeds, clearing the existing arrears is putting strong pressure on government resources, reducing the overall funding envelope for road maintenance, and compounding the maintenance backlog.

14. In line with GoL's commitment to clear arrears, about 45 percent of the RMF is used annually to this end. As the RMF allocation is decided on an annual basis, this does not allow much room for medium-term planning. Also, while work is underway to ascertain the full extent of the arrears, the total amount is not yet fully known. Thus quantification of the resources and time requirements for solving the arrears problem has yet to be done. In the meantime, as part of fiscal stability measures, GoL has set an annual ceiling on the RMF allocation that for 2017 is approximately US\$45 million or 64 percent of the total funds available for the year.

15. **Overloading.** The geographical location of Lao PDR, on main trade routes between Thailand, China, and Vietnam, has resulted in the country becoming a key transit country. While this is a positive development, it has also resulted in truck overloading, from national and international freight that is increasing at an alarming rate and affecting the rate of deterioration of the network. Most of the main roads in Lao PDR were designed and built for 8.2 ton of standard axle loads, while the current ASEAN's minimum standard is 9.1 ton. Overloading particularly affects the National roads that serve the bulk of transit transport, including Roads 3, 7, 8, 9, 12 and 13. Overloading is also an issue on local roads. The GoL, with assistance from ADB, is in the process of re-introducing overloading controls and regulation, and will also purchase three new weigh scales with support from JICA, ADB and IDA.

16. **Road maintenance planning system.** MPWT has been using a road management system (RMS) adapted from Highway Development and Management Model, Version 4 (HDM4) for National roads and a Provincial Road Maintenance and Management System (PROMMS) set up in the late 2000s for sub-national roads. Although the system for planning and prioritization of road maintenance is in place, it has not yet been effectively implemented, as competing needs among maintenance, construction, and disaster emergency repair, coupled with low quality data, have limited its use. In this context and complementing sector policy to increase allocation to maintenance, MPWT aims to mainstream climate resilience in road planning; improve the quality and timeliness of data; and prioritize technical capacity building, particularly for local levels.

17. **Road Safety.** In addition to the road maintenance issues, road safety is a growing concern for Lao PDR. Growth in vehicle registration has been high relative to international comparators, at around 15 percent per annum across all vehicle types between 2007 and 2012. Reported road fatalities more than doubled between 2000 and 2010 (from 358 to 790), and increased to 1,054 in 2014. Nearly three-quarters of these fatalities are motorcyclists. Regionally, the World Health Organization places Lao PDR third behind Thailand and Vietnam—countries

with significantly higher motorization—in terms of the share of GDP (2.7 percent in 2010 for Lao PDR) lost because of road crash related fatalities. Lao PDR has established a National Road Safety Committee, but more support is needed to operationalize road safety management.

18. The ongoing IDA financed Lao Road Sector Project (LRSP)¹ has successfully supported GoL to introduce the building blocks for integrated road asset management and sector governance. The proposed LRSP2 will build on the work initiated through LRSP and will provide a practical opportunity and a framework for supporting MPWT's efforts towards a sector-wide approach. The project will have parallel co-financing from the Nordic Development Fund (NDF) and it is envisaged that the European Investment Bank (EIB) and possibly the European Union (EU) will provide complementary financing at a later stage.

C. Higher Level Objectives to which the Project Contributes

19. The project is aligned with the goals of the Government's Eighth National Socio-Economic Development Plan (NSED) 2016-2020, which was approved by the National Assembly in December 2015. The NSED provides an opportunity to focus policy support for sustained and inclusive economic growth, based on green growth principles that will help lessen the effects of natural shocks. The Project supports Lao PDR efforts towards achieving Sustainable Development Goal (SDG) 9 to build resilient infrastructure and SDG 13 to take urgent action to address the impacts of climate change. The project directly contributes to the Government's National Transport Sector Plan to 2020 and Strategy to 2025, in which sustaining the condition of the existing infrastructure is high priority.

20. With its emphasis on strengthening institutional capacity for road asset management and strong climate resilience that will result in improved and reliable connectivity, the proposed Project supports the World Bank Group's twin goals of ending extreme poverty and boosting shared prosperity. The project is consistent with the World Bank Group's Lao PDR Country Partnership Strategy (CPS) for 2012-2016, discussed by the Board of Executive Directors on March 8, 2012 (Report No. 66692) and the World Bank Country Partnership Framework for the period 2017-2021, currently under preparation. The project will help to increase access to improved infrastructure services in transport (CPS Strategic Objective 1) and enable improved access to public services and markets, specifically among the large rural majority, and thus contribute to inclusive development (CPS Strategic Objective 3). The project contributes to the CPS's cross cutting theme of enhancing public sector management through strengthening road sector capacities.

¹ P102398 Lao Road Sector Project (US\$48.8 million) was approved on March 25, 2010 and the project closing date is 30 September 2017.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

21. The Project Development Objective (PDO) is to strengthen maintenance systems to improve reliable road connectivity in Lao PDR, and to provide immediate and effective response in case of an Eligible Crisis or Emergency.

B. Project Beneficiaries

22. The Project will benefit the country and road sector as a whole through a stronger institutional framework for road maintenance. The Project will fund technical assistance and a capacity development program to strengthen MPWT's and DPWT's capacities for sector financing, planning, integration of climate change adaptation into sector strategies, business processes, standard designs for climate resilient road asset management, governance and accountability, monitoring and evaluation.

23. The project will finance road maintenance works in provinces identified as highly vulnerable to natural hazards. These six provinces also present some of the highest levels of poverty in the country. Phongsaly, Houaphan, Oudomxay, Xiengkhouang provinces are particularly vulnerable to flash floods, while Xayabouly and Bolikhamxay provinces experience frequent landslides and backwater flooding. The number of potential beneficiaries living in the six provinces is as high as 1.6 million people who will benefit from improved and reliable road connectivity. At present, disaster related road closures in these provinces directly affect peoples' access to basic services and markets, and negatively affect incomes and livelihoods. The project will establish various disaster resilient solutions that can be scaled up nationwide in the future.

C. PDO Level Results Indicators and Disbursement Linked Indicator

24. The following outcome level indicators have been selected to measure success in the achievement of the Project Development Objective. Annex 1 provides the detailed Project Results Framework.

- (a) Share of total provincial and district road network in project area in good and fair condition (percentage) (Currently 50 percent)
- (b) Share of the rural population with access to an all-season road (Currently National 56 percent; six project provinces 53 percent)
- (c) Preparation and implementation of three-year rolling climate resilient road maintenance plans, on annual basis (Yes/No)
- (d) Direct project beneficiaries (Number) – (Core)
- (e) Female beneficiaries (Percentage) – (Supplemental) (Core)

25. In addition to the PDO and Intermediate Level Indicators, the Project has been designed to link disbursement to the following Disbursement Linked Indicator (DLI). The DLI framework and protocol for monitoring its achievement is presented in Annex 1(B).

DLI-1 Routine Maintenance. Length of provincial and district roads in the Target Provinces maintained in good and fair condition. The DLI target will be achieved if the targets of the pre-defined levels of services of routine maintenance are achieved.

III. PROJECT DESCRIPTION

A. Project Components

26. The Project has been designed as a program to support the strengthening of maintenance systems that will result in improved connectivity. The Project will support institutional development through the preparation of financing and policy frameworks, improved planning and prioritization, and governance systems, and technical capacity for the road sector as a whole in order to maximize the effectiveness of public expenditure and allow for the incremental increase in the length of the provincial roads network in good and fair condition, its climate resiliency and safety. The Project will finance periodic maintenance and routine maintenance works in six provinces (Phongsaly, Houaphan, Oudomxay, Xiengkhouang, Xayabouly and Bolikhamxay).

27. The Project consists of four components: (i) Climate Resilient Road Maintenance, (ii) Institutional Strengthening, (iii) Project Management, and (iv) Contingent Emergency Response.

28. **Component 1: Climate Resilient Road Maintenance** (Total US\$36.9 million; of which IDA US\$17.2 million; NDF US\$9.7 million; RMF US\$7 million; Provinces US\$3 million). To finance the climate resilient periodic maintenance and routine maintenance works program in Phongsaly, Houaphan, Oudomxay, Xiengkhouang, Xayabouly and Bolikhamxay provinces, including technical assistance for design and supervision of works.

1.1 Periodic Maintenance and Spot Improvements (Total US\$20.9 million; IDA US\$14.2 million; NDF US\$6.7 million). Carrying out climate resilient periodic maintenance and spot improvements of provincial and district roads in the Target Provinces, consisting of: (a) roads selected for IDA financing in accordance with the respective Annual Work Plans and Budget (AWPBs); and (b) roads selected for financing by NDF in accordance with the respective AWPBs.

Climate resilience interventions may include elevating flood prone road sections, paving road sections with steep slopes and sections passing through large communities, drainage improvement or construction, and slope improvement and stabilization, as required. Under this component road safety issues would be considered, such as road furniture and traffic calming options.

1.2 Routine Maintenance (Total US\$13 million; IDA US\$3 million; GoL US\$10 million including RMF US\$7 million; Provinces US\$3 million). Carrying out routine maintenance of provincial and district roads in the Target Provinces.

1.3 Design and Supervision (Total US\$3 million NDF). Provision of technical and operational assistance for the design and supervision, procurement, quality assurance,

contract management, and other technical management of the works carried out under Parts 1.1 and 1.2 of the Project.

29. **Component 2: Institutional Strengthening** (Total US\$8.5 million; IDA US\$5.8 million; NDF US\$2.7 million). To provide technical assistance, goods, training, and operating costs for (a) Strategic Planning and Financing; (b) Sector Governance; (c) Climate Resilient Road Asset Management; and (d) Capacity Building.

2.1 Strategic Planning and Financing (US\$0.6 million IDA). Carrying out of a program of activities to: (a) strengthen the capacity to update and operationalize MPWT's national sector strategy and action plan; (b) strengthen the capacity to improve transport sector policy and financing frameworks; and (c) strengthen the capacity for strategic management at both MPWT and DPWT.

2.2 Sector Governance (Total US\$2.3 million IDA). Carrying out of a program of activities to: (a) improve the integrated road asset management system (IRAM); (b) upgrade and roll out the road sector information and communication technology system including (i) e-archive, (ii) e-procurement, and (iii) information disclosure and citizen engagement; (c) upgrade the accounting system and expenditure tracking tools in the road sector; (d) strengthen the internal control systems of provincial road authorities; and (e) strengthen overloading control through the provision of a weighting station on national road NR13 in Bolikhamxay province.

2.3 Climate Resilient Road Asset Management (Total US\$3.2 million; IDA US\$0.5 million; NDF US\$2.7 million). Carrying out of a program of activities: (a) for financing by NDF to (i) develop MPWT's climate change action plan; (ii) operationalize hazard maps into practical vulnerability maps for planning of road infrastructure maintenance or investments; (iii) review and update current tools for road management and maintenance planning; (iv) prepare a medium-term climate resilient national road preservation plan; (v) review and update road sector designs, standards and guidelines to incorporate climate resilience aspects; and (vi) design mechanisms to strengthen emergency road repair management; and (b) for financing by IDA to carry out annual field surveys to include necessary data in the road management information systems for risk-based planning.

2.4 Capacity Building (Total US\$2.4 million IDA). Carrying out of a program of activities to: (a) strengthen the operating, fiduciary and human resource systems of MPWT and provincial and district road authorities; (b) strengthen the capacity of MPWT and other relevant government agencies to assess and manage the technical, environmental and social aspects of potential future public private partnerships and performance based contracting modalities in the road sector; (c) develop or update environmental and social management manuals and procedures in the road sector; and (d) develop and implement traffic safety action plans, audit manuals, training programs and public awareness raising campaigns.

30. **Component 3: Project Management** (Total US\$2 million IDA). Provision of technical and operational assistance for the day-to-day management, monitoring and evaluation of the Project, and the carrying out of technical and financial audits.

31. **Component 4: Contingent Emergency Response:** (US\$0 million). A contingency emergency response component with a provisional allocation of zero dollars is included under the project in accordance with OP10.00, Paragraphs 12 and 13, for projects in situations of urgent need of assistance or capacity constraints. This will allow for rapid allocation of project proceeds in the event of the Government declaring that a crisis or emergency has occurred and the World Bank Group (WBG) agreeing with such determination. This component would finance public and private sector expenditures on a positive list of goods and/or specific works, goods, services and emergency operation costs required for emergency recovery. An Emergency Response Operations Manual will apply to this component, detailing financial management, procurement, safeguards and any other necessary implementation arrangements.

B. Project Cost and Financing

32. The total project financing requirements are estimated at US\$47.4 million, inclusive of price and physical contingencies. The project is designed as an Investment Project Financing and would be financed through an IDA Credit of US\$25 million equivalent. The Government of Lao PDR will provide US\$10 million (US\$7 million from the RMF and US\$3 million provincial budget from the six participating provinces), and NDF will provide a Grant of EUR 5 million (approximately US\$5.6 million equivalent), and a Credit of EUR 6 million (approximately US\$6.8 million equivalent). Table 3 details the project financing.

Table 3: Project Cost and Financing

Project Component	Project Costs US\$ m	IDA US\$ m	NDF US\$ m	RMF US\$ m	Province US\$ m	IDA financing (%)
Component 1: Climate Resilient Road Maintenance	36.9	17.2	9.7	7.0	3.0	47%
Component 2: Institutional Strengthening	8.5	5.8	2.7	0.0	0.0	68%
Component 3: Project Management	2.0	2.0	0.0	0.0	0.0	100%
Component 4: Contingent Emergency Response	0.0	0.0	0.0	0.0	0.0	100%
Sub-total 1+2+3+4	47.4	25.0	12.4	7.0	3.0	
Total Financing Required	47.4	25.0	12.4	7.0	3.0	

33. **Complementary Financing.** EIB and EU are anticipated to provide complementary financing at a later stage of EUR 20 million, and EUR 5 million, respectively. Activities to be financed may include selected contracts for climate resilient periodic maintenance in targeted provinces, traffic safety, capacity building, and overloading control.

34. **Disbursement Linked Indicator.** Under Component 1.2 on Routine Maintenance, DLI-based financing is introduced in order to support GoL's aims to move towards results based road asset management. The routine maintenance program will include a total of 2,856 km cumulatively maintained over the life of the project, broken into incrementally increasing annual

targets of kilometers of road maintained in good and fair condition. The average cost per kilometer of routine maintenance is estimated at US\$1,200 per km. Thus, the total cost of the routine maintenance program over the life of the project is approximately US\$13 million. GoL will finance US\$10 million, i.e. around 77 percent of the total cost (RMF US\$7 million and the six participating provinces US\$3 million), and IDA will cover the remaining US\$3 million i.e. around 23 percent of the cost. The DLI Value is calculated by the total length of the road receiving routine maintenance each year, multiplied by the average of SDR 212 per km (US\$295.5 equivalent). Contingency is included across the DLI values (See Annex 1B for details). This is a scalable DLI, which allows flexibility of disbursement if the annual targets (Table 4) have been partially met. The achievement of targets will be verified at the end of each 12-month period and payments made subject to works being monitored with digitized road maps, photo/video confirmation of the before and after condition, contract information, and maintenance history and expenditure details. The Integrated Road Asset Management System (IRAM) for local roads, which will be further developed and operationalized during the first two years of the project implementation, will be used for the monitoring from the third year onwards.

Table 4: Cumulative Targets for Routine Maintenance

Activity/Year	2017	2018	2019	2020	2021
Routine Maintenance – annual target (in km)	0	2,169	2,432	2,694	2,856

C. Lessons Learned and Reflected in the Project Design

35. **Effective routine maintenance can help mitigate the effects of climate change.** The ongoing LRSP shows that lack of timely maintenance and repair can lead to more budget being used for emergency works, creating a downward spiral for agencies already facing fiscal challenges. The project will consider a variety of options in identifying the appropriate modalities to ensure effective routine maintenance is carried out.

36. **Moving from a section-by-section to a network approach for climate resilient road asset management can yield positive results.** The vulnerability of the road network is often attributed to inappropriate designs, low standards and lack of maintenance. All of these factors can result in vast loss and damage during extreme climatic events. This problem is exacerbated in the Lao PDR context, where there is tension between low traffic volumes and the need to strengthen large portions of the network. The project will help tackle the issues of poor quality and vulnerability by incorporating climate change adaptation aspects into sector policies and strategies, developing a transport sector climate change action plan, strengthening the maintenance regime, allocating the budget more optimally, and strengthening planning, prioritization, and implementation processes. In addition, the project will help to improve technical designs and guidelines, and will support flood mapping, landslides inventory, and technical training. This holistic view should increase the overall climate resilience of the road network.

37. **Importance of appropriate road asset management practices at local levels.** The LRSP has invested in developing road maintenance planning and prioritization systems that are now in place. As the decentralization process is rolled out, it is the local levels that are now most in need of support to develop procedures, standards, and management and technical capacities. It

is becoming increasingly apparent that limited capacity at local level creates challenges for introducing effective asset management. The LRSP2 will adapt and scale up the work conducted at central level and roll out the systems to provincial and district levels, recognizing that local roads also have a significant climate resilience deficit and regional lessons indicate such roads are particularly vulnerable to natural hazards and are comparatively in worse condition than National roads.

38. **The decentralization of Road Asset Management tasks will require a strong level of vertical coordination.** Based on lessons learned from the implementation of LRSP and in a context in which provincial levels are being assigned primary responsibilities for road asset management, the LRSP2 will put greater emphasis on coordination with provincial authorities to ensure their full engagement in project activities.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

39. The Ministry of Public Works and Transport is the Project Implementing Agency. The Project will be implemented through Government structures (See Annex 3).

40. **Project Oversight and Coordination.** MPWT's Department of Planning and Cooperation (DPC) will be responsible for overseeing the overall project coordination and management. DPC will coordinate with other MPWT departments providing supporting management functions including: (i) the Department of Finance (DoF) which will have overall responsibility for financial management of the project and will provide procurement support to departments implementing project activities; and (ii) the Department of Inspection (DoI) which will apply internal controls to project activities, and will oversee and report on the implementation of the project grievance redress mechanism. The ICT Division of the Cabinet office will oversee all activities related to the administration of the IRAM, e-procurement, disclosure of bidding documents, and MPWT's website management.

41. **Project Implementation.** MPWT's Department of Roads (DoR) will be responsible for overseeing the implementation of Component 1 on climate resilient road maintenance including monitoring progress, supervising the procurement process, including prior review, and chairing the Procurement Evaluation Committee, reviewing work plans, and allocating funds to routine and periodic maintenance activities. DoR will also supervise data collection and will conduct data analysis. In line with the national decentralization policy, the role of the Department of Public Works and Transport (DPWT) in each participating Province will be to carry out local road maintenance prioritization using PROMMS, preparation of the provincial three-year rolling maintenance plan and provincial road sector budget, conduct procurement under the supervision of DoR, contract management, quality control, and reporting. Responsibilities for field data collection are with DPWT under the supervision of DoR. The design and supervision consultants will provide implementation support to DPWT for data collection, planning, procurement, contract management, quality control, monitoring, and reporting, as well as building the technical capacities of DPWTs and district Offices of Public Works and Transport (OPWT) on a

continuous basis. DoI will recruit an individual consultant to conduct the technical audit and DLI verification.

42. Various MPWT Departments will implement Component 2 activities as per their official mandates and under the overall coordination of DPC.

43. The Environment and Social Division of the Public Works and Transport Research Institute (ESD/PTRI) will lead safeguard supervision, monitoring, and safeguard training, including implementation of safeguards related activities for all project activities.

44. *Memorandum of Understanding.* In order to ensure clear assignment of roles and responsibilities, and to ensure accountability for project results, the Minister of MPWT and the Governor of each one of the six participating provinces will sign a Memorandum of Understanding within three months of project effectiveness.

45. *Project Operational Manual.* The LRSP2 will be implemented using a Project Operational Manual (POM). The POM includes the MPWT updated Financial Management Manual (FMM) that details the division of responsibilities for the fiduciary function between MPWT and DPWTs at provincial level. NDF has agreed to the use of the same POM for the implementation of project activities co-financed by it. EIB and EU, which may provide financing for additional activities complementary to (but not formally part of) LRSP2 in the future, may also consider using the same POM.

46. *Development Partners.* GoL has established an Infrastructure Sector Working Group, led by the Minister of MPWT, as a mechanism to facilitate overall coordination among development partners. LRSP2 will continue to actively strengthen this mechanism for sector dialogue and coordination. LRSP2 will collaborate with partners currently engaged in road maintenance activities including ADB, JICA, and KfW.

B. Results Monitoring and Evaluation

47. The Project Results Framework (Annex 1) forms the basis to track progress of activities to meet the PDO. Monitoring and Evaluation (M&E) will be performed through existing systems of the MPWT, which will be strengthened through project technical assistance. The implementing departments at MPWT and DPWT will provide the necessary data (using PROMMS, RMS, IRAM) and submit to DPC who will consolidate semi-annual progress reports in line with the project indicators and milestones. These reports will include information on compliance with safeguards, institutional strengthening, and citizen engagement and grievance redress. Regular implementation support missions, conducted jointly by the World Bank and NDF, will assess the implementation. Annual independent financial audits of the special accounts will be carried out, and an Implementation Completion and Results Report (ICR) will be prepared within six months of the closing date of the IDA Grant. A midterm review will be carried out within 20 months after project effectiveness to assess the status of project implementation as measured against the performance indicators.

C. Sustainability

48. The proposed project will support the MPWT to address upstream challenges through policy, strategy, and institutional development, including enhancing existing mechanisms such as the RMF that will strengthen the sector as a whole. The effective use of the RMF will become increasingly important as resources available through the RMF continue to grow and the backlog of maintenance begins to diminish over time. At the same time, the project will address downstream aspects by strengthening practices for planning and prioritization that mainstream disaster resilience and improve the condition of the roads. This strengthening will include improved capacities and systems, including improved coordination between national and sub-national levels, and improved budget allocation for road maintenance. These improved systems will remain beyond project completion, and thereby ensure the sustainability of the investment. The project will use innovative approaches towards improving climate resilience with long-term benefits for the country.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

49. The overall risk is considered **Substantial**. Key risks to achieving the PDO include the current fiscal situation of the country, which has the potential to constrain the capacity of GoL to allocate the necessary funds to ensure the optimum financing for road maintenance. Macroeconomic risk is substantial given the continuing fiscal crunch facing the GoL. The risk is heightened by the need to clear the existing arrears, and the risk of diversion of funding from road maintenance to new construction that remains substantial despite GoL's ban on new pre-financed contracts. The project will support the update of the sector strategy, and preparation of the financing and policy frameworks for road maintenance to help guide public expenditure in the sector, enabling the incremental increase in the extent of the network in good and fair condition.

50. The fiduciary capacities of DPWT staff at provincial level were built during the implementation of the original LRSP. However, and despite good progress, there are still limitations caused by a mix of staff mobility and the ongoing need to enhance the control and fiduciary environment. Thus, the fiduciary risk is substantial and strengthening staff capacities, internal control and fiduciary systems will continue to be a focus of the support under the project. Potential governance and institutional capacity risks, mainly related to the growing role of local levels in planning and implementation while capacities at these levels remains limited, will be mitigated through a strong focus on road asset management system improvement. Also, the inspection function of DPWT would be boosted through formal training, establishment of a network of inspectors, and the provision of inspection equipment. Transparency would be increased through the development of ICT systems for accounting, e-procurement, and budget monitoring. Independent annual technical and procurement audits, as well as financial audits will be conducted, and fiduciary capacity building will feature prominently under the project, including procurement training and hiring a procurement advisor. The political risk of potential elite capture will be mitigated by the improvement and use of the road asset management system that will promote objective prioritization and selection criteria.

51. This is the first time that DLIs are used in the transport sector in Lao PDR, and despite their potential to incentivize a focus on results, their use might give rise to operational risks that will need to be closely monitored and addressed. To mitigate potential risks, the DLI framework proposed is straightforward and has been thoroughly discussed with MPWT. The design and supervision consultant will prepare the monitoring reports that will be verified by independent technical auditors. Furthermore, disaster and climate change risks pose a substantial risk for the achievement of the DLI target due to the potential occurrence of natural disaster on project roads, causing damages that cannot be addressed through routine maintenance. Mitigation measures include the identification and application of climate resilience periodic maintenance and spot improvement to vulnerable sections prior to including these in the routine maintenance regime.

52. The environmental and social risk is rated substantial as the project will provide technical assistance to develop the capacity of MPWT, including for the potential future implementation of Category A investment in road sector, including a potential PPP project with high environmental and social impacts downstream. Mitigation measures include technical assistance to strengthen MPWT's environmental and social safeguards capacity in preparing and implementing road sector investment projects up to the level required for a Category A investment.

53. **Disaster Risk and Climate Change Risk.** The project was screened for disaster risk and potential risks from climate change. The results suggested a substantial risk to the PDO given the location of the project areas. Lao PDR is exposed to a range of natural hazards, including floods, landslides, drought, and tropical storms and cyclones. From 1970 to 2010, 33 natural hazard events (mostly floods and droughts) were registered affecting almost nine million people and causing economic damages of over US\$400 million. The six provinces selected under the project for climate resilient road maintenance works are prone to flash floods and landslides inducing slope failure in the North (Phongsaly, Houaphan, Oudomxay, Xiengkhouang Provinces) and backwater flooding from the Mekong River and its tributaries (Xayabouly and Bolikhamsay Provinces).

54. *Projections.* A warmer climate is expected by the end of this century as well as an increase in rainfall across the country, with the number of wet days possibly increasing across the Mekong River basin, and an increase in intensity and in frequency of extreme events (primarily flooding) with implications for agriculture, food security, infrastructure, and lives. The major risks for project investments are floods, flash floods, and landslides. Climate resilient technical designs, and routine and periodic maintenance, including spot improvement, would mitigate the risks and help to strengthen national adaptive capacity to disaster and climate change risk. Component 4 will provide immediate assistance should an eligible disaster occur. More detailed information on the climate change vulnerability context and activities to address these is included in Annex 5.

VI. APPRAISAL SUMMARY

A. Economic Analysis

55. The economic evaluation focuses on the overall project cost of US\$47.4 million, comprised of US\$33.9 million of civil works and US\$13.5 million of other costs. The analysis

was performed based on the work plan for the routine and periodic (including climate-resilient) maintenance in six selected provinces: Oudomaxay, Phongsaly, Houaphan, Xiengkhouang, Xayabouly, and Bolikhamxay. The total length of roads receiving both, periodic and routine maintenance is estimated at 2,856 km. The Cost-Benefit Analysis (CBA) was conducted to calculate the economic internal rate of return (EIRR) and net present value (NPV) of the project.

56. The major economic benefits of the project arise from reduced vehicle operating costs (VOCs) due to improved road condition, travel time saving benefits to passengers, avoided emergency maintenance costs in the case of without-project, and improved economic potentials from improved access (reduced flood period). To be conservative, no generated or diverted traffic was considered in the economic analysis. The economic analysis covers the period of 10 years (2017-2027). With the standard conversion fraction of 0.90, EIRR is calculated to be 31.5 percent and NPV US\$6.85 million with 12 percent discount rate. The sensitivity analysis on various assumptions is illustrated below.

Table 5: Summary of Economic Analysis

	EIRR	NPV
Base Case	31.5%	6.85
Investment cost increases by 20%	16.8%	2.33
Length of road reduced by 15%	15.0%	1.10
Share of population affected reduced by 50%	15.6%	1.32
AADT reduced by 20%	19.2%	2.57

57. **Greenhouse Gas Emissions.** An analysis of greenhouse gas emissions (GHG) was undertaken based on fuel consumption rate at different speed under with- and without-project scenarios. Without project, road's deteriorated condition limits vehicle speed and leads to higher fuel consumption per vehicle-km compared to with-project scenario. With project, improved road condition leads to improved speed, and hence lower fuel consumption. The total emission of CO₂ under the project scenario over the evaluation period (10 years) is estimated to be 175,000 tCO₂e and the estimated GHG reduction is 47,000 tCO₂e. The social benefit from GHG reduction is estimated to be US\$1.4 million.

B. Technical

58. The project will support six provinces² to: (i) preserve the 2,856 km of paved and gravel provincial and district roads in good and fair condition through routine maintenance; (ii) improve road sections in bad and poor condition through periodic maintenance in approximately 687 km,

² Out of the 5,024 km of the total lengths of provincial and district roads in the six pilot provinces, 685 km have been built to paved road standard, 3,525 to gravel road standard, and 814 km are foot paths or tracks, not yet built to engineering standard. Due to inadequate maintenance and natural disaster impact, only 2,169 km of the 4,210 km of paved and gravel roads are in good and fair condition. The remaining 2,041 km require periodic maintenance. Of these, 305 km are highly vulnerable to natural disaster and require climate resilience improvement. A further 565 km passing through communities require paving.

including improvement of vulnerable spots; and (iii) pave some sections passing through large communities.

59. The routine maintenance will be carried out through contracts using an area-wide approach. The precise modality and coverage for the contracts will be established during implementation. The routine maintenance is to be carried out continually to ensure the road and the roadsides are kept in their original condition as far as possible. The activities include temporary drainage of road surface, pothole repair (patching), reshaping the carriageway, spot filling, shoulder and edge repair, drain and culvert clearing, repair of scour, repair of erosion damage, bush cutting and litter collection, minor bridge repairs. It is anticipated that the contracts will potentially include minor spot improvements as well as some types of emergency maintenance. The average cost per km is estimated at US\$1,200. All roads in good and fair condition will be included in the routine maintenance program, starting with 2,169 km in year 2, increasing to an estimated 2,856 km in year 5 as the periodic maintenance program is completed.

60. A key activity to be included with the routine maintenance is the use of bio-engineering solutions for slope stabilization and erosion control. These range from grasses to tree planting. The project will draw on the experience from similar projects in other regions, including having the care of trees included as part of the routine maintenance contracts.

61. Periodic maintenance will be prioritized through PROMMS, included in the three-year rolling road maintenance plans, and implemented via individual road contracts. The periodic maintenance will restore roads to their original condition, or to prevent further deterioration. Examples of periodic maintenance include reshaping the carriageway, reshaping of ditches, gravelling, stockpiling of gravel that are later to be used for pothole patching, resealing of paved road, replacement of bridge components. Climate resilience improvement of vulnerable sections includes strengthening or construction of culverts, concrete lining for side ditches, slope protection, raising road profile of the flooded sections, and paving steep slope sections and section passing through large communities.

62. Technical assistance recruited for design and implementation support will support DPWTs to improve the three-year rolling maintenance plans and design of routine maintenance and periodic maintenance packages. The actual periodic maintenance works will be implemented from the second year onwards. Road safety aspects will be incorporated into periodic maintenance contracts by addressing blackspots identified through road safety audits. In addition, TA will be implemented to support institutional strengthening. Road maintenance planning and management is a continuous activity and requires updates with reliable road condition data. The project will provide TA, training and operating cost to DoR and DPWTs to improve quality of road data collection and its analysis as well as using the result from analysis for prioritization and prepare three year rolling plan for the entire road network.

C. Financial Management

63. The Department of Finance (DoF) of MPWT will have the overall responsibility for financial management of the project. DoF has experience managing donor-funded projects, including World Bank-financed projects. The capacity of DoF is considered adequate. However,

due to the limited number of staff combined with increased management of funds, consultant support will be required to provide assistance on budget consolidation, review and monitoring, and preparation of IFRs. The divisions of planning, budget and statistics of DPWT will be responsible for financial management at the provincial level. The DPWTs have been implementing the original LRSP and financial capacities have been built. However, some gaps remain, mainly due to a combination of staff mobility, and insufficient documentation of procedures or guidelines for use at the provincial level. Furthermore, since most of the activities will be implemented at the provincial level, the increase in quantity of work further increases the risk. Risks will be mitigated through: (a) having in place a detailed guide for use of project funds at the provincial level; (b) training and periodic coaching support for provincial level staff; and (c) recruitment of a qualified Financial Management (FM) consultant to provide support, including provision of training to provincial and ministry level at least during the first two years of the project life. The FM assessment was carried out in accordance with OP/BP 10.0 and was based on an assessment carried by the DoF of MPWT and Division of Planning, Budget and Statistics of DPWT in the six project provinces.

64. Oversight of FM of the project will be carried out semi-annually and include a review of interim unaudited reports by the World Bank's team. An annual financial statement audit will also be carried out by qualified independent auditors, with terms of reference acceptable to the World Bank.

D. Procurement

65. DPWTs at provincial level will implement works contracts and associated technical assistance for periodic and routine maintenance and spot improvements. The average value of a single contract for works is estimated to be below US\$3 million, but there will be a large number of contracts. The remaining funds will finance technical assistance and capacity building at central and subnational level.

66. The MPWT and DPWTs at the provincial level will be responsible for implementation of the project hence procurement activities. The MPWT has over 25 years of experience implementing World Bank financed projects. The DoF will be responsible for overall coordination of procurement activities and communicating with the World Bank. The DPWTs will conduct the bulk of procurement activities under supervision of MPWT's DoF and DoR.

67. World Bank staff conducted a procurement assessment of implementing agencies and a contractor capacity assessment in March 2016. Based on the assessment, the capacity of MPWT to manage procurement activities was found adequate with some further strengthening required. The DPWTs have been implementing the original LRSP and procurement capacities have been built. However, gaps remain that would need to be addressed. Key risks identified include (i) possible delays in procurement and contract delivery, (ii) capacity gaps at provincial level, and (iii) governance risks associated with possible conflict of interest, fraud and corruption practices. A number of measures have been agreed to increase efficiency and transparency of procurement including aspects of e-procurement. Risk mitigation measures will include hiring consultants to support procurement and contract management, implementing a procurement information disclosure regime, and annual technical and procurement audits. These mitigation measures have

been agreed with the MPWT. Findings of contractor capacity assessment indicate that there are an adequate number of contractors at the provincial level to participate in the tenders within the values envisaged under the project. A detailed procurement plan has been agreed for the first 18 months and will be used to monitor implementation. Detailed information on the capacity assessment, risk mitigation measures, oversight arrangements and procurement arrangements are included in Annex 3.

68. Procurement under the Project will be carried out in accordance with the World Bank's "Guidelines: Procurement of Goods, Works and Non-consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" dated January 2011 and revised in July 2014; the "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" dated January 2011 and revised in July 2014; and provisions stipulated in the Financing Agreement. Lao Harmonized National Competitive Bidding (NCB) agreed by the Bank, with appropriate modifications to incorporate specific World Bank requirements will be used for procurement of works under National Competitive Bidding threshold (See Annex 3). The Bank Standard Request for Proposal will be used for all consultancy services. Procurement under Component 4 will be carried out based on provisions on an Emergency Response Manual to be agreed between Government of Lao PDR and the Bank.

E. Social (including Safeguards)

69. The project is expected to bring a range of positive benefits. The local communities will benefit from improved quality and reliability of travel, better access to services and markets, and opportunities for short-term employment in small-scale maintenance work. A number of rural and semi-rural settlements along the road alignment will also benefit from local market development, and give impetus to agricultural and business activity. This would be expected to lead to better trading conditions for both local farmers and consumers.

70. *Gender.* A gender field assessment was conducted during project preparation on two local roads that potentially could be included under the project in Oudomxay Province. The findings suggest that the targeting of the project is appropriate. Important positive impacts are expected to accrue from project activities on access to health services in particular. This is important as Lao PDR still lags behind in its efforts to reduce maternal and under-five mortality. The field assessment also found specific patterns of road use (e.g. women in rural areas mainly use the road as pedestrians) with implications for road safety, and the potential of involving women as part of community-based road maintenance groups. Component 1 and Component 2 will integrate gender considerations in the design of works and capacity building of government staff and contractors, particularly related to road access and service provision, road safety, and ensuring that men and women benefit equally from project investments, including opportunities to work in routine maintenance with equal pay. Sexual health and safety will also feature as part of community and contractor training and awareness raising.

71. It is not anticipated that the activities proposed under LRSP2 will lead to any significant or permanent land acquisition or resettlement. There may be temporary land acquisition and limited access to small businesses as road works are implemented. The project activities are also

expected to have some negative impacts associated with traffic safety, noise, public health and potential conflicts related to the influx of construction workers. The Project triggers the World Bank's Involuntary Resettlement Policy OP/BP 4.12 and Indigenous Peoples Policy OP/BP 4.10.

72. The Project will finance maintenance of the entire provincial and district road network in the target provinces, and the exact sections will be prioritized based on PROMMS and will be reflected in the annual work plan and budget (AWPB) to be prepared during project implementation. Given that roads will not be identified prior to appraisal, a framework approach is to be used. An Environmental and Social Management Framework (ESMF) document was prepared for the project by the MPWT, along with a Resettlement Policy Framework (RPF) and an Ethnic Groups Policy Framework (EGPF). These documents were prepared in line with the WB safeguard policies, taking into account related GoL regulations including the Environmental and Social Operations Manual (ESOM) and experience gained with safeguard implementation by MPWT agencies/staff, and current issues related to road projects in Lao PDR.

73. The purpose of the ESMF is to identify the safeguard issues affecting the LRSP2 program, and to direct the formulation of more detailed, specific safeguard instruments. The ESMF and safeguards arrangement will be applicable to all activities financed by the Government, the Bank and NDF under LRSP2. The EIB and EU may finance complementary activities related (but not formally part of) LRSP2, and they may consider using the same ESMF for their financing.

74. In accordance with the screening procedure of the ESMF, for each location where investments are proposed, data will be collected as part of the road maintenance investment plan, which will be prepared annually and identify whether or not ethnic groups are present or collectively have attachment to the project areas. For ethnic groups that are affected by the project, the procedure outlined in the EGPF will be followed and the appropriate instrument (EGDP/ARAP) will be prepared. As shown in Annex 3, any investments with major negative impacts on ethnic groups will not be eligible for project financing.

F. Environment

75. The civil works activities (Component 1) will focus on routine and periodic road maintenance, including spot improvement in order to improve climate resilience and road safety of the provincial and district road network in the six selected provinces. Investment activities may include elevating flood prone road sections, paving road sections with steep slope and sections passing through big communities, drainage improvement/construction, slope improvement/stabilization, etc. It is envisaged that all activities would be carried out on the existing carriageway within the existing right of ways (RoW) and may involve minor realignments to improve road safety and/or strengthen road climate resilience. The potential impacts from these activities will be minor, site specific, localized, temporary, and can be mitigated. Potential impacts include dust dispersion, noise, traffic obstruction and access, construction and road safety etc. Large clearance of natural habitats and forest will not be required. The project triggers four environmental safeguard policies including Environmental Assessment OP/BP 4.01, Natural Habitats OP/BP 4.04, Forests OP/BP 4.36, and Physical Cultural Resources (PCR) OP/BP 4.11.

76. Given that this is a sector wide programmatic project and subproject locations are not known before appraisal, an Environmental and Social Management Framework or ESMF, including a generic Environmental Codes of Practice (ECoP) and also an outline Environmental and Social Management Plan (ESMP), have been prepared to provide: (i) guidance for screening, identifying and addressing environmental and social impacts from the project activities; and (ii) guidance to ensure that TA activities, particularly PPP capacity building activities, are conducted in line with WB safeguards policies and up to level expected for Category A investment. The ESMF includes procedures to conduct safeguard screening, which have been designed to detect and avoid potential negative impacts on natural habitats, forests and PCR. The ESMF also requires that a “chance find” procedure be included in the contract specification.

77. Consultation on the draft ESMF, RPF and EDPF was conducted twice with key stakeholders including relevant government agencies, local non-governmental organizations in Vientiane Capital as well as local authorities and communities in some of pilot provinces (Bolikhamxay, Xayabouly, Houaphan and Oudomxay) in a free, prior and informed consultation to seek their views and establish their broad support for the project implementation. The results were taken into consideration during the drafting of the ESMF, EGPF and RPF. The Draft ESMF including RPF and EGPF were disclosed on the MPWT website and the World Bank external website (www.worldbank.org) on April 11, 2016. The final ESMF, EGPF and RPF (in both local language and in English) were re-disclosed on the MPWT website on July 26, 2016. English versions were re-disclosed on the World Bank website on July 27, 2016.

78. While the project investments are not expected to have major impacts, the project has been assigned Category “A” in accordance to the World Bank policy OP/BP 4.01 on Environmental Assessment, as under Component 2, the project will provide TA support to develop the environmental and social capacity of the MPWT in anticipation of future Public Private Partnership (PPP) projects, even though PPP road investments themselves are outside the scope of LRSP2. The future PPP project impacts may include, but are not limited to, loss of land, assets and income due to land acquisition and/or physical relocation of physical structures, impacts on natural habitats and forest, impacts from use of materials for construction, increased air pollution and noise from road construction and operation, impacts related to increased traffic speed, impacts on Physical Cultural Resources. No safeguard instrument has been developed specifically for PPP capacity building activities, but the project will ensure that TA activities are conducted in line with World Bank safeguard policies to support potential future Category A PPP investments. This will be spelled out in the Consultant Terms of Reference.

79. **Grievance Redress Mechanism.** In addition to the World Bank grievance redress (see below) and as described in the ESMF, the project will develop and implement a project level grievance redress mechanism (GRM) which will include an online grievance reporting system via the MPWT website and Facebook. The online system will enhance transparency and citizen engagement by publishing the project intermediate outcome indicator (see Annex 1) as well as the responses from MPWT. The Project, through the MPWT’s Department of Inspection, will track grievances and provide to the Bank a quarterly report on project grievances received including how these were addressed.

G. World Bank Grievance Redress

80. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit <http://www.worldbank.org/GRS>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

Annex 1: Results Framework and Monitoring

LAO PEOPLE'S DEMOCRATIC REPUBLIC: Lao Road Sector Project 2 (P158504)

Project Development Objective(s)

PDO Statement

The project development objective (PDO) is to strengthen maintenance systems to improve reliable road connectivity in Lao PDR, and to provide immediate and effective response in case of an Eligible Crisis or Emergency.

Project Development Objective Indicators						
		Cumulative Target Values				
Indicator Name	Baseline	YR1	YR2	YR3	YR4	End Target
Share of total provincial and district roads in Project area in good and fair condition (Percentage)	50	50	55	60	65	65
Share of rural population with access to an all-season road (National) (Percentage)	56	56	56	57	57	57
Share of rural population with access to an all-season road (Project area) (Percentage)	53	53	55	56	57	57
Preparation and implementation of three-year rolling climate resilient road maintenance plans, on annual basis (Yes/No)	No	No	Yes	Yes	Yes	Yes
Direct project beneficiaries (number), of which female (Percentage) - (Core)	0	0	300,000 (50%)	700,000 (50%)	1,000,000 (50%)	1,600,000 (50%)

Intermediate Results Indicators						
		Cumulative Target Values				
Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5 End Target
Data on road condition and vulnerability to natural hazard collected for preparation of three-year rolling plan (Yes/No)	No	No	Yes	Yes	Yes	Yes
Length of road receiving climate resilient periodic maintenance (Km) (Cumulative)	0	0	262	525	687	687
Length of road receiving routine maintenance (Km)	0	0	2,169	2,432	2,694	2,856
Share of women participating in paid routine maintenance work (Percentage)	0	0	5	10	15	15
Citizen Engagement						
Grievances registered related to delivery of project benefits addressed (Percentage) - (Core)	0	40	75	80	80	80

Indicator Description

Project Development Objective Indicators				
Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
Share of provincial and district road network in Project area in good and fair condition (percentage)	Measures the percentage of the total classified road network in the project area that is in good and fair condition depending on the road surface and the level of roughness. Initial value: 2,169 km (50% of the total provincial and district road network in project areas)	Annual	Project Semi- Annual Report	DoR/DPWT/DPC
Share of rural population who live within 2 km of an all-weather road (National and six provinces	Measures the population in urban area and rural population with 12-month road accessibility (from available data in PROMMS).	Annual	Project Semi-Annual Report	DoR/DPWT/DPC
Preparation and implementation of three-year rolling climate resilient road maintenance plans, on annual basis (Yes/No)	This is a measure of the sustainability of the process and outcome of maintenance activities under the Project and their institutionalization in MPWTs systems.	Annual	Project Semi-Annual Report	DoR/DPWT/DPC
Direct project beneficiaries	Direct beneficiaries are people or groups who directly derive benefits from an intervention.	Annual	Project Semi-Annual Report	DoR/DPWT/DPC
Female beneficiaries	This indicator is calculated as a percentage.	Annual	Project Semi-Annual Report	DoR/DPWT/DPC

Intermediate Results Indicators

Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
Data on road condition and vulnerability to natural hazard collected for preparation of three-year rolling plan (Yes/No)	Condition and natural hazard data to be surveyed on an annual basis and to be input in preparation of annual three-year rolling plan.	Data collected continuously, indicator reviewed annually.	Project Semi-Annual report	DoR/DPWT/DPC
Length of road receiving climate resilient periodic maintenance (Km) – (Cumulative)	Measures the length of provincial and district roads in the project area that receive periodic maintenance integrating designs and techniques that account for disaster and climate change risk to enhance the roads' climate resiliency.	Annual	Project Semi-Annual report	DoR/DPWT/DPC
Length of road receiving routine maintenance (Km)	Measures the length of provincial and district roads in the project area that receive routine maintenance.	Annual	Project Semi-Annual report	DoR/DPWT/DPC
Share of women participating in paid routine maintenance work (percentage)	The project will promote and measure the increased participation of women in paid routine maintenance in project roads.	Annual	Project Semi- Annual report	DoR/DPWT/DPC
Grievances registered related to delivery of project benefits that are actually addressed (Percentage) - (Core)	This indicator measures the transparency and accountability mechanisms established by the project so the target beneficiaries have trust in the process and are willing to participate, and feel that their grievances are attended to promptly.	Annual	Project Semi-Annual report	DOI/DoR/PTRI/ICT/D PWT

Annex 1 (B): Disbursement Linked Indicators
LAO PEOPLE'S DEMOCRATIC REPUBLIC
Lao Road Sector Project 2

The Disbursement Linked Indicator proposed below would be applied against Component 1.2: Routine Maintenance only. There are no DLI targets associated with other components under LRSP2.

Total Routine Maintenance Works Program in Target Provinces: US\$13 million. IDA will fund SDR 2.2 million (US\$3 million equivalent) (23%) and GoL will finance US\$10 million (77 percent). The estimated average cost per km of routine maintenance is US\$1,200. Contingency is included across the DLI values.

DLI Length of provincial and district roads in the Target Provinces maintained in Good and Fair Condition			
Disbursement of IDA funds: Against each km of road maintenance achieved annually over four years (SDR 212 per km). The DLI target in the table below is an indicative number.			
2018	2019	2020	2021
DLI Target: 2,169 km DLI Value: SDR212 per km, up to a total of SDR460,000	DLI Target: 2,432 km DLI Value: SDR212 per km, up to a total of SDR520,000	DLI Target: 2,694 km DLI Value: SDR212 per km, up to a total of SDR580,000	DLI Target: 2,856 km DLI Value: SDR212 per km, up to a total of SDR 640,000

Table A1.1: Summary of Protocol for Monitoring the Achievement of DLI

DLI	Definition/description of achievement	Protocol to Evaluate Compliance of the DLI		
			Data source	Verification
Length of provincial and district roads in six pilot provinces maintained in Good and Fair Condition	Routine maintenance is an activity carried continually to ensure the road and the roadsides are kept in their original condition as far as possible. The activities include: pothole repair, reshaping (grading) the carriageway, spot filling, shoulder and edge repair, drainage and culvert clearing, repair of scour check, repair of erosion damage and bush cutting. MPWT have pre-defined levels of service for various categories of road as specified in their “Road Condition Survey Guideline” dated September 2009 of DOR, MPWT. These service levels are the basis for the condition data in PROMMS. Table A1.2 below provides a summary of those service levels.	DLI target will be achieved if the targets of the pre-defined levels of services of routine maintenance are achieved. Eligible roads for routine maintenance interventions will be those identified as being in good or fair condition in the PROMMs system. Evidence for the compliance of the DLI will stem from the report prepared by MPWT’s Road Department with support from the implementation support consultant, which include (i) the list of routine maintenance contracts with their main characteristics including road length, and road work activities done during the report period (ii) conditions of road surface and drainage; (iii) a digitized road map, photo/video confirmation of before and after condition, (iv) contract information, maintenance history and (v) expenditure details. IRAM for local roads, which will be developed and operationalized during the first two years of the project implementation, and will be used for the monitoring not later than from year 3 of implementation onwards. The independent technical auditor will audit the report.	DoR’s semi-annual reports with input from DPWTs to be submitted to Bank by April 30 of each year.	Independent technical auditor hired by MPWT will verify the DoR report on an annual basis. The verification report will be submitted to the Bank by June 30 of each year.

Table A1.2: Pre-defined service levels

Rating		Minor Defects	Major Defects
0	Excellent	None	None
1	Good	Up to 20 m ² per 100 m	1 occurrence per 100 mm
2	Fair	< 50 % of the area	up to 4 occurrences per 100 m
3	Poor	> 50 % of the area	< 30 % of the area
4	Bad	N/A	³ 30 % of the area, <u>or</u> potholes on < 20 % of area
5	Failed	N/A	³ 30 % of the area, <u>or</u> potholes on ³ 20 % of area

Annex 2: Detailed Project Description
LAO PEOPLE’S DEMOCRATIC REPUBLIC
Lao Road Sector Project 2

1. The Project Development Objective (PDO) is to strengthen maintenance systems to improve reliable road connectivity in Lao PDR, and to provide immediate and effective response in case of an Eligible Crisis or Emergency.

2. A summary of project cost per component and activity is as follows:

Table A2.1: Project Costs and Financing

Component	Project Costs US\$ m	IDA US\$ m	NDF US\$ m	RMF US\$ m	Province US\$ m	IDA financing (%)
Component 1: Climate Resilient Road Maintenance	36.9	17.2	9.7	7.0	3.0	47%
1.1 Periodic Maintenance and Spot Improvements	20.9	14.2	6.7	-	-	68%
1.2 Routine Maintenance	13.0	3.0	-	7.0	3.0	23%
1.3 Design and Supervision	3.0	-	3.0	-	-	0%
Component 2: Institutional Strengthening	8.5	5.8	2.7	0.0	0.0	68%
2.1 Strategic Planning and Financing	0.6	0.6	-	-	-	100%
2.2 Sector Governance	2.3	2.3	-	-	-	100%
2.3 Climate Resilient Road Asset Management	3.2	0.5	2.7	-	-	16%
2.4 Capacity Building	2.4	2.4	-	-	-	100%
Component 3: Project Management	2.0	2.0	0.0	0.0	0.0	100%
Component 4: Contingent Emergency Response	0.0	0.0	0.0	0.0	0.0	100%
Sub-total 1+2+3+4	47.4	25.0	12.4	7.0	3.0	
Total Financing Required	47.4	25.0	12.4	7.0	3.0	

3. The Project has been designed as a program to support the strengthening of maintenance systems that will result in improved connectivity. The Project will support institutional strengthening through the development of financing and policy frameworks, improved planning and prioritization, governance, and technical capacity for the road sector as a whole in order to maximize the effectiveness of public expenditure and allow for the incremental increase in the length of the provincial roads network in good and fair condition, its climate resiliency and safety. The Project will finance a periodic maintenance and routine maintenance works program in six provinces (Phongsaly, Houaphan, Oudomxay, Xiengkhouang, Xayabouly and Bolikhamxay).

4. The Project consists of four components: (i) Climate Resilient Road Maintenance, (ii) Institutional Strengthening, (iii) Project Management, and (iv) Contingent Emergency Response.

5. **Component 1: Climate Resilient Road Maintenance** (Total US\$36.9 million; of which IDA US\$17.2 million; NDF US\$9.7 million; RMF US\$ 7 million; Provinces US\$ 3 million). To finance the climate resilient periodic maintenance and routine maintenance works program in Phongsaly, Houaphan, Oudomxay, Xiengkhouang, Xayabouly and Bolikhamxay provinces, including technical assistance for design and supervision of works.
6. **Component 1.1: Periodic Maintenance and Spot Improvements** (Total US\$20.9 million; IDA US\$14.2 million; NDF US\$6.7 million). To carry out climate resilient periodic maintenance and spot improvements of provincial and district roads in the Target Provinces, consisting of: (a) roads selected for financing by the Association in accordance with the respective Annual Work Plans and Budget (AWPBs); and (b) roads selected for financing by NDF in accordance with the respective AWPBs. This component will finance disaster resilient periodic maintenance and spot improvement on 687 km of the provincial and district road network selected based on the use of established prioritization systems (PROMMS and RMS) in the six participating provinces. Climate resilience interventions may include elevating flood prone road sections, paving road sections with steep slopes and sections passing through large communities, drainage improvement or construction, and slope improvement and stabilization, as required. Under this component road safety issues would be considered, such as improvements in road furniture and traffic calming options.
7. **Component 1.2: Routine Maintenance** (Total US\$13 million; IDA US\$3 million; RMF US\$7 million; Provinces US\$3 million). To carry out routine maintenance of provincial and district roads in the six target provinces. This component will finance routine maintenance contracts on 2,856 km of provincial and district roads currently in good and fair condition, identified through PROMMS. The cost of the routine maintenance program is of about US\$13 million. GoL will finance US\$10 million (RMF US\$7 million and the six participating provinces US\$3 million) and IDA will cover the remaining US\$3 million. This is a DLI-based component and its financing is linked to the achievement of an annual agreed disbursement indicator.
8. **Component 1.3: Design and Supervision** (Total US\$3 million NDF). To finance the design and supervision consultant for activities under sub-components 1.1 and 1.2. As part of activities under this component, the design and supervision consultant will carry out the development of the quality assurance mechanism; and provide on-the-job coaching, and technical training for MPWT, DPWT, and OPWT on climate resilient design, repair and maintenance, improved road asset management systems (RMS and PROMMS) and data collection, contract management, procurement, and quality control related to the works under sub-components 1.1 and 1.2.
9. **Component 2: Institutional Strengthening** (Total US\$8.5 million; IDA US\$5.8 million; NDF US\$2.7 million). To provide technical assistance, goods, training, and operating costs for (a) Strategic Planning and Financing; (b) Sector Governance; (c) Climate Resilient Road Asset Management; and (d) Capacity Building.
10. **Component 2.1: Strategic Planning and Financing** (US\$0.6 million IDA). Carrying out of a program of activities to (a) strengthen the capacity to update and operationalize

MPWT's Sector Strategy to 2025 and Action Plan to 2020; (b) strengthen the capacity to improve the policy and sector financing frameworks to support sustainable transport sector development; and (c) strengthen the capacity for strategic transport sector management at both MPWT and DPWT.

11. **Component 2.2: Sector Governance** (Total US\$2.3 million IDA). Carrying out of a program of activities to: (a) improve the integrated asset management system (IRAM) to (i) support contract monitoring; (ii) extend the scope to local roads; and (iii) roll out the platform to DPWTs; (b) upgrade and roll out MPWT's information and communication technology system including (i) e-archive, (ii) e-procurement, and (iii) information disclosure and citizen engagement; (c) upgrade the RMF and DPWTs' accounting system and expenditure tracking tools; (d) strengthen internal controls of provincial authorities through: (i) the application of road sector technical audit guidelines to provincial level, (ii) enhancing technical capacities of provincial level internal control units, and (iii) supporting inspection tasks in provinces; and (e) overloading control support through provision of a weighting station on NR13 in Bolikhamxay province.

12. **Component 2.3: Climate Resilient Road Asset Management** (Total US\$3.2 million; IDA US\$0.5 million; NDF US\$2.7 million). Carrying out of a program of activities: (a) for financing by NDF to (i) support MPWT to develop its climate change action plan as described in the Intended Nationally Determined Contribution (INDC); (ii) operationalize the hazard maps into practical vulnerability maps for planning of infrastructure maintenance or investments; (iii) review current planning tools (including RMS, PROMMS) to include risk-based planning by identifying sections vulnerable to extreme weather; (iv) prepare a medium-term climate resilient National Road Preservation Plan; (v) review current design, standards and guidelines in cooperation with other development partners in the sector to incorporate climate resilience aspects; and (vi) further develop standard of operation for emergency repair; and (b) for financing by IDA to carry out annual field surveys to include necessary data in the road management information systems for risk-based planning.

13. **Component 2.4: Capacity Building** (Total US\$2.4 million IDA). Carrying out of a program of activities to: (a) strengthen the operating, fiduciary and human resource systems of MPWT and provincial and district road authorities; (b) strengthen the capacity of MPWT and other relevant government agencies to assess and manage the technical, environmental and social aspects of potential future public private partnerships and performance based contracting modalities in the road sector; (c) develop or update environmental and social management manuals and procedures in the road sector; and (d) develop and implement traffic safety action plans, audit manuals, training programs and public awareness raising campaigns.

14. Specifically, the capacity building component will help develop MPWT's Human Resource Strategy, and will support training for MPWT, DPWTs and OPWTs on IRAM, governance, financial management and procurement systems. Under this component technical assistance and training will also be provided to MPWT to update environmental documents including the Environmental and Social Operation Manual (ESOM). This component will support the National Traffic Safety Council and Department of Transport (DoT) for the update of

the traffic safety action plan, and roll out of public awareness raising campaigns, and to develop MPWT's Traffic Safety Audit manual and training provision to traffic safety auditors.

15. **Component 3: Project Management** (Total US\$2 million IDA). Provision of technical and operational assistance for the day-to-day management (including but not limited to financial management, procurement and safeguards training and advisory support), monitoring and evaluation of the Project, and for carrying out of technical and financial audits.

16. **Component 4: Contingent Emergency Response:** (US\$0 million). A contingency emergency response component with a provisional allocation of zero dollars is included under the project in accordance with OP10.00, Paragraphs 12 and 13, for projects in situations of urgent need of assistance or capacity constraints. This will allow for rapid allocation of project proceeds in the event of the Government declaring that a crisis or emergency has occurred and the World Bank Group (WBG) agreeing with such determination. This component would finance public and private sector expenditures on a positive list of goods and/or specific works, goods, services and emergency operation costs required for emergency recovery. An Emergency Response Operations Manual will apply to this component, detailing financial management, procurement, safeguards and any other necessary implementation arrangements.

17. **Disbursement Linked Indicator.** Under the routine maintenance program (Component 1.2), IDA will disburse funds against each km of road maintenance achieved annually over four years. The targets for DLIs over the project period are as follows:

Table A2.2: Cumulative Targets for Routine Maintenance

Activity/Year	2017	2018	2019	2020	2021
Routine Maintenance – annual target (in km)	0	2,169	2,432	2,694	2,856

18. This is a scalable DLI, which allows flexibility of disbursement if the targets have been partially met. In the event that targets have not been fully met (i.e., downward scalability), the World Bank will only proportionally recognize and convert prior advances into eligible expenditure and disbursements. The amount of the prior advances that are not recognized and converted into disbursed amounts, equal to the unachieved DLI amount in the originally envisioned period, will carry forward as outstanding advance. Once the DLI for a subsequent year has been met, the remaining portion of advances may be disbursed against the eligible expenditures. If no relevant document is provided to demonstrate that the DLIs are met, the respective credit amount of the unachieved DLI in the envisioned time period may be cancelled or reallocated by the Bank in consultation with the MOF. The Bank may, in this respect, decide to reduce proportionally subsequent advances for the Project. Regardless the level of performance against DLIs, the Bank will not recognize disbursements in excess of the DLI Values and the amounts reported through IFRs.

19. The achievement of targets will be verified by June 30 following the end of each year of implementation and payments made subject to works being monitored with digitized road map, photo/video confirmation of before and after condition, contract information, and maintenance

history and expenditure details. Integrated Road Asset Management System (IRAM) for local roads, which will be developed and operationalized during the first two years of the project implementation, will be used for the monitoring from Year 3 onwards.

Annex 3: Implementation Arrangements

LAO PEOPLE'S DEMOCRATIC REPUBLIC

Lao Road Sector Project 2

Project Institutional and Implementation Arrangements

1. The Ministry of Public Works and Transport (MPWT) is the Project Implementing Agency and will be responsible for the overall supervision, execution, and management of the LRSP2. The project will be implemented through the existing MPWT organizational structure and its institutional arrangements, in which its concerned departments at central level are responsible for formulating policy and strategy, setting standards, allocating resources, monitoring, providing technical support including training to provincial authorities, overseeing quality assurance systems and technical auditing, and carrying out impact evaluations.

2. MPWT plays a role as Secretariat to Government in managing, at the macro level, land transportation, waterway transportation, air transportation, train transportation, housing, town planning and water supply nationwide (Prime Minister Decree No. 373/PM of 22 October 2007). MPWT has a mandate to implement the National Social Economic Development Plan (NSED) aspects for transport and urban infrastructure through sector strategic, medium-term, and annual plans, programs, and detailed projects. MPWT has also the responsibility for National roads management, including National road maintenance.

3. At provincial level, the Governor's office is responsible for securing adequate and agreed funds for the provincial contribution to routine and periodic maintenance, for the operational costs, as well as for disbursement of project funds to the contractors through its provincial treasury.

4. Provincial Assemblies have been established as the legislative mechanism at sub-national level through the Second Amendment to the Constitution of December 2015 and confirmed by the National Assembly on March 2016. The assemblies have the mandate to review, approve, and oversee implementation of provincial socio-economic development plan and provincial budget.

5. The provincial Departments of Public Works and Transport (DPWT) are responsible for the preparation of strategic plans for local road network development, including annual work plans, three-year rolling plans, and medium-term plans. The DPWT has the mandate for local roads (including Provincial, District, and Rural roads), including for local road maintenance. DPWT's mandate includes local road planning, budgeting, procurement, contract management, accounting, site supervision and quality control, and reporting.

6. The District Office of Public Works and Transport (OPWT) report to the DPWT for road works. As per government policy the district is the planning unit in the administrative

organization of Lao PDR. The district offices are responsible for road condition surveys and data collection, administer the routine maintenance works, and conduct routine inspections.

7. As per government policy, the Village is the implementation level in the administrative organization and reports to the District. Villages have been involved in routine maintenance of some local roads, but there is no standardized system and various approaches are used.

LRSP2 Project Oversight and Management

8. The MPWT is the Project Implementing Agency. The project will be implemented through Government structures.

9. **Project Coordination.** MPWT's Department of Planning and Cooperation (DPC) will be responsible to oversee the overall project coordination and management. The Department of Planning and Cooperation (DPC) will have the specific following roles and responsibilities:

- Prepare the Project Operational Manual (POM) and ensure that it is followed;
- Review and update implementation schedule for all project activities and disbursement plan (jointly with DoF);
- Consolidate quarterly and yearly progress reports from all MPWTs implementing agencies; and report on project progress to MPWT Minister of Public Works and Transport, the WB, NDF, and other program financiers;
- Ensure that Audits (technical and financial) are carried out;
- Ensure safeguard activities are implemented;
- Review and clear training plans prior to implementation; and
- Identify and resolve issues related to implementation constraints or delays.

10. Project Management Supporting Functions:

(a) **Department of Finance (DoF)** will have overall responsibility for financial management of the project. DoF staff is responsible for accounting and disbursement of project funds, and overall procurement support to MPWT departments implementing LRSP2 activities, ensuring that the Government and IDA's procurement guidelines, as well as those of financiers of LRSP2 are followed and the correct procurement documents are used. Consultant support will be required and FM and procurement consultants will be hired to work under DoF. At the provincial level, the division of planning, budget and statistic of DPWT will be responsible for financial management at that level. DoF will be responsible for preparation of an unaudited Interim Financial Report (IFR) and roll out of the financial system to provincial level.

(b) **Department of Inspection (DoI)** will have overall responsibility for quality assurance of the project implementation including procuring independent technical and financial auditors. The department will also responsible for monitoring and reporting on the grievance mechanism implementation in coordination with the ICT division of the Cabinet Office, and work with the provincial Division of Inspection at DPWT. The Inspection function has a double line of reporting, to MPWT as well as State Inspection

Authority, under the Prime Minister's Office. Consultants will support DoI with capacity development activities of provincial inspection units.

- (c) **Environmental and Social Division of PTRI (ESD/PTRI)** will be responsible for (i) overseeing full compliance with project safeguard instruments and will conduct monitoring of safeguard policy implementation in coordination with DoR and Provincial Offices for Natural Resources and Environment (PONRE); (ii) ensuring DoR includes the safeguards requirements into the bidding documents; (iii) monitoring the supervision of the implementation of these requirements; (iv) verifying safeguards mitigation measures are applied; (v) liaising with the Department of Environment and Social Impact Assessment of the Ministry of Natural Resources and Environment (MONRE), including for updating the ESOM and for ESOM capacity development of DPWT and OPWT; (vi) integrating the gender dimension into safeguards documents, and consultation processes. ESD/PTRI will provide an annual report on the environmental and social impacts of the works carried out under the program and ensure all road maintenance works are at all times carried out in conformity with the ESMF in a manner which ensures that any adverse environmental impact is effectively mitigated in a timely and satisfactory manner.
- (d) **The ICT Division at Cabinet Office of MPWT** will be responsible for public disclosure of project information, including planning, e-procurement, safeguards, and the administration of the MPWT website which includes information disclosure on project grievances.

Project Implementation

11. **MPWT's Department of Roads (DoR)** will be responsible for overseeing the implementation of Component 1 on climate resilient road maintenance including monitoring progress, supervising the procurement process, chairing of the Procurement Evaluation Committee, providing prior review, reviewing work plans, and allocating funds to routine and periodic maintenance activities. DoR will supervise data collection and conduct data analysis. DoR will ensure that the Environmental Code of Practice (ECoP) is integrated into the standard template of civil work bidding package and contracts. As LRSP2 will mainstream gender in the implementation of works, DoR in coordination with PTRI, will be responsible for overseeing the implementation of DPWT's gender action plans.

12. In line with the decentralization policy, the role of the DPWT in each of the six selected provinces will be to carry out PROMMS prioritization, preparation of the provincial three-year rolling maintenance plan and provincial road sector budget, procurement under the supervision of MPWT's DoR, contract management, maintenance works site supervision, quality control, and reporting. DPWTs will ensure that sub-projects safeguard specific requirements stated in relevant IEE/ESMP, EGDP, and Abbreviated RAP (where relevant) are integrated into civil work bidding package and contracts. DPWTs will implement and report on the gender action plans. Under the supervision of DoR, DPWT will conduct field data collection of provincial roads and will delegate data collection of district roads to OPWT. OPWT will also conduct site supervision of district roads maintenance works.

13. A firm will be contracted to support DoR and DPWTs with the design and supervision, including road maintenance procurement and monitoring. The staffing for the firm will include two consultants (Team Leader and Road Maintenance Consultant) placed at DoR to oversee, provide technical and procurement support, and monitor the road maintenance works, and implementation support consultants (six) placed in each one of the six pilot provinces to assist DPWTs with data collection, planning, design, contract management, quality control, and reporting, and to build the technical capacities of DPWTs and OPWT's on a continuous basis.

14. Under Component 2 on institutional strengthening, various MPWT's Departments will implement project activities as per their official mandates with the overall coordination of DPC:

- (a) **The Department of Planning and Cooperation (DPC)** will implement all activities related to sector strategic planning, financing and policy framework development. DPC will implement this sub-component through technical assistance. A Policy Advisor Consultant will be procured and placed at DPC to provide high-level policy and planning support to the Minister of MPWT.
- (b) **The Department of Roads (DoR)** is responsible for further developing, operating, and maintaining the RMS and PROMMS modeling, including integration of climate resilience elements, and will perform the Unified Road Maintenance Framework tasks needed to formulate the road maintenance program. DoR will collect the data needed to evaluate National roads, including inventory surveys, periodic road condition surveys, traffic surveys, road database, and pavement management system. DPWT will collect data for local roads and submit to DoR for verification. Technical Assistance will be procured to support RMS/PROMMS system improvement.
- (c) **The Department of Inspection (DoI) and the Department of Finance (DoF)** will implement the activities related to strengthening MPWT and DPWT's internal control and financial management systems, respectively. In addition, DoF will coordinate procurement activities for all components and communicate with the World Bank. The ICT Division of the Cabinet Office will be responsible for the further development of MPWT's ICT platform, including IRAM upgrade and rollout to provinces, e-procurement and information disclosure, e-archive, and MPWT's website administration and inclusion of grievance redress. Technical Assistance will be procured for the upgrade of governance and ICT systems.
- (d) **The Department of Personnel (DOP)** will oversee the implementation of capacity development activities at the project level. **The Public Works and Transport Training Institute (PTTI)** will serve as training provider for technical and managerial training organized under the program as required.
- (e) **The Environment and Social Division** of the Public Works and Transport Research Institute (ESD/PTRI) will lead safeguard supervision, monitoring, and safeguard training, including implementation of safeguards related activities for all project activities.

- (f) **The Department of Transport (DOT)** will be responsible for the implementation of traffic safety activities under LRSP2, including coordination with the National Committee for Traffic Safety.

15. **Memorandum of Understanding.** In order to ensure clear assignment of roles and responsibilities, and accountability for project results, the Minister of MPWT and the Governor of each one of the six participating provinces have discussed and agreed to sign a Memorandum of Understanding prior to the commencement of project implementation.

16. **Project Operational Manual.** The LRSP2 will be implemented using a Project Operational Manual (POM). The POM includes the MPWT updated Financial Management Manual (FMM) that details the division of responsibilities for the fiduciary function between MPWT and DPWTs at provincial level. NDF has agreed to the use of the same POM for the implementation of project activities co-financed by it. EIB and EU, which may provide financing for additional activities complementary to (but not formally part of) LRSP2 in the future, may also consider using the same POM.

17. **Role of Partners.** GoL has established an Infrastructure Sector Working Group, led by the Minister of MPWT, as a mechanism to facilitate overall coordination among development partners. LRSP2 will continue to actively strengthen this mechanism for sector dialogue and coordination. LRSP2 will collaborate with partners currently engaged in road maintenance activities including ADB, JICA, and KfW.

Table A3.1: Current Activities financed by Development Partners in the Lao Road Sector

Financier	Institutional Strengthening	Physical Works
ADB	- Road Maintenance and Governance (2016-2021) - Regulations on axle load control - Review Technical Specification - e-procurement - Contractor's training - Quality assurance - PBC for paved road maintenance	- Periodic road maintenance in Southern provinces: Saravan, Xekong, Attapeu (2016-2021) - Improvement NR 6B (Houaphan)
JICA	- Software update RMS/PROMMS - PBC for paved roads - Technical manuals for road maintenance	- Sekong Bridge construction - Improvement of NR 9 (Savannakhet) - Reconstruction bridges along NR 9
KfW	- Local road maintenance procedures - Local road maintenance techniques	Rural roads improvement and maintenance in Sekong, Saravan, Bokeo, Louangnamtha, Oudomxay, Khammouane provinces.
China		Improvement NR 1A (Phongsaly)
Thailand		- Improvement of NR 11 (Vientiane) - Improvement of Vientiane urban road

Financial Management, Disbursements and Procurement

Financial Management

18. The FM assessment was carried out in accordance with OP/BP 10.0. The assessment is based on an assessment carried out on the Department of Finance of MPWT and Division of planning, budget and statistics of DPWT in six provinces. The assessment was carried out to determine if the existing capacity and FM arrangement is adequate for the project.

19. The overall FM risk for this project is assessed as Substantial. The main risks are associated with limited capacity of the staff at provincial level, and inadequate documentation of procedures or guidelines for use at provincial level. Since a lot of the activities will be implemented at the provincial level, the increase in quantity of work further increases the risk, as capacity of staff is limited. The capacity of staff at central level is also limited; with an increase in funding to manage, they will also be stretched. Risk mitigation measures to address these risks are: to have in place a detailed guide for use of project funds at provincial level; training and periodic coaching support for provincial level staff; and recruitment of a qualified FM consultant to provide support, including provision of training to provincial and ministry level at least during the first two years of the project life.

20. **Project financial management arrangements.** The Department of Finance (DoF) of MPWT will have overall responsibility for financial management of the project. DoF has experience managing donor funded projects such as World Bank (Road Maintenance Project, Lao Road Sector Project), ADB and other financiers (e.g. SIDA). Currently, DOF staff is responsible for accounting and disbursement of project funds, with support from consultants for review of work and on-job coaching. Capacity of DoF is considered adequate. However, due to a limited number of staff, combined with increased funding to manage, consultant support will still be required to provide assistance on budget consolidation, review and monitoring, preparation of IFR, and day-to-day supervision and coaching of staff. At provincial level, the Division of Planning, Budget and Statistics of DPWT will be responsible for financial management at that level. Most finance staff at provincial level are accounting/finance graduates. Although staff at some provinces have had some experience in managing funds from LRSP, SIDA with some knowledge of ACCPAC, there are some newer staff as well, so in overall terms, the experience of provincial staff is still limited. In addition, there is no manual or guideline for use at the provincial level. Only selected forms were provided in addition to a training under the LRSP. Therefore, documented procedures, and training and periodic support will be required to strengthened capacity at the provincial level.

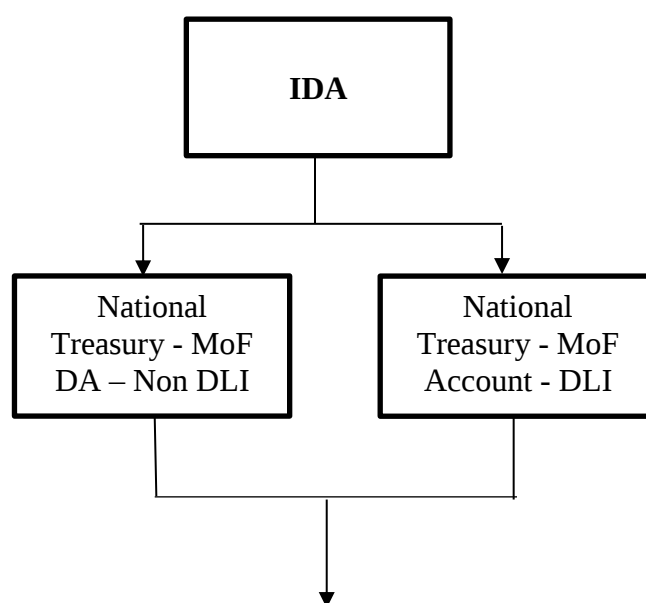
21. **Budgeting.** MPWT and DPWT follow government procedure in preparing budget. Investment projects utilizing funds from ODA are included in the government budget under Chapter 17 Public Investment Project. Other budgets, e.g. technical assistance, training, operating cost etc., are not included in the overall ministry budget but prepared separately as a project budget. Once prepared, the budget is submitted to Planning and Investment and then Finance, at respective level, before it is submitted to the National Assembly for approval. Once approved by the National Assembly, MoF or respective Finance Department announces the approved budget allocation. For the purposes of the project, an annual budget will be prepared in accordance with annual work plan and with sufficient detail by project component/sub-components. Steps and timeline for preparation will follow that of the government budgeting processes and as detailed in the FMM. IDA will review and provide no objection prior to implementation. The budget will also be divided into semi-annual budgets and compared with

actual expenditure semi-annually. Any variances will be explained and information used to review and revise the budget accordingly. A review of the budget should take place at least every six months.

22. **Fund flows.** A designated account (DA) in U.S Dollar will be opened at the Bank of Lao, managed by the National Treasury, MoF. This DA will be used to receive and replenish funds for Components 1.1, 2 and 3 of the project. The ceiling for the DA will be variable and will be based on six months planned expenditure and related cash flow forecast. GoL/MPWT will also open another bank account (Special Account) at the Bank of Lao, managed by National Treasury, to be used to receive funds for Sub-component 1.2 when DLIs have been met. The account will also be denominated in U.S. Dollars. An advance equivalent to a 12 months forecast for sub-component 1.2 will be made to this Special Account. This advance will be counted towards the amount to be disbursed when DLI is achieved. GoL requested the advance to kick-start the program mainly due to limited fiscal space and availability of funding from the Road Maintenance Fund (RMF). Availability of funding from the RMF is based on approved budget as well as MOF's approved quarterly ceilings, which in turn depend on receipts collected by the GoL. Receipts collected vary between quarters and affect the ceiling. Emergency expenditure also impacts the liquidity of RMF as funds could be diverted for emergency work. The advance is required in this context to facilitate the smooth commencement and implementation of the project ensuring timely payment to contractors and ultimately achieving the results intended.

23. For activities to be implemented at the provincial level, funds will be advanced from DA to participating provincial accounts in line with approved work plans and budgets. Similarly under Component 1.2, funds may be advanced to the provincial accounts in line with approved work plans and budgets, following the same procedures outlined in the financial procedure manual. In all cases transfers of funds and replenishment will be made on submission of a quarterly approved budgets. Expenditure will be reported monthly.

Figure A3.2: Fund Flow Arrangement



Provincial DPWT account (LAK)

24. **Internal control procedure.** The processes/procedures and controls as documented in the FMM has been acceptable for use under LRSP. DoF has revised the FMM for use by the ministry, provinces as well as ODA projects. As there is no detailed documented procedure for use at provincial level, the revised FMM has included these processes/procedures. The revised FMM will be reviewed by IDA to ensure acceptability for use under this project. It is envisaged that system improvements, including implementation of ACCPAC (see below) at ministry and provincial level will continue in this project. Therefore, support from consultants will still be required to assist DoF in the improvement and roll out of improved systems, including training and coaching.

25. **Recording and reporting.** Effective from FY2015/16, all ministries, and ministry equivalent entities at national or sub-national level are to use double entry accounting system. Currently, recording is still done manually with the use of Excel for consolidation and reporting. The same system is used at provincial level. For MPWT and provinces with previous overseas development assistance (ODA) support, accounting software such as ACCPAC has been used. Under this project, double entry accounting will be used with the use of ACCPAC software. The basis of accounting will be cash basis. The project will follow the government's reporting period. The DoF is currently modifying ACCPAC for use in new project as well as the whole ministry. Consideration of use ACCPAC will also be extended to provincial level on a pilot basis during the lifetime of the project. The automation of recording and ability to consolidate data online will enable timely reporting of financial data. Details of recording and reporting at provincial level will be included in the revised FMM.

26. The interim financial reports (IFR) must report receipts and expenditure by source of funds, components and sub-components. The IFR will be prepared every six month or semi-annually and submitted to IDA no later than 45 days after the semester end. The format of the IFR has been confirmed at negotiations. The IFR will also be used as a basis for documentation of expenditure under the project's components 1, 2 and 3. In addition sub-component 1.2, which is DLI based, will be supported by certification by the DOF, financial statement of RMF and the DLI verification/technical audit report.

27. **Internal Audit.** An Internal Control Division within the Department of Inspection, MPWT is established and responsible for internal audit of the ministry. With support of LRSP, internal audit manuals/tools have been developed but not yet finalized for use. Staff also have not yet been trained or started internal audit of the ministry or any project that MPWT manages. Support will continue to be provided under this project so that the Internal Control Division is equipped with technical capacity and operationalized by the end of the project.

28. **External Audit.** An annual audit, covering all sources of financing, will be required. The audit will be carried out by qualified independent external auditors, with terms of reference (TOR) acceptable to IDA. To ensure timeliness of appointment of the auditors and any

subsequent delays in submission of audit reports, draft audit TOR were available and confirmed at negotiations. Auditors will be appointed no later than six months after project effectiveness. The annual audited report together with management letter will be submitted to the IDA no later than six months after the end of each FY. The audited financial statements will be subject to public disclosure in accordance with the World Bank's Policy on Access to Information. The audited financial statements will be disclosed on the ministry's website.

Table A3.2: FM action

Action	By whom	Target completion
Completion of revised FMM to include provincial level procedures/processes	DoF	Completed
Agree on IFR format	DOF/WB	Completed
Complete preparation of audit TOR	DOF/DoI/WB	Completed
Appoint project auditors	DOF/DoI	Within 6 months after project effectiveness

29. **Implementation Support and Supervision Plan.** Implementation support for FM functions will be provided more frequently to the task and client teams in the first year of project implementation. IDA will then limit its review to at least bi-annually thereafter depending on the updated project FM risk assessment and progress. The FM missions will include reviews of the continuous adequacy of the FM arrangements, progress with FM capacity building activities, adequacy and timeliness of preparation of IFRs and progress in implementation of agreed FM actions and recommendations from project audits.

Disbursement arrangements

Table A3.3: Disbursements from the IDA Credit shall be made against the following expenditure categories:

Category	Amount of the Financing Allocated (expressed in SDR)	Percentage of Expenditures to be Financed (inclusive of Taxes)
(1) Works under Part 1.1(a) of the Project	10,200,000	100%
(2) Works under Part 1.2 of the Project	2,200,000	100% of the DLI Values
(3) Goods, non-consulting services, Consultants' services, Training and Workshops, and Operating Costs under Parts 2.1, 2.2, 2.3(b), 2.4 and 3 of the Project	5,600,000	100%
(4) Emergency Expenditures under	0	100%

Part 4 of the Project		
TOTAL AMOUNT	18,000,000	

Disbursement arrangements – sub-component 1.2 Routine Maintenance- DLI

30. The applicable Eligible Expenditure Program (EEP) for Sub-component 1.2 under Category 2, will be works carried out under routine maintenance activities under the RMF as per the approved Annual Work Plan and Budget. The program will reimburse expenditure identified as works carried out under routine maintenance as recorded under RMF financial statement and reported under government budget code/chapter 17-10-03-00. MPWT/RMF must demonstrate that expenditure incurred and paid for by the RMF (as captured in its financial statements) and reported under Chapter 17-10-03-00 exceeds the amount being requested from IDA in a particular period. This will be through submission of EEP certified by the Director of Finance of MPWT and RMF financial statements for the period.

31. Disbursement will be made on the basis of achieved and verified DLI targets. Annex 1(B) describes the determination of the amount of disbursement. Disbursement will be against Category 2. An advance up to 12 months forecast of planned expenditure for routine maintenance (sub-component 1.2) could be provided at the beginning of each fiscal year. The advance will be reconciled with the amount to be disbursed when the DLI targets are achieved, i.e. the advance will be counted towards the disbursed amount. Reconciliation and documentation of expenditures under sub-component 1.2 (against the DLI targets) will be made once a year.

32. First disbursement: Disbursement of the advance will be made upon IDA no objection of the forecast of planned expenditure (up to 12 months forecast) for works under the routine maintenance. The advance cannot exceed the DLI value estimated for that year. At the end of each year, but not later than April 30, of each year during the Project implementation period, (a) the project will submit its report on the status of achievement of the relevant DLI Targets; and (b) not later than June 30, of each year during the Project implementation period, independently verify, the achievement of the DLI targets. This should be carried out by an independent verification agent (Technical Audit) and the verification report produced. Based on the verification report, the amount to be recognized as disbursed under the DLI will be determined. The advance will be reconciled with the DLI value of the DLI targets achieved. Supporting documents comprise: DLI verification report, EEP certification and financial statements for the relevant period, and IFR (reporting actual expenditure) covering the year.

33. Subsequent disbursements: This will follow the same procedure and require documentation as the first disbursement.

34. If the DLI for the particular year is fully achieved, IDA will document the full DLI amount as expenditure under disbursement Category 2. The DLI amounts are capped for each year, so that even if the DLI target is exceeded for a particular year, there will be no additional payments for that year. If the DLI target is not fully achieved during a particular year (the annual DLI targets being scalable), IDA will partially reimburse the eligible expenditures up to the km

of routine maintenance achieved against the agreed cost per km. If the DLI amount is less than the advance amount, then the remaining advance would be deemed as undocumented and will be deducted from the next advance.

35. At the completion of the project, any undocumented and unutilized funds in the special account will be refunded to IDA.

Disbursement arrangements – input based approach for all components other than sub-component 1.2

36. Applicable disbursement methods include (a) Advances, (b) Direct Payments and (c) reimbursements. Funds will be advanced into the U.S Dollar Designated Account (DA) opened at the Bank of Lao, managed by the National Treasury, MoF. The ceiling will be variable based on approved six monthly forecast. Reporting of expenditure will be based on IFR. The frequency of reporting will be quarterly (3 months).

37. The minimum application size for Reimbursements and Direct Payments will be equivalent to US\$200,000.

Disbursement arrangements – Component 4

38. Disbursement for Component 4: Contingent Emergency Response. No withdrawal will be made under Component 4 until the government has: (a) declared that a crisis or emergency has occurred, and the WB has agreed with the determination; (b) prepared and disclosed all safeguards instruments required for activities under Component 4 of the Project, if any, and the government has implemented any actions which are required to be taken under said instruments; (c) established adequate implementation arrangements, including a positive list of goods and/or specific works and services required for emergency recovery, satisfactory to the IDA, including staff and resources for the purposes of said activities; and (d) has prepared and adopted the Emergency Response Manual (ERM) acceptable to IDA, so as to be appropriate for the inclusion and implementation of activities under Component 4. A Contingency Emergency Response Implementation Plan (CERIP) will be developed in accordance with the ERM manual prior to the release of any funds under Component 4.

39. Disbursements would be made either against a positive list of critical goods and/or against the procurement of works, and consultant services required to support the immediate response and recovery needs of GoL. All expenditures under this component, should it be triggered, will be in accordance with OP/BP 10.00 and will be appraised, reviewed and found to be acceptable to the Bank before any disbursement is made. All supporting documents for reimbursement of such expenditures will be verified by the DOI and DOF, certifying that the expenditures were incurred for the intended purpose and to enable a fast recovery following the crisis or emergency, before the withdrawal application is submitted to the Bank. This verification would be sent to the Bank together with the application.

40. The project will have a Disbursement Deadline Date (final date on which the IDA will accept applications for withdrawal from the Recipient or documentation on the use of Credit

proceeds already advanced by the IDA) of four months after the Closing Date of the project. This “Grace Period” is granted in order to permit the orderly project completion and closure of the Credit account via the submission of applications and supporting documentation for expenditures incurred on or before the Closing Date. Expenditures incurred between the Closing Date and the Disbursement Deadline Date are not eligible for disbursement. All documentation for expenditure forwarded to IDA for disbursements will be retained and be made available to the external auditors for their annual audit, and to the IDA and its representatives if requested. In the event that auditors or the IDA implementation support missions find that disbursements made were not justified by the supporting documentation or are ineligible, the IDA may, at its discretion, require the Recipient to: (a) refund an equivalent amount to the IDA; or (b) exceptionally, provide substitute documentation evidencing other eligible expenditures.

41. In the event that auditors or the IDA implementation support missions find that disbursements made were not justified by the supporting documentation or are ineligible, the IDA may, at its discretion, require the Recipient to: (a) refund an equivalent amount to the IDA; or (b) exceptionally, provide substitute documentation evidencing other eligible expenditures.

42. **Retroactive Financing.** To ensure continuity of the Project activities, retroactive financing of up to SDR 0.5 million from the IDA Credit will be allowed for all activities, except for Project activities under Component 1.1 and 1.2, to finance payments made for eligible expenditures made prior to credit signing but on or after September 30, 2016.

Procurement

43. Seventy eight percent (78%) of the project funds will finance works contracts and associated technical assistance for periodic and routine maintenance and spot improvements to be implemented by DPWTs at provincial level. The remaining funds will finance technical assistance and capacity building at central and subnational level. The average value of a single contract for works is estimated to be below US\$3 million, but there will be a large number of contracts.

44. Procurement under the Project will be carried out in accordance with the World Bank’s “Guidelines: Procurement of Goods, Works and Non-consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers” dated January 2011 and revised in July 2014; the “Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers” dated January 2011 and revised in July 2014; and provisions stipulated in the Financing Agreement. Lao Harmonized National Competitive Bidding (NCB) agreed by the Bank, with appropriate modifications to incorporate specific Bank requirements will be used for procurement of works with values under the National Competitive Bidding threshold.

45. **Additional NCB Provisions.** The procurement procedure to be followed for National Competitive Bidding shall be based on the public bidding procurement method as defined in the Decree No. 03/PM on Government Procurement of Goods, Construction, Maintenance and Services, dated January 9, 2004 and the Implementing Rules and Regulations, dated March 12, 2004 as amended on May 5, 2009; provided that such procedure shall be subject to the

provisions of Section I and Paragraphs 3.3 and 3.4 of the Procurement Guidelines and the following additional provisions:

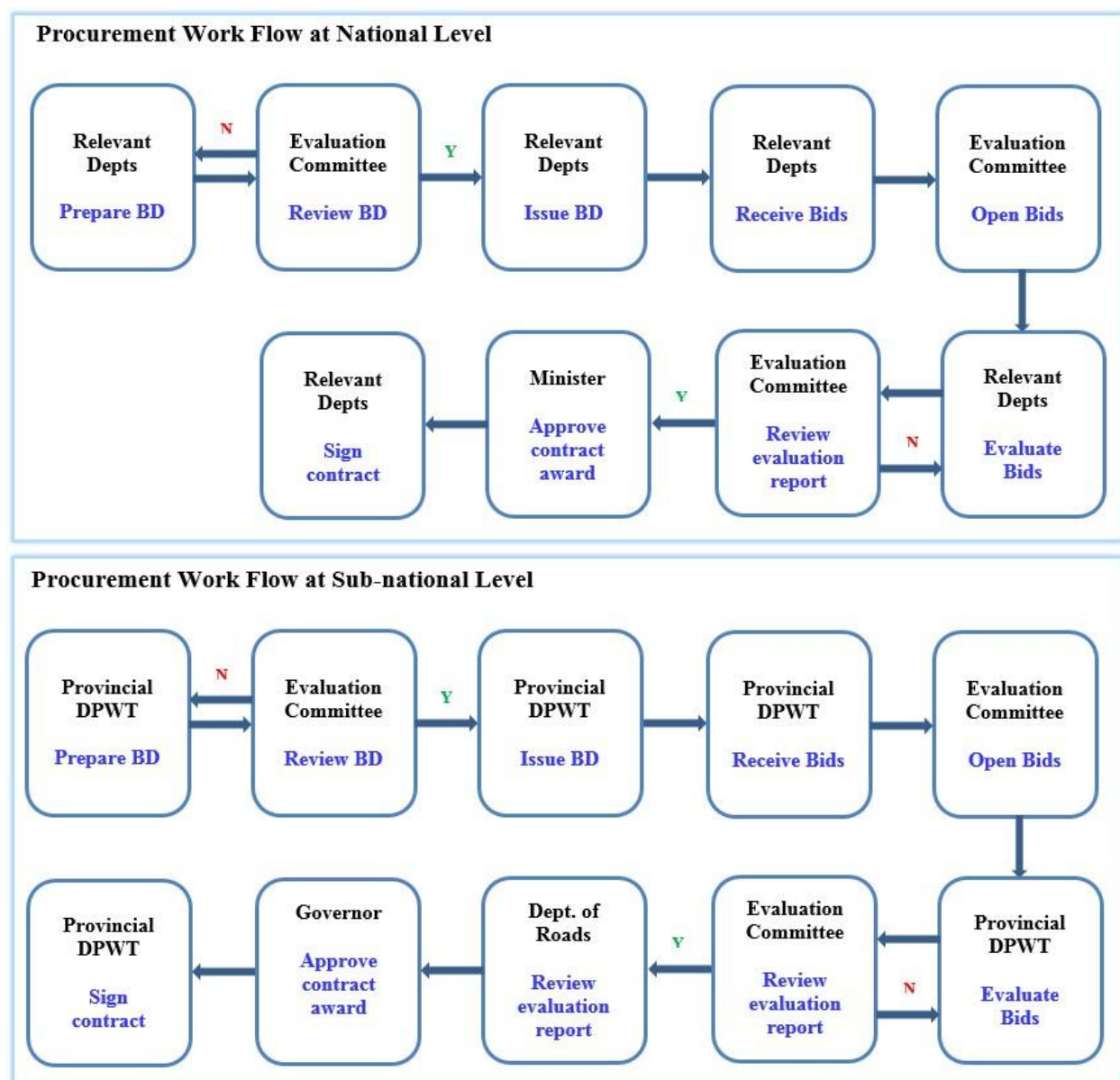
- (a) Eligibility: The eligibility of bidders to participate in a procurement process and to be awarded a contract financed by the Association shall be as defined under Section I of the Procurement Guidelines; accordingly, no bidder or potential bidder shall be declared ineligible for contracts financed by the Association for reasons other than those provided in Section I of the Procurement Guidelines.
- (b) Domestic Preference: No domestic preference may be applied in bid evaluation on the basis of bidder nationality, the origin of goods, services or labor, and/or preferential programs.
- (c) Registration and Inclusion in the Reference List of Suppliers/Contractors: Registration and inclusion in the reference list shall not be used as a basis for or as a substitute for assessing the bidders' qualifications.
- (d) Bidding Documents: Procuring entities shall use the appropriate standard bidding documents acceptable to the Association, which documents shall be prepared to ensure economy, efficiency, transparency, and broad consistency with the provisions of Section I of the Procurement Guidelines.
- (e) Bid Opening: All bids must be opened in public immediately at on the deadline set for the bid submission at the date, time and place stipulated in the tender documents. Bids shall be opened in public, that is, the bidders or their representatives may attend the bid opening. The tender committee shall announce the names of the bidders and the price offered by each bidder. A record of the bid opening shall be prepared and shall contain the names of the bidders, bid price, discounts and the names of persons in attendance and the organizations they represent.
- (f) Rejection of Bids and Re-bidding: All bids (or the sole bid if only one bid is received) shall not be rejected, negotiations shall not take place at any time with a bidder, the procurement process shall not be cancelled, or new bids shall not be solicited without the Association's prior written concurrence.
- (g) Contract Modifications: With respect to contracts subject to the Association's Prior Review, the Recipient shall obtain the Association's no objection before agreeing to: (i) a material extension of the stipulated time for performance of a contract; (ii) any substantial modification of the contract scope of services or other significant changes to the terms and conditions of the contract; (iii) any variation order or amendment (except in cases of extreme urgency) which, singly or combined with all variation orders or amendments previously issued, increases the original contract amount by more than fifteen percent (15%); or (iv) the proposed termination of the contract. A copy of all signed contract amendments shall be provided to the Association for its record.
- (h) Bid and Contract Securities: All bid and contract securities shall be in the format specified in the bidding documents.

- (i) Fraud and Corruption: To be deemed acceptable by the Association, the bidding documents and contract shall include provision(s) stating the Association's policy to sanction firms or individuals found to have engaged in fraud and corruption as defined in the Procurement Guidelines.
- (j) Inspection and Audit Rights: In accordance with the Procurement Guidelines, each bidding document and contract financed out of the proceeds of the Financing shall provide that bidders, suppliers and contractors, and their subcontractors, agents, personnel, consultants, service providers, or suppliers, shall permit the Association to inspect all accounts, records, and other documents relating to the submission of bids and contract performance, and to have them audited by auditors appointed by the Association. Acts intended to materially impede the exercise of the Association's inspection and audit rights provided for in the Procurement Guidelines constitute an obstructive practice as defined in the Procurement Guidelines.

46. The Bank Standard Request for Proposal will be used for all consultancy services. Procurement under Component 4 of the Project will be carried out in accordance with the Emergency Response Manual to be agreed between the Bank and Government.

47. The Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants", dated October 15, 2006 and revised in January 2011 will apply to this Project. Specifically, the MPWT has agreed to the following actions: (i) declaration of interest by all evaluation committee members involved in procurement activities; (ii) bidding documents/RFP will include the Statement of Undertaking requiring bidders and consultants to observe the highest ethical behavior in participation and implementation of procurement activities; (iii) instituting a project complaints system that will be disclosed in all tender documents and the implementing agency will submit to the Bank a quarterly grievance/complaints report; (iv) strengthening the capacity of the MPWT through employment of an international procurement consultant to provide procurement support and provision of procurement training to the implementing agency throughout project implementation; and (v) procurement information disclosure regime including posting bidding documents, bid opening records, and awards on the MPWT's website; and (vi) procurement audit as integral part of the annual technical audit.

48. The Department of Finance (DoF) will manage, coordinate, and monitor all procurement activities and communicate with the Bank with regards to procurement activities. The provincial DPWTs will undertake procurement activities for Component 1 on road maintenance and climate resilience, under supervision of the MPWT Department of Roads (DoR). The DoR will act as Chair of the Procurement Committee and will oversee and provide technical and procurement support to DPWTs in implementing Component 1, including conducting prior review of the procurement by provincial committees before award of the contract. DPWT will be responsible for implementation of community based routine maintenance. Various MPWT departments will provide inputs to technical assistance activities within their mandates. The responsibilities and flow of procurement activities at national (MPWT) and provincial level is summarized in the two following diagrams:



49. The project will kick start the use of information technology in procurement in the Ministry. This activity, which will be part of efforts to improve sectoral governance, is designed to improve transparency and accountability in public procurement within the Ministry. The Ministry website will be upgraded and enhanced to be more interactive and publish all procurement related information to tender notices, downloadable tender documents and clarifications, tender results and contacts for procurement related information. It expected that in the long run this initiative will form the nucleus of implementing an e-procurement system.

50. The World Bank carried out the procurement capacity and risk assessment of MPWT in accordance with the guidelines on “Revised Instruction for carrying out assessment of agency’s capacity assessment to implement procurement; setting of prior review thresholds and

procurement supervision plan” in March 2016. The assessment was done for MPWT at the national and subnational levels, and included an assessment of contractor capacity to carry out works at provincial level.

51. The MPWT has over 25 years of experience implementing Bank financed projects. Since 1991, MPWT has implemented six (6) World Bank financed projects. Overall MPWT has adequate capacity to manage procurement activities under the project. Within MPWT, DoF will be responsible for the management of procurement activities. While at the institutional level the procurement capacities are appropriate, the assessment found that most of the experienced staff have moved on as result of promotion or restructuring, and the available staff is not completely familiar with World Bank procurement procedures. While staff at provincial level have been engaged in the implementation of the original LRSP, staff mobility has also resulted in current gaps in knowledge regarding World Bank procurement procedures at this level. During the implementation of LRSP some issues were observed regarding the timely provision of technical inputs into procurement documents at both central and provincial level. For LRSP2, the limited exposure to World Bank procurement procedures among new staff and delays in providing technical inputs could result in delays in procurement processing and contract delivery.

52. A contractor capacity assessment to carry out work activities in the provinces was carried out. The assessment found that all selected regions have an adequate number of contractors ranging from 18 to 31 in number in each province. The lowest classification for these contractors was Level 3 based on Government classification. Level 3 classified contractors were assessed by Government to have at least 8 engineers of various disciplines, turnover of between 100-500 million Kip (around US\$12-60 million), and the required equipment for road construction. These contractors are reported to have carried out similar contracts to the ones envisaged under the Project. The assessment concluded that there are adequate numbers of contractors to participate in open tendering at provincial level.

53. The overall procurement risk is rated as Substantial. The major risks and mitigation measures are summarized as follows:

Table A3.4: Procurement risk mitigation measures

No	Risk/problem	Proposed risk mitigation measure	Responsibility	Deadline
1.	Delays in procurement process	(i) Careful procurement planning and scheduling, procurement advanced as much as possible; (ii) Procurement monitoring using Systematic Tracking of Exchanges in Procurement (STEP); (iii) Closer coordination between DoF Implementing Departments and IDA, and supervisions and follow up by IDA.	MPWT DoF DoF	During Project implementation
2.	Remaining capacity gaps of staff in the MPWT's DoF and at provincial level with WB Procurement Guidelines	(i) Procurement training provided by the procurement consultant and capacity development of the staff of the DoF; and (ii) Bank will provide training to MPWT's departments and DPWT's with responsibilities for Project activities on its	Procurement consultant; DoR; DoF; and design and supervision consultant	During Project implementation

		- procurement procedures; (iii) part-time international procurement consultant to work under DoF; (iv) DoR will Chair the Procurement Committee; (v) DoR will provide prior review; (vi) DoR will provide support to provinces in preparing bidding documents; (vii) Design and supervision consultant, hired under the Project, will provide technical support to DPWTs on procurement including procurement training.		
3	Limited exposure of local contractors in the province to procurement documents and procedures	(i) Regular reviews of market based cost estimates; and (ii) Training of local contractors	DPWT; design and supervision consultant	Within six months of the signing of the grant agreement.
4	Governance risks associated with conflict of interest, fraud and corruption	(i) A part-time international procurement consultant shall be hired to provide procurement support to this Project. (ii) Annual technical and procurement audits have been agreed and will be carried out as part of the Project. (iii) Quarterly procurement report shall be prepared. (iv) Enhanced disclosure of procurement information, including publication of the annual procurement plan and a quarterly summary of the contract award information for all procurement packages on MPWT's website and in newspapers. (v) Establish a procurement complaint handling mechanism consistent with the Government Procurement Rules & Regulations of MOF, and the Bank's requirements. (vi) Require staff involved in procurement to declare their interest and sign a declaration form (iii) Monitoring and reporting on implementation of actions Point 2 (i) to (vii) and Point 5 (i) to (vi) for strengthening transparency and procurement training for the project.	MPWT, DPWT, procurement consultant	During Project implementation
5	Transparency and disclosure regime on public procurement	Install as part of ICT platform upgrade a web based public procurement information disclosure regime as first step towards moving towards e-Procurement. The information to be posted on MPWT's website will include: (i) Annual procurement plan. (ii) Invitation/REOI. (iii) Bidding/proposal documents, which can be downloaded by interested bidders and they can submit bids/proposals in hardcopy to project implementing agency as specified	ICT; DoF	During Project implementation

		in the bidding/proposal documents. (iv) Questions and Answers. (v) Bid opening record, and (vi) Contract award.		
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54. The overall procurement risk is rated as **Substantial**.

55. **Procurement oversight:** In addition to prior review, field procurement supervision will be conducted as part of the regular implementation support missions, which will be conducted at least twice a year. The Bank will periodically undertake the ex-post review by a procurement specialist; once a year if there are sufficient contracts for review. MPWT will supervise the provinces in procurement processing and provide oversight. Annually, an independent technical and procurement audit of procurement and contract management activities will be carried out.

56. **Procurement plan:** The MPWT has prepared a common detailed Procurement Plan for the first 18 months of Components 1, 2 and 3, (dated October 18, 2016) which will provide the basis for the selected procurement procedures. The Plan will be updated with the Bank's prior concurrence, annually or as required, to reflect changes in implementation needs and improvements in institutional capacity. The procurement plan is summarized as follows:

Goods and Works and non-consulting services.

57. **Prior Review Threshold:** Procurement Decisions subject to Prior Review by the WBG as stated in Appendix 1 to the Guidelines for Procurement:

Table A3.5: Method and Prior Review Threshold

No.	Procurement Method	Contract Value Threshold USD	Prior Review Threshold USD	Comments
1	ICB (Goods)	>=600,000	All ICB contracts	
2	NCB (Goods)	100,000 - <600,000	None	
3	Shopping (Goods)	<100,000	None	
4	Direct Contracting (Goods, Works, and Non-consulting Services)	-	All contracts above 5,000	
5	ICB (Works)	>= 2,000,000	All ICB contracts	
6	NCB (Works)	200,000 - <2,000,000	All contracts above USD 1 million	
7	Shopping (Works)	<200,000	None	
8	Community participation	None	First contract	
9	Procurement from UN agencies (Goods)	None	All contracts above 600,000	Use World Bank-UN contract template

58. **Prequalification.** Not expected for the works/goods packages.

59. The Project Operation Manual (POM) will provide guidance to project implementing agencies.

Table A3.6: Summary of the Procurement Packages planned during the first 18 months after Project effectiveness

1	2	3	4	5	6	7
Ref No.	Description	Estimated Cost US\$ million	Packages	Domestic Preference (yes/no)	Review by Bank (Prior / Post)	Comments
1	Summary of the NCB (Works) packages	33.900	Multiple	No	Prior/Post	
2	Summary of the NCB (Goods) packages	0.59	2	No	Post	
3	Summary of the Shopping (Goods) packages	0.317	8	No	Post	

Selection of Consultants

60. **Prior Review Threshold:** Selection decisions subject to Prior Review by Bank as stated in Appendix 1 to the Guidelines Selection and Employment of Consultants:

Table A3.7: Prior Review Threshold

No.	Selection Method	Contract Value Threshold (US\$)	Prior Review Threshold (US\$)	Comments
1	Competitive Methods (Firms) – Quality & Cost Based Selection (QCBS) and Quality Based Selection (QBS)	>=300,000	All contracts	
2	Competitive Methods (Firms) – Least-Cost Selection (LCS) and Selection Based on Consultant Qualifications (CQS)	<300,000	>=100,000	
3	Single Source (Firms)		All contracts above 5,000	
4	Individual Consultants		All contracts above 100,000 for all individuals. Key (heading those units/departments).	Contract extension shall be subject to post review.

No.	Selection Method	Contract Value Threshold (US\$)	Prior Review Threshold (US\$)	Comments
			Legal and Fiduciary Consultants and all sole-source selection >=10,000. All ToRs will require Bank clearance.	

61. **Short list comprising entirely national consultants:** No short lists of consultants for services are expected to comprise entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines. However, if a need arises during the project implementation and if it is warranted, short lists of consultants for services estimated to cost less than US\$200,000 equivalent per contract, may comprise entirely national consultants.

Table A3.8: Consultancy Assignments with Selection Methods and Time Schedule

1	2	3	4	5	6
Ref. No.	Description of Assignment	Estimated Cost US\$ million	Packages	Review by Bank (Prior/Post)	Comments
1	Summary of number of contracts that will be let under QCBS and CQS	6.15	4	Prior	
2	Summary of number of contracts that will be let under other methods	2.53	17	Prior/Post	

Procurement Plan

Goods and Works and non-consulting services

Ref. No.	Contract (Description)	Estimated Cost USD million	Procurement Method	PQ (yes/no)	Domestic Preference (yes/no)	Review by Bank (Prior / Post)	Expected Bid/Quotation Opening Date	Comment/ Final contracted amount
Civil Works								
W-01	Routine Maintenance	13.000	NCB	No	No	Post/Prior	July 2017 - 2020	Multiple contracts IDA and GoL
W-02	Periodic Maintenance and Spot Improvement	20.900	NCB	No	No	Post/Prior	July 2017 - 2020	Multiple contracts IDA and NDF

Goods								
G-01	Weight scales for overloading controls for DoR	0.250	NCB	No	No	Post	May 2017	IDA
G-02	Fifty (50) off-road motorbikes for DoR and DPWT	0.200	NCB	No	No	Post	May 2017	IDA
G-03	Motorbikes (10 for DoI and 18 for DoF)	0.042	Shopping	No	No	Post	December 2017	IDA
G-04	Testing equipment for DoI	0.013	Shopping	No	No	Post	June 2017	IDA
G-05	1 st batch – office equipment for DoI, DoP and PTTI *	0.094	Shopping	No	No	Post	May 2017	IDA
G-06	2 nd batch - office equipment for DPC *	0.080	Shopping	No	No	Post	December 2017	IDA
G-07	3 rd batch - office equipment for DoF *	0.073	Shopping	No	No	Post	June 2018	IDA
G-08	Computers and Server equipment for Network Development for ICT	0.14	NCB	No	No	Post	May 2017	IDA
G-09	E&S monitoring tools/equipment and facilities for PTRI	0.015	Shopping	No	No	Post	May 2017	IDA
Total of Civil Works and Goods		34.807						

Consulting Services

1	2	3	4	5	6	7
Ref. No.	Description of Assignment	Estimated Cost US\$ million	Selection Method	Review by Bank (Prior/ Post)	Expected Proposals Submission Date	Comment/ Final contracted amount
Component 1: Climate Resilience Road maintenance						
C1-01	TA for design and supervision for provincial and district roads	3.20	QCBS	Prior	December 2016	NDF
Component 2: Institutional Strengthening						
C2-01	TA for climate resilient road asset management and preparation of Climate Resilience Maintenance and Preservation Program for the National Road Network and	2.00	QCBS	Prior	April 2017	NDF
C2-02	Transport Sector Policy advisor	0.25	IC	Prior	May 2017	IDA
C2-03	Planning Framework Development Consultant	0.170	IC	Prior	May 2017	IDA
C2-04	Internal Control Advisor	0.100	IC	Post	May 2017	IDA

1	2	3	4	5	6	7
Ref. No.	Description of Assignment	Estimated Cost US\$ million	Selection Method	Review by Bank (Prior/Post)	Expected Proposals Submission Date	Comment/ Final contracted amount
C2-05	Quality Assurance Advisor	0.100	IC	Post	May 2017	IDA
C2-06	Consultant for evaluation of FMS	0.090	IC	Prior	January 2018	IDA
C2-07	Financial Management Consultant - Northern	0.100	IC	Prior	April 2017	IDA
C2-08	Financial Management Consultant - Central	0.100	IC	Prior	April 2017	IDA
C2-09	Financial Management Consultant - Southern	0.100	IC	Prior	April 2017	IDA
C2-10	TA for IRAM for local roads, E-Archive, and Web-site	0.750	QCBS	Prior	March 2017	IDA
C2-11	Environment and Social Consultant (Local)	0.060	IC	Post	January 2018	IDA
C2-12	Environment and Social Consultant (International)	0.030	IC	Post	January 2018	IDA
C2-13	Human Resource Development Consultant	0.080	IC	Post	April 2017	IDA
C2-14	Technical assistant to NSCT	0.100	IC	Post	June 2017	IDA
C2-15	Road safety audit manual development	0.200	IC	Prior	June 2017	IDA
C2-16	Traffic safety campaign consultant	0.150	IC	Prior	June 2017	IDA
Component 3: Project management						
C3-01	Project Coordinator	0.300	IC	Prior	April 2017	IDA
C3-02	Financial Auditor	0.200	CQS	Prior	June 2017	IDA
C3-03	Technical Auditor	0.300	IC	Prior	July 2017	IDA
C3-04	Procurement Consultant	0.300	IC	Prior	December 2016	IDA
Total Consulting Services		8.68				
Grand Total		43.49				

Environmental and Social (including safeguards)

62. The Project triggers four environmental safeguards policies including Environmental Assessment (OP/BP 4.01), Natural Habitats (OP/BP 4.04), Forests (OP/BP 4.36) and Physical Cultural Resources (OP/BP 4.11), and two social safeguards policies including, Involuntary Resettlement (OP/BP 4.12) and Indigenous Peoples (OP/BP 4.10).

63. The civil works activities, under Component 1 of the Project, will focus on routine and periodic road maintenance, including spot improvement in order to improve climate resilience

and road safety of road networks provincial and district road network in the six selected provinces. Investment activities may include elevating flood prone road sections, paving road sections with steep slope and the sections passing through big communities, drainage improvement/ construction, slope improvement/stabilization etc. It is envisaged that all activities would be carried out on the existing carriageway within the existing right of ways (RoW) and may involve minor realignments to improve road safety and/or strengthen road climate resilience. The potential impacts from these activities will be minor, site specific, localized, temporary, and can be mitigated. Potential impacts include dust dispersion, noise, traffic obstruction and access, construction and road safety etc. It is not anticipated that the Project would generate any considerable risk of destroying important habitats, damaging forest stands, or affecting other ecosystems in any tangible and/or irreversible ways.

64. To address the potential environmental, health, and social impacts from the LRSP2, the MPWT has prepared and disclosed: (i) an Environmental and Social Management Framework (ESMF) that includes an ESMP guide and generic Environmental Code of Practice (ECoP); (ii) an RPF to address any issues that may occur for subprojects identified during implementation with screening criteria and relevant protocols; and (iii) an EGPF to address the requirements of the indigenous peoples policy. Under OP 4.10, free, prior, and informed consultation leading to broad community support will be applied during the implementation of the program. The ESMF, RPF and EGPF will apply to all activities/subprojects financed by IDA, NDF and the Government. It is anticipated that there will be no permanent land acquisition related to the implementation of the Project.

65. A work plan will be prepared annually. To mitigate social and environmental impacts, the ESMF provides for screening and assessing environmental and social issues and for preparing required site-specific safeguard instruments once specific locations and technical details of the selected investments are identified during Project implementation. The ESMF indicates that the following activities will not be eligible for Project financing:

- Works likely to create adverse impacts on ethnic groups within the village and/or in neighboring villages or unacceptable to ethnic group communities living in a village of mixed ethnic composition;
- Loss or damage to cultural property, including sites having archaeological (prehistoric), paleontological, historical, religious, cultural and unique natural values;
- Purchase of gasoline or diesel generators and pumps; guns; chain saws; large amounts of pesticides, insecticides, herbicides and other dangerous chemicals; asbestos and other investments detrimental to the environment;
- Significant conversion or degradation of natural habitat or where the conservation and/or environmental gains do not clearly outweigh any potential losses; and
- Construction of new roads and major road upgrading, improvement, and/or rehabilitation that is classified as EA Category A according to OP/BP 4.01.

66. The Project has been assigned Category A as Component 2 of the Project will provide TA support to develop the environment and social assessment capacity of the MPWT with a view to developing and implementing future Public-Private Partnerships (PPP), but PPP road investments themselves are outside the scope of the Project. Thus, the capacity development

activities under this Project may potentially support Category A investments. These potential downstream impacts may include, but not be limited to, loss of land, assets and income due to land acquisition and/or physical relocation of physical structures, impacts on natural habitats and forest, impacts from use of materials for construction, increased air pollution and noise from road construction and operation, impacts related to increased traffic speed, impacts on Physical Cultural Resources and socio-economic impacts.

67. No safeguard instruments have been developed specifically for PPP capacity building activities, but LRSP2 will ensure that TA activities would be conducted in line with Bank safeguard policies to support future Category A PPP investments. This will be spelled out in the relevant Consultant ToRs. OP 4.10 and OP4.12 requirements will be addressed in capacity development and any technical assistance activities to be supported under the Project with regard to PPPs.

68. The first consultations on LRSP2 and its safeguard arrangements were held in Vientiane capital and Bolikhamxay and Xayabouly on February 25, 2016 and during March 6-11, 2016, respectively, focusing on the Project scope and draft TORs for the ESMF, EGPF, and RPF. The results were taken into consideration during the drafting of the ESMF, EGPF and RPF. Consultations on the draft ESMF, RPF and EGPF were conducted twice with key stakeholders including relevant government agencies, local non-governmental organizations in Vientiane Capital as well as local authorities and communities in some of the pilot provinces (Bolikhamxay and Xayabouly) in a free, prior and informed consultation manner to seek their views and establish their broad support for the Project implementation.

69. The Draft ESMF including RPF and EGPF were disclosed on the MPWT website and the World Bank external website on April 11, 2016. The second set of consultations was first conducted on the drafts ESMF, RPF and EGPF in Bolikhamxay and Xayabouly and in Vientiane in late April 2016 and later in Houaphan and Oudomxay in June 2016. The final ESMF, EGPF and RPF in both English and Lao were re-disclosed on MPWT's website on July 26, 2016. English versions were re-disclosed on the World Bank website on July 27, 2016.

70. The ESMF and site specific safeguards instruments will be implemented by the MPWT and its line agencies including Department of Planning and Cooperation (DPC), the Environment and Social Division of the Public Works and Transport Research Institute (ESD/PTRI), the DoR and DPWTs in the target provinces. The MPWT is familiar with and has experience in managing safeguards under World Bank financed projects and has developed an Environmental and Social Operational Manual (ESOM), which is in line with World Bank environmental and social safeguard policies. The knowledge and understanding of the World Bank environmental and social safeguard policies has been improved during LRSP implementation among the MPWT staff, both at the central and provincial level.

71. Training on application of the ESOM was provided to DoR and DPWTs during the ongoing LRSP project implementation. However, an assessment of safeguard implementation capacity during the preparation of the ESMF for LRSP2 suggested that among the key agencies involved in ESMF implementation, ESD/PTRI is the only agency with enough safeguards capacity and staffing to oversee the implementation of the safeguards instruments for the Project.

Furthermore, the restructuring of MPWT since 2012 has resulted in a definition of roles and responsibilities of MPWT agencies and DPWTs, and at present ESD/PTRI has the main mandate for environment and social safeguards under MPWT. Currently, ESD/PTRI has seven staff fully responsible for safeguards related tasks. These seven staff members are highly knowledgeable, experienced and committed to the implementation of the ESOM – they also have solid experience using World Bank safeguards instruments. Under LRSP ESD/PTRI conducted safeguard monitoring and reporting, and six month and annual reports are available, and ESD/PTRI started the process of updating the ESOM. The number of ESD/PTRI staff is adequate to fulfill the current mandate but would need more resources for the implementation of LRSP2 as the PTRI safeguards supervision roles will be increased under the project. Resources are required to further strengthen capacities to prepare safeguards instruments and supervise more complex works, i.e., preparation and implementation of future PPP projects.

72. At provincial level, the capacity assessment of the six project provinces indicates that all DPWTs in these provinces have a certain level of capacity. In each, between three and seven staff were trained on ESOM, and/or were responsible for its implementation, although at present only some DPWTs have assigned engineers for ESOM supervision and monitoring. Under LRSP2, one engineer of each DPWT in the target provinces will be assigned for safeguards implementation. A design and supervision consultant will be hired using NDF-funded technical assistance support. The scope of works of the design and supervision consultant will include safeguards implementation and supervision aspects. Under LRSP2 safeguard trainings will be provided to concerned staff of ESD/PTRI, DoR, and DPWTs to ensure effective implementation of safeguards measures.

Monitoring & Evaluation

73. At Project level, the DPC of MPWT responsible for the overall management of the Project will also be responsible for ensuring that the implementation report of the Project includes a section on safeguards implementation. ESD/PTRI is responsible for six month and annual monitoring, including preparation of the six month and annual safeguard monitoring report, while DoR is responsible for ensuring that safeguard measures are incorporated into the designs and bidding/contract documents. At subproject level, DPWTs are responsible for implementation of safeguard activities including undertaking day-to-day monitoring of safeguard measures to be carried out by contractors. The Environmental and Social Unit (ESU) of DPWT will be responsible for carrying out monthly monitoring of contractors and implementation of other safeguard measures including preparation of safeguard monthly monitoring reports to be submitted to ESD/PTRI. The ESD/PTRI, and ESU/DPWTs will be responsible for keeping proper documentation for review by the WB. The ESD/PTRI will also be responsible for providing overall safeguards supervision and monitoring, ensuring effective mainstreaming of safeguard requirements into the road development project cycle, and undertaking research activities including updating ESOM in close consultation with MONRE and other agencies and the WB.

74. The ESD/PTRI (in consultation with World Bank safeguard specialists) will conduct safeguard training to concerned staff of DoR and DPWT of the Project provinces at least one time per year. Effort will be made to engage the local authorities (PONRE/DONRE), local mass organizations, and/or local communities to assist in monitoring performance of the contractors,

especially in areas that are sensitive and likely to be affected by the subproject activities and workers. A qualified national and/or regional consultant will be hired to establish and implement the training of trainers program.

Mid-Term Review

75. A midterm review will be carried out within 20 months after project effectiveness to assess the status of project implementation as measured against the performance indicators. Such a review would include an assessment of the (i) overall implementation progress of the Project; (ii) results of Monitoring and Evaluation of various activities and performance indicators; (iii) progress on procurement, disbursement and financial management; (iv) progress on the implementation of the safeguards instruments and measures; (v) implementation arrangements; and (vi) need for any project restructuring or reallocation of funds among project components to achieve the Project Development Objective by the closing date and/or improve performance. At least one-month prior to the Bank's mid-term review mission, the Project Director, will provide the Bank with an Mid-Term Review report assessing project implementation status with updated results indicators, project cost estimates, and plans for completion.

Annex 4: Implementation Support Plan
LAO PEOPLE’S DEMOCRATIC REPUBLIC
Lao Road Sector Project 2

Strategy and Approach for Implementation Support

1. The implementation support strategy addresses the design and implementation requirements of the project, including the implementation of the risk mitigation measures defined in the new Framework for Management of Risk in Operations. It also builds on the experiences and lessons learned in the implementation and management of the LRSP.

2. In light of the considerable experience acquired by the Bank in supervising LRSP, a number of steps were taken as part of project preparation to facilitate implementation. These include:

- a. Stakeholder consultations and briefings, conducted to take stock of the lessons learned from the on-going LRSP, and help identify and improve the approaches to be used in the new Project.
- b. Establishment of MoUs between MPWT and DPWTs on the division of roles and responsibilities of parties concerned on planning, financing, implementation and monitoring.
- c. Procurement and Financial Management assessments of the implementing agencies/units to determine the soundness of the respective systems and any mitigation measures to be applied.
- d. A road survey mission, which looked into the new area of climate resilience measures and helped shape the designs of the civil works to be carried out under the Project.

3. As with LRSP, LRSP2 will be implemented through government systems. The MPWT will be the implementing agency and the DPC will manage, coordinate and monitor the project implementation and monitoring. DoF will be responsible for financial management and procurement support to the departments concerned. DoI will be responsible for financial and technical audit as well as internal control. DOR will coordinate the implementation of Component 1 on road maintenance and disaster resilience. DoT will be responsible for traffic safety. DoP will be responsible for training assessment and training plan, while PTTI will serve as a training provider. ICT division under CO will work on expansion of the Integrated Road Asset Management Program Monitoring System (IRAMP) to provincial levels and Document Archive System. Environmental and Social Division (ESD) of PTRI and Technical Division of DoR will be responsible for further strengthening Environment and Social capacity at both central and local level as well as monitoring implementation thereof. The Infrastructure Division of PTRI and DoR will work on the improvement of RMS and PROMMS and data collection for National roads. DPWTs will be responsible for the implementation of road works including procurement, contract management, quality control, and data collection for local roads.

4. The strategy for the new Project takes into account the need for strengthening coordination between departments in MPWT and between MPWT and DPWTs. The

implementation support strategy thus provides focused implementation assistance to both MPWT and DPWTs, especially given: (a) application of climate resilience measures; (b) unclear division of roles and responsibilities between MPWTs and DPWTs; (c) behavioral change of road users aiming at reducing losses to road accidents; (d) the Project's new approach of PBC; and (e) enhancement of MPWT's capacity for better management of the road network.

5. To enhance synergies in the support provided by the various development partners, the existing technical working group will further develop frameworks for policy development, institutional strengthening, and investment, which will be a platform for development partners and MPWT to work together to support sector development. The LRSP2 has been designed so as to integrate support from NDF, EIB and EU, the former with parallel financing, and the latter two with complimentary financing. It is envisioned that joint preparation and supervision missions will be carried out at regular intervals throughout implementation.

6. The Project has built in implementation support through the employment of International and national short- and long-term consultants. Review of the performance of the experts hired under the Project will be part of these implementation support missions. Important areas include: regular road condition surveys, road maintenance planning; performance based contract management, monitoring and reporting; and supervision.

Implementation Support Plan

7. The implementation support strategy will be operationalized through the conduct of joint semi-annual implementation support missions, complemented with follow-up meetings, field visits and fiduciary reviews. The Bank team members, the majority of whom are based in the Country Office and other country offices in the region, will undertake day to day interaction and provide support to the client. This arrangement is expected to ensure timely, efficient and effective implementation support to the client. Detailed inputs from the Bank team are outlined below:

- a. **Procurement.** Procurement support involving (i) prior review of procurement documents; (ii) at least twice a year conduct of ex-post reviews; (iii) coaching of procurement staff and detailed guidance on the Bank's procurement guidelines; and (iv) monitoring of procurement progress against the detailed procurement plan.
- b. **Financial Management.** Twice-yearly missions to ensure that funds are used for the intended purpose, with due regard to economy and efficiency. The reviews may include: (i) review and verification of specific transactions; (ii) review of internal controls of financial management; (iii) analysis of the financial statements in relation to the funds disbursed by the Bank; and (iv) physical verification of structures and others as to existence. Desk reviews will also be conducted on a regular basis and upon submission of the annual external audit of the Project and the bi-annual Interim Financial Reports (IFRs). Issues arising from these reports will be used to revise and adjust the scope of the planned FM implementation support.

- c. **Environment and Social Safeguards.** Supervision of and provision of technical inputs for (i) implementation of the social and environmental management plan in accordance with Bank safeguard policies; and (ii) coaching of relevant project staff for the preparation, implementation and monitoring of environmental and social safeguard tools.
 - d. **Technical Implementation Advice.** Provision of on-demand technical advice, especially with respect to: (i) climate resilience measures; (ii) the project's new approach to PBC; (iii) activities to effect behavioral change of road users and thereby reduce losses to road accidents; (iv) capacity building of MPWT and DPWTs' to improve management of road network assets, and ensure that good quality and timely road works are carried out in accordance with appropriate designs including, as needed, climate resilience aspects; and (v) gender elements of the Project.
 - e. **Project Management.** Advice on the overall management and supervision of the Project to ensure (i) technical soundness and consistency; (ii) transparency and good governance; (iii) inclusiveness; and (iv) compliance with relevant guidelines and procedures. Implementation support missions would in particular review and help to ensure the adequacy of expertise and experts employed under the Project, as well as assist with the introduction and roll-out of the project's climate resilience aspects and PBC approach.
 - f. **Mid-Term Review.** The mid-term review would review and assess implementation progress and ensure that an adequate phasing out strategy is proposed, in line with the project's overall development objective.
 - g. **Donor coordination:** In line with the sector-wide approach, the task team would assist government to take an increasingly active role in the coordination of the key development partners in the roads sector. Such coordination would be directed towards ensuring the most advantageous allocation of donor support. Such areas could range from development of integrated frameworks for policy development, institutional strengthening, to investment of various kinds. To facilitate improved dialog and cooperation, it is envisaged that donor coordination meetings would take place a minimum of twice a year.
8. Implementation support will be more intense during the first half of the Project. As capacity develops and matures, technical support will be able to be reduced. The main focus of implementation support and requirements are summarized in Tables A6.1 and A6.2.

Table A6.1: Skills Needed for Implementation Support

Skill Needed	Number of Staff Weeks (SW)	Number of trips	Estimated Resources (US\$000)	Comments
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Time	Focus	Skills Needed
	Pavement designs and supervision	Design and supervision
First twelve months	Road asset management/ condition survey	Road survey, data collection and processing; PBC of routine maintenance
	Project Supervision	Supervision/Operations
	Road designs/Technical Audit	Technical auditing
	Road safety	Awareness raising and enforcement
	Monitoring and Evaluation (M&E)	M&E
	Procurement	Procurement process/hands-on training
	Financial Management	Financial management/Review new system set up
	Safeguards	Environment and social safeguards
	Gender	Social and Gender Analysis
Annual from Year 2 to Year 5	Road asset management/ condition survey	Road survey, data collection and processing; PBC of routine maintenance
	Project supervision	Supervision/operations
	Road designs/Technical Audit	Technical auditing
	Pavement designs and supervision	Design and supervision
	Road safety	Awareness raising and enforcement
	Monitoring and Evaluation (M&E)	M&E
	Procurement	Procurement process/hands-on training
	Financial Management	Financial management/Review new system set up
	Safeguards	Environment and social safeguards
	Gender	Social and Gender Analysis

Task Team Leader (Infrastructure Specialist)	8*	8**	20	Country based
Road Transport Specialist	8	4	40	Staff or Consultant
Road Safety Specialist	2	2	10	Region based staff
DRM Specialist	2	2	10	Staff or Consultant
Infrastructure Economist	2	2	10	Country based staff
Highway Engineer	8	6**	12	Country based Consultant (local)
Procurement Specialist	4	4**	Financed by GGO08	Country based staff
FM Specialist	4	2**	Financed by GGODR	Country based staff
Monitoring and Evaluation Specialist	2	2	10	Consultant
Environmental Safeguards Specialist	4	6	Financed by GSU02	Consultant
Social Development/Gender Specialist	4	4	20	Staff or Consultant
TOTAL	45	42	132	

Table A6.2: Year 1 Implementation Support Requirement

Note:

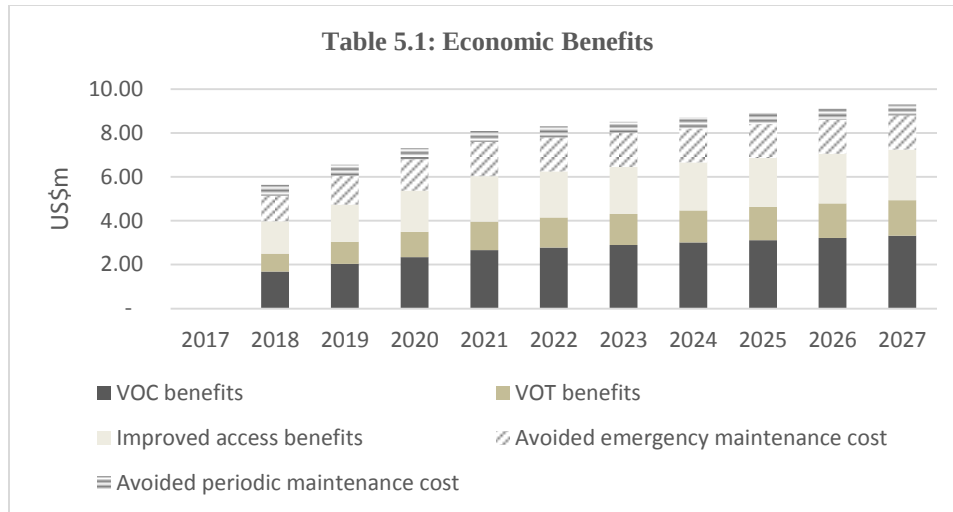
(*) – For the year 1 is estimated about 12SW

(**) – Local trips

Annex 5: Economic and GHG Analysis
LAO PEOPLE'S DEMOCRATIC REPUBLIC
Lao Road Sector Project 2

A. Economic Analysis

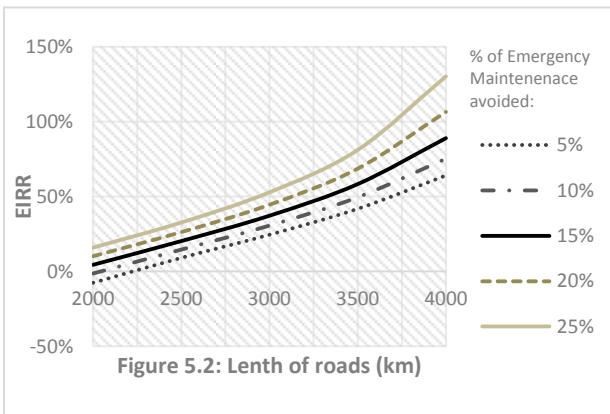
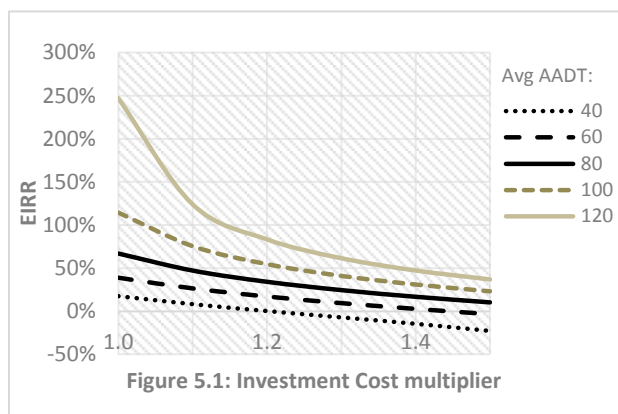
1. The economic evaluation focuses on the overall project cost of US\$47.4 million, this comprised of US\$33.9 million of civil works and US\$13.5 million of other costs. The analysis was performed based on the work plan for the routine and periodic (including climate-resilient periodic) maintenance in six selected provinces: Oudomaxay, Phongsaly, Houaphan, Xiengkhouang, Xayabouly, and Bolikhamxay. The total length estimated is 2,856 km.
2. The Cost-Benefit Analysis (CBA) was conducted to calculate the economic internal rate of return (EIRR) and net present value (NPV) of the Project. The major economic benefits of the Project arise from reduced vehicle operating costs (VOCs) due to improved road condition, travel time saving benefits to passengers, avoided emergency maintenance costs in the case of without-project, and improved economic potentials from improved access (reduced flood period). To be conservative, no generated or diverted traffic was considered in the economic analysis.
3. Traffic Data and Growth. The analysis, based on PROMMS estimated traffic data on local roads (which is 50-100 vehicles per day), assumes AADT of 60 vehicles/day and estimated growth of 10 percent in the initial year. The traffic is assumed to grow slower each year and result in less than 100 vehicles/day in the 10th year.
4. Population and road closure due to annual flood. Based on PROMMS data, it is assumed that the average population nearby the road is 120 persons/km. About 13 percent of local gravel roads are affected by more than one month of flood each year. Therefore, the baseline model assumes that, each year, 10 percent of population are affected by 30 days of road closure due to annual flood.
5. Project Benefits. The benefits to road users were estimated from the difference between the costs in the “without-project” case and the “with-project” case. (a) Without-project, it is assumed that MPWT spends US\$0.56 million on periodic maintenance and US\$8.61 million on emergency maintenance and reconstruction each year. With project, it is assumed that all \$0.56 periodic maintenance is replaced with project’s climate-resilient periodic maintenance program, and 20 percent of emergency maintenance can be avoided. (b) VOC saving is approximated, based on RMS & HDM-4 information at PTRI, at US\$0.033 per vehicle-km as road conditions are improved to good & fair level. (c) Travel time (VOT) saving is derived from speed improvement (i.e. 20 km/hr to 40 km/hr) and the assumed average wage of 30,000 LAK/day. (d) Improved access benefit comes from reduced flood period, which is assumed to be 30 days in the baseline, to 15 days for 10 percent of the population nearby the roads. It is assumed that people earn extra income from these days free from flooding. The stream of economic benefits is illustrated in the figure below.

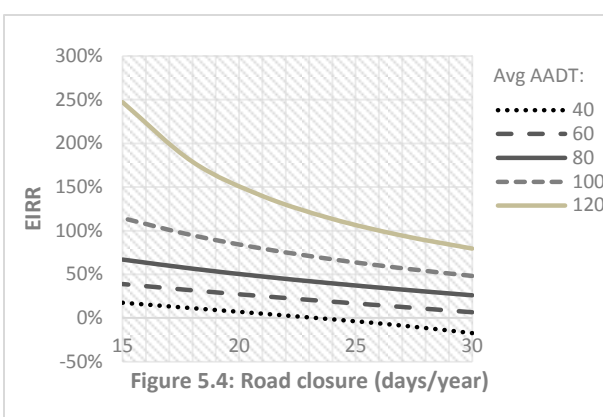
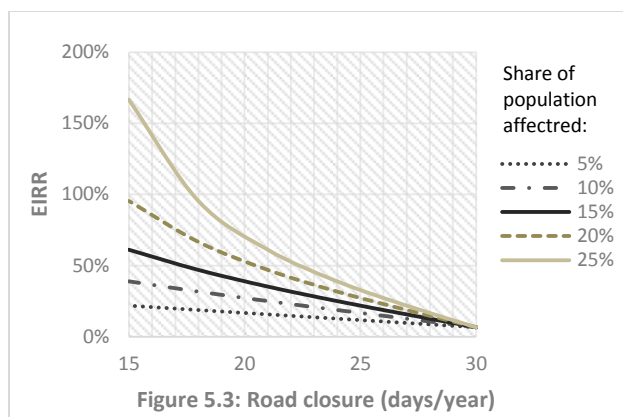


6. Results of Economic Analysis. The economic analysis covers the period of 10 years (2017-2027). With the standard conversion fraction of 0.90, EIRR is calculated to be 31.5 percent and NPV US\$6.85 million with 12 percent discount rate.

Table 5.2: Summary of Economic Analysis		
	IRR	NPV
Base Case	31.5%	6.85
Investment cost increases by 20%	16.8%	2.33
Length of road reduced by 15%	15.0%	1.10
Share of population affected reduced by 50%	15.6%	1.32
AADT reduced by 20%	19.2%	2.57

7. Sensitivity Analysis. The result of the economic analysis is robust; sensitivity analysis on various assumptions is illustrated in the figures below.





8. Because there is no revenue in road maintenance, the finances of the Project are reflected in the cost structure and the financial analysis is not needed.

9. **Greenhouse Gas Emissions.** An analysis of greenhouse gas emissions (GHG) was undertaken based on fuel consumption rate at different speed under with- and without-project scenarios. Without project, road's deteriorated condition limits vehicle speed and lead to higher fuel consumption per vehicle-km compared to with-project scenario. The total emission of CO₂ over the evaluation period is estimated to be 222,000 tCO₂e. With project, improved road condition leads to improved speed, and hence lower fuel consumption. The total emission of CO₂ under the project scenario over the evaluation period is estimated to be 175,000 tCO₂e. Therefore, the estimated GHG reduction over the evaluation period (10 years) is 47,000 tCO₂e. Assuming the social cost of GHG emission of US\$30/tCO₂e, the social benefit from GHG reduction is estimated to be US\$1.43 million. The Table below shows the details of GHG emission reduction over 10 years.

Table 5.3: GHG Emissions Reduction

Year	GHG Reduction (tCO ₂ e)		TOTAL
	from diesel	from gasoline	
2018	500	2,400	2,900
2019	600	2,900	3,500
2020	700	3,400	4,100
2021	800	3,900	4,700
2022	900	4,000	4,900
2023	900	4,200	5,100
2024	900	4,300	5,200
2025	1,000	4,400	5,400
2026	1,000	4,500	5,500
2027	1,000	4,700	5,700
TOTAL			47,000

Annex 6: Building Climate Resiliency
LAO PEOPLE'S DEMOCRATIC REPUBLIC
Lao Road Sector Project 2

Climate change vulnerability context

1. Lao PDR is one of the ASEAN region's most vulnerable countries to natural hazards with the highest 100-year Probable Maximum Loss relative to GDP (as high as 11.7 percent). From 1970 to 2010, 33 natural hazard events (mostly floods, storms, and droughts) have been registered affecting almost nine million people and causing economic damages for over US\$400 million. Fifteen floods have occurred in Lao PDR from 1970 to 2010. In 1992 a heavy flood caused economic damages for over US\$21 million. In addition, in 2005 and 2006, the damages on the irrigation system by floods caused more than US\$5 million worth of damage. Five storms or tropical cyclones have reached and affected the country over the last two decades. These storms as well as the impacts from southwest Monsoons have affected over 1.5 million people. In 2009, Typhoon Ketsana resulted in estimated damages and losses of US\$58 million. In 2011, Typhoon Haima and Tropical Storm Nok-Ten caused damages of US\$66 million and US\$71.9 million, respectively. In 2013, a series of storms caused extensive flooding affecting 350,000 people in 12 provinces (out of a total of 18). Five droughts have affected the country over the past 40 years. One of the most severe was in 1977 affecting almost 3.5 million people. A later drought in 1998 affected 750,000 people.

2. Lao PDR is highly susceptible to climate impacts and the risk increases considerably if climate change projections are taken into account. Global and regional climate change projections suggest that natural disasters in Lao PDR are likely to intensify and become more frequent. An increase in rainfall across all the country is expected, including an increase in floods along the Mekong River and its tributaries. The increase in intensity and in frequency of extreme events (primarily flooding and landslides) is expected to have implications on agriculture, food security, infrastructure, and lives.

3. The local transport infrastructure—especially unsealed roads—is particularly vulnerable to disaster risk as a result of general low standards, technical designs that have not accounted for increased climate variability, and lack of adequate maintenance. The importance of increased climate resilience for roads is now recognized as a potentially significant factor in reducing demand for emergency repair budget. The growing impacts of natural disasters have increased the pressure on emergency repair. Annually in Lao PDR, approximately 30 percent of road maintenance budget is spent on emergency road repair.

Specific project activities addressing climate resilience

4. *Regulatory and Policy Framework.* A Climate Change and Disaster Law is currently being developed with expected approval in 2017. The National Strategy on Climate Change (NSCC) was approved in early 2010, and sector climate change action plans for the period 2013-2020 are been prepared. The financial needs for implementing the NSCC's identified mitigation and adaptation policies and actions stand at approximately US\$2.4 billion until 2020, out of which US\$190 million is for adaptation in the transport sector. The NSCC forms the basis for the

country's Intended Nationally Determined Contribution (INDC) presented to the Conference of the Parties in 2015 (COP21). Through Technical Assistance (TA) the LRSP2 will support MPWT to develop its climate change action plan as described in the INDC.

5. In response to the increased threat of natural disasters, GoL with support from the Global Fund for Disaster Risk Reduction (GFDRR) has established a National Reserve Fund as a means to respond to natural disasters. GoL is in the process of developing the NRF Standard Operation Procedures. The LRSP had supported MPWT to develop Standard Operating Procedures for emergency maintenance under the RMF. This work needs to be aligned to the emerging policy framework for DRR and the overarching agenda for climate change mitigation and adaptation. The LRSP2 will continue supporting GoL to ensure consistency between the overall legal framework on climate change mitigation, adaptation and disaster risk management and efforts to increase the efficiency of emergency response in the road sector.

6. *Systems and processes.* The Project will support MPWT to review current tools for road asset management planning and prioritization (RMS, PROMMS) to: (a) include risk-based planning by adding data related to damages caused by natural disasters, in order to identify sections vulnerable to extreme weather; (b) operationalize the MPWT information and communications technology (ICT) platform to include hazard risks and links to road maintenance planning at provincial levels; (c) support reviews of current design, standards and guidelines in cooperation with other development partners in the sector (mainly ADB, JICA, KfW) to incorporate climate resilience aspects and finalizing nation-wide documents.

7. Since 2012 with financing support from the Japan Policy and Human Resources Development, the MPWT has received technical assistance for the 'Mainstreaming Disaster and Climate Risk Management into Investment Decisions Project'. The Project, under the overall supervision of the Ministry of Planning and Investment (MPI), has supported MPWT to prepare a disaster risk assessment and hazard mapping for the road sectors, and to developed technical guidelines on climate resilient roads in Lao PDR. Technical demonstrations (e.g. slope stabilization) were conducted on a few critical sections of Road 1B financed under the IDA Lao Road Sector Project (LRSP) in Phongsaly province. LRSP2 will support GoL to operationalize the hazard maps, available with MPI, into practical vulnerability maps for the use of engineers in planning of infrastructure maintenance or investments.

8. *Capacity.* LRSP2 will finance technical training for MPWT, provincial and district Departments of Public Works and Transport (DPWT and OPWT) on climate resilient design and maintenance.

9. *Works.* LRSP2 will carry out a program of civil works in six provinces experiencing disaster risk (flash floods, landslides, backwater flooding) to improve the climate resilience of the road network. This may include elevating flood prone road sections, paving road sections with steep slopes and sections passing through communities, drainage improvement, and slope improvement and stabilization. Interventions chosen would be prioritized based on climate concerns and vulnerability assessment, which will be a basis for technical solution. The approach for road maintenance applied for this project is different from a regular maintenance in a way that periodic maintenance includes retrofitting of vulnerable sections up to a standard appropriate

to cope with an increased climate impact. Based on the Climate Resilient Road Asset Management put in place under Component 2.3, road maintenance will be prioritized and carried out in accordance with national hazard maps, with risk-based planning tools that are able to identify road sections that are vulnerable to extreme weather (in addition to standard parameters, such as road conditions), with new design standards that incorporate climate resilience aspects.

10. Project adaptation co-benefits. Considering the above information, the project adaptation co-benefits are calculated using the Climate Change coding methodology. The main components, estimated costs and respective activities are listed in the table below. Periodic maintenance and spot improvement (US\$14.2 million) will be prioritized and carried out with climate impact consideration, where institutional strengthening will enable MPWT to prioritize road maintenance based on climate vulnerability.

Component	Activities	IDA Commitment (USD million)	Sector Codes (%)	Adaptation Associated Sector (\$)	Mitigation Associated Sector (\$)
Component 1	Climate Resilience Road Maintenance	17.2			0.00
Subcomponent 1.1	Periodic maintenance and spot improvement	14.2	Rural and Inter-Urban Roads and Highways (100%)	14.2	
Component 2	Institutional Strengthening	5.8			0.00
Subcomponent 2.3	Climate Resilient Road Asset Management	0.5	Public Administration-Transportation (80%) Public Administration-Water, sanitation and flood protection (20%)	0.5	
Subcomponent 2.4	Capacity Building	2.4	Public Administration-Transportation (100%)	2.4	

11. Climate co-benefits per sector

Sectors / Climate Change				
Sector (Maximum 5 and total % must equal 100)				
Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Transportation	Rural and Inter-Urban Roads and Highways	70	60	
Public Administration, Law, and Justice	Public administration-Transportation	15	12	
Public Administration, Law, and Justice	Public administration- Water, sanitation and flood protection	15		
Total		100		