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INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT PAPER

ON A

PROPOSED PROJECT RESTRUCTURING AND

SECOND ADDITIONAL CREDIT

IN THE AMOUNT OF SDR 39.3 MILLION
(US\$ 55 MILLION EQUIVALENT)

TO

NEPAL

FOR A

ROAD SECTOR DEVELOPMENT PROJECT

July 19, 2016

Transport and ICT Global Practice
South Asia Region

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CURRENCY EQUIVALENTS

(Exchange Rate Effective May 31, 2016)

Currency Unit = Nepalese Rupee (NPR)
 NPR 151 = US\$1
 US\$ 1.40 = SDR1

GOVERNMENT OF NEPAL FISCAL YEAR

July 16 – July 15

ABBREVIATIONS AND ACRONYMS

AF	Additional Finance	HDM-4	Highway Development and Management Model (HDM-4)
AASHTO	American Association of State Highway and Transportation Officials	IDA	International Development Association
ADT	Average Daily Traffic	IRI	International Roughness Index
BIMP	Bridges Improvement and Maintenance Program	IEE	Initial Environmental Examination
BMS	Bridge Management System	MIS	Management Information System
BOQ	Bill of Quantity	MoF	Ministry of Finance
CMS	Contract Management System	MoPIT	Ministry of Physical Infrastructure and Transport
CPS	Country Partnership Strategy	NPV	Net Present Value
DfID	Dept. for International Development (UK)	NVC	National Vigilance Centre
DOR	Department of Roads	PDO	Project Development Objective
EA	Environmental Assessment	PIP	Priority Investment Plan
EMAP	Environmental Management Action Plan	PIU	Project Implementation Unit
ESMF	Environmental and Social Management Framework	PforR	Program for Results
FMIS	Financial Management Information System	QAP	Quality Assurance Plan
FMR	Financial Monitoring Report	RBN	Road Board Nepal
GDP	Gross Domestic Product	RAP	Resettlement Action Plan
GHG	Greenhouse Gas	RBN	Road Board Nepal
GON	Government of Nepal	RED	Road Economic Decision Model
GRSF	Global Road Safety Facility	RSDP	Road Sector Development Project
GRS	Grievance Redress Service	RPF	Resettlement Policy Framework
EIA	Environmental Impact Assessment	RSSP	Road Safety Support Project
EIRR	Economic Internal Rate of Return	SIA	Social Impact Assessment
EMAP	Environmental Management Action Plan	SNRTP	Strengthening the National Rural Transport Program
EMP	Environmental Management Plan	SRN	Strategic Roads Network
ESMF	Environmental & Social Management Framework	VCDF	Vulnerable Community Development Framework
FY	Financial Year	VCDP	Vulnerable Community Development Plan
GDP	Gross Domestic Product	VOC	Vehicle Operating Cost
GON	Government of Nepal		

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NEPAL

**SECOND ADDITIONAL FINANCING TO THE ROAD SECTOR DEVELOPMENT
PROJECT**

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ADDITIONAL FINANCING DATA SHEET

Nepal

Additional finance to Road Sector Development Project (P157607)

SOUTH ASIA

GTI06

Basic Information – Parent							
Parent Project ID:		P095977		Original EA Category:		B - Partial Assessment	
Current Closing Date:		30-Jun-2017					
Basic Information – Additional Financing (AF)							
Project ID:		P157607		Additional Financing Type (from AUS):		Scale Up & Restructuring	
Regional Vice President:		Annette Dixon		Proposed EA Category:		B - Partial Assessment	
Country Director:		Qimiao Fan		Expected Effectiveness Date:		04-Sep-2016	
Senior Global Practice Director:		Pierre Guislain		Expected Closing Date:		15-Jul-2019	
Practice Manager/Manager:		Karla Gonzalez Carvajal		Report No:		PAD1749	
Team Leader(s):		A.K. Farhad Ahmed, Dominic Pasquale Patella					
Borrower							
Organization Name		Contact		Title		Telephone	
Department of Roads		Mr Sanjaya Kumar Shrestha		Deputy Director General		(977-1) 426-2675	
						Email	
						sanjayashrestha@dor.gov.np	
Project Financing Data - Parent (Road Sector Development Project-P095977) (in USD Million)							
Key Dates							
Project	Ln/Cr/TF	Status	Approval Date	Signing Date	Effectiveness Date	Original Closing Date	Revised Closing Date
P095977	IDA-48320	Closed	23-Nov-2010	04-Mar-2011	11-Apr-2011	30-Jun-2015	30-Jun-2015
P095977	IDA-50020	Effective	02-Jun-2011	08-Jul-2011	08-Jul-2011	30-Jun-2015	30-Jun-2017
P095977	IDA-H3390	Closed	06-Dec-2007	31-Jan-2008	21-Feb-2008	30-Jun-2012	31-Dec-2013
P095977	IDA-H6290	Closed	02-Jun-2011	08-Jul-2011	08-Jul-2011	30-Jun-2015	30-Jun-2015

Disbursements									
Project	Ln/Cr/TF	Status	Currency	Original	Revised	Cancelled	Disbursed	Undisbursed	% Disbursed
P095977	IDA-48320	Closed	XDR	26.60	26.60	0.00	26.60	0.00	100.00
P095977	IDA-50020	Effective	XDR	17.50	13.00	4.50	5.65	7.35	43.50
P095977	IDA-H3390	Closed	XDR	27.80	27.80	0.00	27.80	0.00	100.00
P095977	IDA-H6290	Closed	XDR	4.20	4.03	0.17	4.03	0.00	100.00
Project Financing Data - Additional Financing Additional finance to Road Sector Development Project (P157607)(in USD Million)									
<input type="checkbox"/> Loan <input type="checkbox"/> Grant <input type="checkbox"/> IDA Grant <input checked="" type="checkbox"/> Credit <input type="checkbox"/> Guarantee <input type="checkbox"/> Other									
Total Project Cost:		65.00		Total Bank Financing:		55.00			
Financing Gap:		0.00							
Financing Source – Additional Financing (AF)								Amount	
BORROWER/RECIPIENT								10.00	
International Development Association (IDA)								5.00	
IDA Credit from CRW								50.00	
Total								65.00	
Policy Waivers									
Does the project depart from the CAS in content or in other significant respects?							No		
Explanation									
Does the project require any policy waiver(s)?							No		
Explanation									
Has the waiver(s) been endorsed or approved by Bank Management?							No		
Explanation									

Team Composition					
Bank Staff					
Name	Role	Title	Specialization	Unit	
A.K. Farhad Ahmed	Team Leader (ADM Responsible)	Sr Transport. Spec.	Transport	GTI06	
Dominic Pasquale Patella	Team Leader	Sr Transport. Spec.	Transport	GTI06	
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Yogesh Bom Malla	Financial Management Specialist	Financial Management Specialist	Financial Management	GGO24	
Annu Rajbhandari	Safeguards Specialist	Environmental Specialist		GEN06	
Bibash Shrestha	Team Member	Temporary		GTI06	
Comfort Onyeje Olatunji	Team Member	Program Assistant		GTI06	
Drona Raj Ghimire	Environmental Specialist	Senior Environmental Specialist	Environment	GEN06	
Jun Zeng	Safeguards Specialist	Senior Social Development Specialist	Social	GSU06	
Shubu Thapa	Team Member	Temporary		GTI06	
Extended Team					
Name		Title	Location		
Locations					
Country	First Administrative Division	Location	Planned	Actual	Comments
Nepal		Naubise			
Nepal		Kalikot			
Nepal	Mid Western Region	Kalikot			
Nepal		Kalaiya			
Nepal		Kakani			

Nepal	Mid Western Region	Jajarkot			
Nepal		Ithari			
Nepal		Dharan Bazar			
Nepal	Mid Western Region	Dailekh			
Nepal	Far Western Region	Dadeldhura			
Nepal		Chandra Garhi			
Nepal		Butwal			
Nepal		Birganj			
Nepal		Bangahi			
Nepal	Far Western Region	Bajura			
Nepal	Far Western Region	Bajhang			
Nepal	Far Western Region	Baitadi			
Nepal		Amlekhganj			
Nepal	Central Region	Madhyamanchal	X		
Nepal	Mid Western Region	Surkhet			
Institutional Data					
Parent (Road Sector Development Project-P095977)					
Practice Area (Lead)					
Transport & ICT					
Contributing Practice Areas					
Cross Cutting Topics					
[] Climate Change					
[] Fragile, Conflict & Violence					
[] Gender					
[] Jobs					
[] Public Private Partnership					

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	90		
Public Administration, Law, and Justice	Central government administration	10		
Total		100		
Themes				
Theme (Maximum 5 and total % must equal 100)				
Major theme	Theme	%		
Financial and private sector development	Infrastructure services for private sector development	67		
Rural development	Rural services and infrastructure	33		
Total		100		
Additional Financing Additional finance to Road Sector Development Project (P157607)				
Practice Area (Lead)				
Transport & ICT				
Contributing Practice Areas				
Social, Urban, Rural and Resilience Global Practice				
Cross Cutting Topics				
[X] Climate Change				
[] Fragile, Conflict & Violence				
[] Gender				
[] Jobs				
[] Public Private Partnership				

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	80	53	
Public Administration, Law, and Justice	Public administration-Transportation	20		
Total		100		
<input type="checkbox"/> I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.				
Themes				
Theme (Maximum 5 and total % must equal 100)				
Major theme	Theme	%		
Rural development	Rural services and infrastructure	40		
Public sector governance	Managing for development results	20		
Social protection and risk management	Natural disaster management	40		
Total		100		
Consultants (Will be disclosed in the Monthly Operational Summary)				
Consultants Required? Consultants will be required				

I. INTRODUCTION

1. This Project Paper seeks the approval of the Executive Directors to provide a Second Additional Financing (AF) of US\$ 55.0 million equivalent to the ongoing Nepal Road Sector Development Project (RSDP, P095977 IDA Credit Nos. 4832-NP, 5002-NP and IDA Grant Nos. H-339-NP, H-629-NP). Of the above, IDA Credit No. 5002-NP is currently the only remaining active credit supporting the parent operation. The Association's support to the Second AF includes US\$ 50 million equivalent from the IDA Crisis Response Window. The Second AF would support the following:

- Road and bridge works (including road safety enhancements);
- Post-earthquake reconstruction and resilience enhancements to Nepal's Strategic Roads Network; and
- Technical assistance to improve investment planning and implementation capacity within the institutions that manage Nepal's Strategic Roads Network.

2. This scope of works constitutes both a scale up of project activities and a restructuring of components to address post-quake needs, further capacity development, and resilience enhancements. The results framework of the parent operation will be modified in order to better reflect attributable outcomes from project interventions. The Government of Nepal (GON) originally requested this Second Additional Financing for the project through a letter from the Ministry of Finance (MoF) to the Bank dated May 18, 2015. In addition to IDA's contribution to support for the Second AF, GON would also contribute US\$ 10.0 million for a total Second AF project size of US\$ 65.0 million.

II. BACKGROUND AND RATIONALE FOR ADDITIONAL FINANCING

A *Country Context*

3. Nepal is a land-locked country characterized by topographic extremes. The southern 'Terai' region sits close to sea level while the northern 'mountain' region contains the world's highest peaks. About 25% of Nepal's 27.8 million people classify as poor. Average per capita income in 2014 was about US\$ 760. Nepal has made remarkable progress in poverty reduction and human development by halving the percentage of people living on less than US\$ 1.25 a day between 2003/2004 and 2010/2011. Several important social-sector indicators relating to education, health and gender also improved over this period. Nepal has successfully transitioned away from its decade long 'people's war' that officially ended in 2006. A new constitution was promulgated in September 2015 which envisages a federal model of government and a stronger role for states / provinces in delivering basic services.

4. Despite heartening progress, Nepal faces many development challenges. Most recently, political unrest and instances of violence followed the new constitution. Trade along the border with India suffered disruptions between September 2015 and February 2016. These events followed on the heels of devastating earthquakes that struck Nepal in April and May of 2015. Disrupted trade limited the availability of fuel, construction materials, and other imported items needed for reconstruction. Nepal's post-quake recovery has suffered considerable delays as a result.

B *Sector Context*

5. Aside from Nepal's political challenges, poor and insufficient infrastructure is the single most important economic bottleneck to growth in Nepal. Deficient infrastructure services hold back job growth, increase the cost of doing business, and reduce Nepal's attractiveness for investment. The World Economic Forum's 2014/15 Global Competitiveness Report ranked Nepal 132nd out of 144 countries in overall quality of infrastructure. Nepal needs to be investing somewhere between 8 and 12 percent of GDP per annum until 2020 in order to address its infrastructure gap. Energy and transport alone account for approximately 2/3rds of required investment. Improved transport linkages are particularly critical for reducing the cost of doing business in Nepal. For example, the World Bank Group's 2014 'Doing Business' survey observes that the average cost of importing or exporting a 20 ft shipping container from Kathmandu is about US\$ 2,295. This is 28% higher than the average for all countries in South Asia. Roughly 61% of estimated export costs relate to inland transportation and handling which hints at the impact that transportation has on the cost structures of Nepal's private enterprises.

6. Nepal's transport sector remains vulnerable to climate change and seismic events. The hill and mountains that characterize project locations are susceptible to extreme precipitation, earthquakes, and landslides that can result in severed connectivity, loss of life, and damage to property. The medium and long term local effects of climate change in Nepal remain uncertain. However, global level predictions indicate that mountainous regions are likely to undergo significant changes. The International Panel on Climate Change, states that *"there is high confidence that changes in heat waves, glacial retreat, and/or permafrost degradation will affect high-mountain phenomena such as slope instabilities, landslides, and glacial lake outburst floods. There is also high confidence that changes in heavy precipitation will affect landslides in some regions."* Strengthening the resilience of Nepal's road and bridge network, particularly through improved maintenance of assets, more resilient upfront construction, and improved capacity to respond to unforeseen events, is important for adapting to whatever eventualities climate change will bring for Nepal.

C *The Road Sector Development Project*

7. RSDP's objective is *"for the residents of beneficiary districts to have all season road access thereby reducing travel time and improving access to economic centers and social services."* IDA's original support to the Road Sector Development Project (RSDP) in the amount of SDR 27.8 million was signed on January 31, 2008 with an envisaged closing date of June 30, 2012 which was extended to June 30, 2015. A First Additional Financing in the amount of SDR 48.3 million was signed on March 4, 2011 / July 8, 2011 with a closing date of June 30, 2015, later extended to June 30, 2016 and subsequently June 30, 2017 for the Credit portion (Credit No. 5002-NP). This first Additional Financing scaled-up activities to enhance the impact of the original project intervention and specifically included: (i) an additional 408 km of road upgrading; (ii) an additional 2,100 km of road maintenance; and (iii) further support for institutional development relating to human resources, road safety, quality management, and IT systems.

8. RSDP has been the cornerstone of the Association's support to Nepal's Strategic Road's Network for the past three IDA funding cycles. The primary focus of RSDP's civil works has been to develop connectivity in the Far-Western and Mid-Western regions which are among the poorest and least connected areas of Nepal. A key aim of RSDP has been to connect eight remote district

headquarters with all-weather roads. The project's key results to date include: (i) increasing the share of beneficiaries within a 20 minute walk to an all-weather road from 8% of the population to 15% of the population in target districts; (ii) reduction of journey times by approximately 35%; (iii) upgrading and rehabilitation of 680 km of roads; (iv) periodic maintenance of 2,608 km of roads.

9. RSDP's technical assistance to Nepal's Department of Roads (DOR) and Ministry of Physical Infrastructure and Transport (MoPIT) has also been critical to supporting development of the Strategic Road Network (SRN). This has included the following: (i) development of a Priority Investment Program (PIP) in 2007 and subsequent ex-post review of that program in 2014/15; (ii) development of the Bridge Management System (BMS) which enabled the IDA- supported Bridges Improvement and Maintenance Program (BIMP, P125495) to use a results-based approach under the Association's new Program for Results (PforR) instrument; and (iii) development of a department-wide Environmental and Social Management Framework (ESMF). Most recently, RSDP supported the DOR to undertake a rapid condition assessment of 389 quake affected bridges in the Central and Western Development Region to identify the extent of damages and options for remediation.

10. RSDP's structure consists of two components as follows:

- Component I (Road Development): which includes (i) road upgrading; (ii) periodic maintenance; and (iii) road safety works; and
- Component II (Institutional Strengthening and Policy Reform): which includes training and development and support to increase capacity relating to the management of Nepal's Strategic Roads Network and project-specific incremental tasks.

11. To date, RSDP's implementation progress and progress towards achieving the Project Development Objective (PDO) are both rated as "*moderately satisfactory*." RSDP's original IDA grant (H339-NP) and subsequent IDA grant and one of the IDA credits provided under the first Additional Financing (i.e. Credit 4832-NP, Grant H629-NP) have fully disbursed the allocated amounts. IDA's remaining commitment from the first Additional Financing (IDA Credit 5002-NP) has disbursed 43.5% of the committed amount as of April 30, 2016. The project closing date of the Additional Financing of RSDP (IDA Credit 5002-NP) has been extended to June 30, 2017 to enable the wrapping up of the few remaining activities.

12. The Association's last implementation support and review mission of RSDP between February 29 and March 4, 2016 confirmed that the project is in substantial compliance with legal covenants and that implementation of fiduciary frameworks is acceptable. The review also concluded that the implementation of safeguards activities remain satisfactory and there were no major safeguards issues. There are no outstanding audit reports under RSDP or under any other transport sector project in Nepal. The overall project risk rating for RSDP is "substantial"

D Beneficiaries and Gender

13. The estimated number of beneficiaries from RSDP activities to date stands at 725,000 in Nepal's Mid-Western and Far-Western regions¹. These regions have the highest overall rates of

¹ Specifically: Darchula, Baitadi, Kalikot, Dailekh, Surkhet, Bajhang, Jumla, Rukum, Salyan and Jajarkotin

poverty of all regions in Nepal (32% and 46% respectively). More specifically, the initial 10 districts that have benefited from IDA's original support and first additional financing to RSDP are home to approximately 2 million people (roughly 8% of Nepal's population). About 51% of the people living in these districts are poor according to the Association's Small Area Poverty Assessment conducted in 2011. RSDP's original target districts include Kalikot, Bajhang, and Jumla which are considered to be the second, third and sixth poorest districts of Nepal with estimated poverty rates in 2011 of 58%, 56%, and 49% respectively. These districts will continue to benefit from further access enhancement under the second Additional Financing.

14. The additional 25 districts that will benefit from maintenance of quake-affected bridges under the second Additional Financing are home to approximately 10.2 million people. The overall rate of poverty across these additional districts was estimated at 19.2% in 2011. Despite lower rates of overall poverty when compared with RSDP's original districts, these additional 25 districts are home to an estimated 1.93 million poor people (roughly 36% of Nepal's total population that classifies as poor). It is also important to note that the bridges that will undergo maintenance in these districts provide connectivity along the Birgunj-Narayanghat-Mugling-Kathmandu corridor which carries the vast majority of freight into and out of Kathmandu and Pokhara. This corridor is among Nepal's most vital infrastructure assets for supporting economic growth and development. The April and May 2015 earthquakes occurred in the vicinity of this corridor and highlighted the need for enhancing its resilience.

15. The access improvements that IDA's support to RSDP finances have a gender dimension due to the effect that migrant labor patterns have on households in target districts. According to the Ministry of Labor and Employment and the International Labor Organization's joint *Status Report on Labour and Migration for Employment* in Nepal roughly 694,429 people (about 5% of the population from the 10 original and 25 additional districts included in the Additional Finance) have obtained permits for working abroad through intermediary agencies. Approximately 96% of these individuals are male. Improving and sustaining transport access in target districts has the potential to increase economic opportunities for the women who stay behind and head absentee households – especially where families require incomes beyond what remittances alone provide.

E Rationale for Additional Financing

16. Nepal suffered earthquakes in April and May of 2015 that have created additional investment needs in bridge maintenance and highlighted a general need to improve the resilience of SRN roads and bridges to future natural phenomena (incl. seismic activity and climate change). The DOR is choosing to focus the Bridges Improvement and Maintenance Program (P125495) and the team that manages it on addressing urgent major maintenance while using Additional Finance for RSDP to address less urgent, but nevertheless highly important, major and minor maintenance on quake affected bridges. This reflects an intention to focus the team that manages BIMP on works that are more technically complex where there is a need for specialized expertise. The AF will also support DOR to procure and stage additional modular steel bridges and equipment for emergency repairs throughout Nepal. These measures will help to increase the SRN's resilience to future seismic events and / or climate change related phenomena. While the impacts of future seismic events and climate change remain uncertain, ensuring that DOR has additional capabilities to respond to unforeseen emergencies is important to the resilience of access along the SRN.

17. In addition to quake related investment needs, RSDP roads also require further access enhancements. In part, this reflects inherent topographical challenges that compelled DOR to leave out some sections of RSDP roads due to slope instability. In addition, it is also important to note that the original design of RSDP made strategic decisions during Nepal's post-conflict era regarding the tradeoff between the breadth and cost of project investments. Specifically, a push to deliver some level of access for more people led to cost economization on road geometry, road safety, and structures work (bridges, slope protection works, culverts, etc.). While perhaps appropriate at the time, Nepal's transport needs have changed. The result is that many RSDP roads require enhancements to keep pace with both greater traffic volumes and the development that road access has brought to remote areas. The proposed additional finance would accordingly support further enhancements to the access that RSDP roads provide, including the construction of new bridges at "gaps" in the original road alignment.

18. IDA is leveraging the Global Road Safety Facility (GRSF) via the Road Safety Support Project (RSSP, P149606) to fund road safety enhancements along RSDP roads using a US\$ 7.47 million grant from the UK's Department for International Development (DfID). However, addressing further needs will require Additional Financing. There is a particularly acute need to further strengthen RSDP roads that suffer from unstable slopes and require improvement works to road surfaces to enhance the quality of access (particularly during seasonal monsoons). Other RSDP roads require upgrading of temporary bridges and dry crossings to dual lane permanent structures in order to improve safety, functionality, and resilience.

F Linkages to the Country Partnership Strategy

19. The Country Partnership Strategy (CPS, Report No. 83148-NP, discussed by the Executive Directors on May 29, 2014) recognizes that Nepal needs to strengthen internal transport connectivity in order to accelerate and sustain its growth. The proposed operation would contribute to this goal by improving both the quality and resilience of connectivity along selected sections of the Strategic Roads Network. In particular, the proposed operation aligns with pillar 1 of the CPS, *"Increasing economic growth and competitiveness"*, and contributes outcome 1.1: *"Improved transportation connectivity, internally and with India."*

III. PROPOSED CHANGES

Summary of Proposed Changes

The Second AF will expand IDA's RSDP-related commitments and will aim at achieving three key outcomes that support the PDO including: (i) reduced bridge vulnerability; (ii) enhanced resilience of RSDP roads; (iii) enhanced access as reported by beneficiaries.

The Second Additional Financing will expand the project's geographical scope from 10 districts to a total of 35 districts. RSDP's 10 original districts will continue to benefit from road upgrading, slope stabilization works, and bridge works. The additional 25 districts included under the Additional Finance will benefit from maintenance of quake affected bridges.

These changes involve scale up and restructuring of the two components of the parent operation and addition of a new Reconstruction and Resilience Enhancement component. The parent operation's results framework will also be modified in order to better reflect attributable outcomes from project interventions.	
Change in Implementing Agency	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Project's Development Objectives	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Results Framework	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Change in Safeguard Policies Triggered	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change of EA category	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Other Changes to Safeguards	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Legal Covenants	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Change in Loan Closing Date(s)	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Cancellations Proposed	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Disbursement Arrangements	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Reallocation between Disbursement Categories	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Disbursement Estimates	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Change to Components and Cost	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Change in Institutional Arrangements	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Change in Financial Management	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Change in Procurement	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Change in Implementation Schedule	Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>]
Other Change(s)	Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>]
Development Objective/Results	
Project's Development Objectives	
Original PDO The Project Development Objective is for the residents of beneficiary districts to have all season road access thereby reducing travel time and improving access to economic centers and social services.	
Change in Results Framework	
Explanation: There has been new addition to the following indicators: At PDO level: (a) Reduced bridge vulnerability. Rationale: for additional scope of bridge related works under AF operation; (b) Enhanced resilience of RSDP roads. Rationale: to ensure all season access as envisaged by PDO; and (c) Enhanced access as reported by beneficiaries. Rationale: to capture beneficiary perceptions of enhanced	

access as envisaged by PDO.

At intermediate level:

(a) Strengthened planning for SRN roads and bridges; Rationale: to capture updates to DOR's Priority Investment Program.

(b) Major /minor bridge maintenance, rehabilitation and replacement. Rationale: for additional scope of works under AF operation.

The AF will discontinue one PDO indicator that relates to the following: "Reduce the percentage of blacktop SRN in poor condition to about 15%." The rationale for this change is that GON has and will likely continue to redefine the subset of roads classified within the definition of the SRN. These reclassifications makes significant changes to the indicator value that are not attributable to project works.

The AF will also restructure selected intermediate indicators from the parent project to reflect changes in Nepal's context since the last restructuring and additional finance to RSDP. Specifically, this will include deleting indicators relating to legislative and human resources reform concerning the Road Board Nepal (RBN). The parent operation has supported the drafting of new legislation and the preparation of a five year plan for RBN. However, the final approval and implementation of these reforms is outside the scope of project interventions and will likely require greater stability in the external environment for effective implementation.

Annex A and Annex B provide further details on proposed changes.

Compliance

Covenants - Additional Financing (Additional finance to Road Sector Development Project - P157607)

Source of Funds	Finance Agreement Reference	Description of Covenants	Date Due	Recurrent	Frequency	Action
IDA	Schedule IV, Section B	No withdrawal shall be made...for expenditures related to disbursement-linked results financed or agreed to be financed by the Association in accordance with the PforR Financing Agreement for the Bridges Improvement and Maintenance Program.		☒	CONTINUOUS	New

Conditions					
Source Of Fund		Name		Type	
Description of Condition					
Risk					
Risk Category				Rating (H, S, M, L)	
1. Political and Governance				High	
2. Macroeconomic				Substantial	
3. Sector Strategies and Policies				Moderate	
4. Technical Design of Project or Program				Moderate	
5. Institutional Capacity for Implementation and Sustainability				Moderate	
6. Fiduciary				Substantial	
7. Environment and Social				High	
8. Stakeholders				Low	
9. Other					
OVERALL				Substantial	
Finance					
Loan Closing Date - Additional Financing (Additional finance to Road Sector Development Project - P157607)					
Source of Funds			Proposed Additional Financing Loan Closing Date		
International Development Association (IDA)			15-Jul-2019		
IDA Credit from CRW			15-Jul-2019		
Loan Closing Date(s) - Parent (Road Sector Development Project - P095977)					
Explanation:					
Ln/Cr/TF	Status	Original Closing Date	Current Closing Date	Proposed Closing Date	Previous Closing Date(s)
IDA-48320	Closed	30-Jun-2015	30-Jun-2015		30-Jun-2015, 21-Dec-2015
IDA-50020	Effective	30-Jun-2015	30-Jun-2017		30-Jun-2015, 30-Jun-2016
IDA-H3390	Closed	30-Jun-2012	31-Dec-2013		31-Dec-2013, 07-May-2014

IDA-H6290	Closed	30-Jun-2015	30-Jun-2015		30-Jun-2015, 21-Dec-2015

Change in Disbursement Estimates

Explanation:

The outstanding balance for the remaining IDA credit (IDA-50020) from the First Additional Finance is expected to disburse in FY 2017. The Second Additional Finance is expected to disburse between 2017 and 2020.

Expected Disbursements (in USD Million)(including all Sources of Financing)

Fiscal Year	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Annual	12.37	20.00	25.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00
Cumulative	12.37	32.37	57.37	64.37	0.00	0.00	0.00	0.00	0.00	0.00

Allocations - Additional Financing (Second Additional Financing to Road Sector Development Project - P157607)

Source of Fund	Currency	Category of Expenditure	Allocation	Disbursement % (Type Total)
			Proposed	Proposed
IDA	XDR	Works under Parts 1.F and 1.G of the Project	12,150,000.00	100.00
IDA	XDR	Works under Part 1.A and 1.E of the Project	7,150,000.00	50.00
IDA	XDR	Consultants' serv., goods, Training & Workshops, & Incr. Op. Costs under Parts 1.D(i)(a) & 2(ix),(x),(xi), & (xii)	5,700,000.00	100.00
IDA	XDR	Goods and non-consulting services under Part 3 of the Project	14,300,000.00	100.00
		Total:	39,300,000.00	

Components

Change to Components and Cost

Explanation:

The Project Development Objective for the Second AF, which remains the same from the parent operation, is: "for the residents of beneficiary districts to have all season road access thereby reducing travel time and improving access to economic centers and social services." The Second AF will expand IDA's RSDP-related commitments and will aim at achieving three key outcomes that support the PDO including: (i) reduced bridge vulnerability; (ii) enhanced resilience of RSDP roads; (iii) enhanced access as reported by beneficiaries. The Second Additional Financing operation will consist of scale up and restructuring of two

ongoing components of RSDP and will add an additional third component on resilience enhancements (see Annex C).

Current Component Name	Proposed Component Name	Current Cost (US\$M)	Proposed Cost (US\$M)	Action
Road Development	Road and Bridge Development	93.42	131.42	Revised
Institutional strengthening & policy reform	Institutional Strengthening and Policy Reform	19.28	26.28	Revised
	Resilience Enhancements	0.00	20.00	New
	Total:	112.70	177.70	

Other Change(s)

Implementing Agency Name	Type	Action

Change in Financial Management

Explanation:

The Second Additional Financing to RSDP will include further assistance from the Association for bridge maintenance beyond the financing that is already in place under the ongoing IDA-supported BIMP operation. As BIMP uses a results-based approach under the Program for Results instrument, there is a need to ensure that achievements under the Second Additional Financing are not claimed against Disbursement Linked Indicators that correspond to BIMP (i.e. no "double disbursement" for one set of results). The following mechanisms will serve to prevent any confusion between bridge works under BIMP and the Additional Financing to RSDP: (i) separate line items in the national budget; (ii) separate annual work programs; (iii) separate sets of accounts; and (iv) separate financial statements. The Financing Agreement for the Second Additional Financing to RSDP includes a covenant stating that expenditures under the project will only be eligible for reimbursement provided that they are not claimed as disbursement linked indicators for the BIMP operation. More detail on financial management arrangements are provided in Annex D.

Change in Procurement

Explanation:

There will be only one exception to the previous arrangement under the parent operation as follows: the bridge maintenance contracts (both major and maintenance) will be procured by DOR's Bridge Branch in support of DOR's decision to manage bridge works in this fashion. The Bridge Branch will also be responsible for supervision of these contracts.

Change in Implementation Schedule

Explanation:

Extension of implementation period until July 15, 2019.

IV. APPRAISAL SUMMARY

Economic and Financial Analysis

Explanation:

The economic appraisal of the Second AF operation was conducted for a sample of works including: slope stabilization, improvement of RSDP roads, installation of new bridges on RSDP roads, replacement of temporary bridges, and major and minor maintenance of bridges. The analysis results for individual interventions and the overall program are shown in Annex E. The results show that project interventions are economically viable individually and jointly. A sensitivity analysis using "switching values" shows that the rate of return on investment is robust. This means that the economic case underpinning the project could withstand reasonable uncertainties in appraisal assumptions.

Technical Analysis

Explanation:

Component I involves upgrading of RSDP road sections, construction of new bridges, and maintenance of RSDP bridges (including quake affected bridges). The proposed activities under Component III also include the provision and staging of modular steel bridges and heavy equipment. The project will adopt cost-effective measures for slope stabilization and upgrading of road sections (e.g. geotextiles, drainage improvements, bioengineering, surface drainage measures, etc.). The bridge maintenance activities will focus on major, and minor works. This will include safety measures on bridges to align with standard practices that DOR's Bridge Branch have developed under the IDA-supported Bridges Improvement and Maintenance Program (BIMP).

DOR will use Nepal Bridge Standards-2067 for bridge design (carriageway width of 7.5m). For the design of roads the Nepal Road Standards-2070 or any subsequent revisions will be used. Similarly applicable Indian and/or AASHTO or equivalent standards will apply to the purchase of modular steel bridges. Where national standards have gaps acceptable international standards will be adapted as is DOR's current practice. The design of slope stabilization measures will be based on hazard spot mapping and applicable other methods suggested in DOR Roadside Geotechnical Problems A Practical Guide to their Solution, DOR Bio-engineering Manual/Hand Books, and provisions specified in the Environmental and Social Management Framework (ESMF).

Cost items for implementing the Environment Management Plans (EMPs), including labor campsites and labor safety requirements, will also be included in Bills of Quantity (BOQ). All interventions under the project will have Quality Assurance Plans (QAPs) to guide contractor activities. The National Vigilance Centre (NVC) will conduct technical audits of a sample of project works (20%) to ensure adherence to relevant technical specifications.

The project's climate adaptation related investments are estimated to include the entirety of Component III (reconstruction and resilience enhancements) and 40% of Component I (road and bridge works). The fraction of Component I included as climate adaptation investment reflects the entirety of estimated costs for slope protection works plus one half of the investments in surface upgrading, new bridge construction, and major maintenance as these interventions will enhance the overall climate resilience of connectivity along targeted roads.

Social Analysis

Explanation:

The Second Additional Financing will not change the social safeguards policies triggered under the operation (i.e. OP/BP 4.10 - Indigenous Peoples and OP/BP 4.12 – Involuntary Resettlement). The Department of Roads (DOR) is applying the Environmental and Social Management Framework (ESMF) of June 2007 and the subsequent Addendum of April 2013 which currently applies to all of the department's IDA-funded projects. The 2013 Addendum has strengthened the management of bridge related social and environmental safeguard issues that were previously not included in the original 2007 ESMF. The two aforementioned documents have been duly disclosed and they are available on DOR's website (<http://dor.gov.np>). The ESMF requires the preparation of a number of documents including screening reports, Vulnerable Community Development Plans (VCDPs), Resettlement Action Plans (RAPs) etc. These were prepared and implemented for all sub-projects under the parent project where works required detailed safeguards instruments.

The ESMF and the Addendum will guide the management of social issues under the additional financing. The ESMF fulfills GON's regulations/policy requirements and the requirements of World Bank's Operation Policies 4.12 and 4.10. Activities under Component I of the project will occur within the right of way of RSDP roads where the parent project has already completed resettlement activities and has implemented VCDPs. It is to be noted that the RSDP project sites are located in areas that are inhabited by one or more ethnic groups. However, these groups live alongside people from other communities in the project area. During the parent project's implementation VCDPs have supported needs of vulnerable communities in accordance with the Association's requirements and it has not been necessary to develop separate Indigenous Community Development Plans (ICDPs). Nonetheless, Indigenous Peoples OP/BP 4.10 has been triggered in this Additional Financing as a precautionary measure.

Citizen Engagement: The interventions under the Second Additional Financing are scattered and will involve many small value contracts (e.g. minor maintenance of bridges). The operation will make use of DOR's departmental Grievance Redressal Mechanism that was developed under RSDP and BIMP and will support DOR to publicly disclose a report on grievances received and remedies implemented. In addition, the project will support the commissioning of an access perception and users' satisfaction survey that will assess the access enhancements that beneficiaries perceive as well as their satisfaction level with project interventions. The beneficiary survey will report gender-dis-aggregated results and will focus primarily on road upgrading and new bridge construction works that provide beneficiaries with step changes in access. This will help in the assessment of effectiveness of the project interventions on different genders.

Environmental Analysis

Explanation:

The Second Additional Financing (AF) will not support the opening of new road tracks and will not entail changes to the environmental safeguards policies triggered under the operation (i.e OP/BP 4.01 - Environmental Assessment, and OP/BP 4.36 – Forests). The activities are likely to be confined within or in close vicinity of the existing rights of way of the roads. Works will not take place in any national parks or protected areas. The potential impacts are unlikely to be highly significant, sensitive, diverse, or unprecedented. Hence, the environmental Category B of the original project remains valid in the case of the Second AF.

The planned activities under the Second Additional Financing will continue to use the ESMF and the Addendum for the management of environmental risks. The parent project screened all upgraded roads (seven in total) for the assessment of potential environmental impact. Also, a road-specific Environmental Management Action Plan (EMAP) was prepared based on the Initial Environmental Examination (IEE).

These EMAPs were already under implementation. Experience from the parent project suggests that while upgrading/slope stabilization related roadworks and construction of new bridges might cause moderate environmental impact, the bridge maintenance works are likely to produce only minor environmental impact. The remedial measures that are being planned under the project to treat landslides and social erosion problems are likely to have positive environmental impact on balance.

Typical environmental impact of the proposed interventions that is likely to be encountered during implementation include slope stability/landslides/ erosion, degradation of river/ stream water and regime, construction period disturbances including dust pollution and spoil disposal, health and safety of workers, etc. The disposal of excavated materials, location of drain outlets, drainage management, and management of quarrying operations will be critical for managing environmental risks. Mitigation measures for such impacts are known and the ESMF's coverage under different site conditions is comprehensive. Typical mitigations measures, for example, include: cut-fill balance; re-use of materials; disposal of excess excavated materials at designated sites with protection measures, landslide and slope protection measures such as plantations/bio-engineering, protection around drain-outlets, re-instating quarry sites and borrow pits, provision of water and sanitation facilities along with health and safety gears for workers, quarry operation with appropriate environmental protection measures etc. The environmental impacts of the additional financing activities are manageable within DOR's ESMF.

Department of Roads has already screened bridges that are planned for maintenance in the first year of implementation. The screening process has concluded that none of these bridges requires specific/ separate environmental safeguard documents as the impact of works will be minor. DOR is currently conducting screening of subprojects that are planned to be undertaken in years two and three of the AF operation. Results of the screening process will determine the preparation of further environmental safeguard documents including site specific EMAPs or IEEs.

As part of the Appraisal of the Second AF, analysis was conducted on the incremental greenhouse gas (GHG) emissions resulting from the project using a simplified version of the World Bank's GHG accounting tool, because of the scant data availability. In the "without-project" scenario, constant deterioration of unimproved roads and expected increases in traffic due to economic growth over the project period would increase CO2 emissions, leading to a total of 28,700 tons of CO2 over the project lifetime. Poor road quality would lead to low driving speeds and increased fuel consumption per vehicle-km, thus generating an overall increase in emissions. Using standard elasticity of traffic with respect to travel time, the estimated effect of road surface deterioration on demand for transport is negligible. In the "with project" scenario, rehabilitation of roads and expected increases in traffic due to economic growth, as well as low levels of induced traffic resulting from decrease in travel time due to road rehabilitation works, will lead to 16,900 tons of CO2 over the lifetime of the project. Compared with the without project scenario, works will result in higher driving speeds and lead to a decrease of fuel consumption per vehicle-km (closer to the optimal level of fuel efficiency use), thus generating a decrease in emissions relative to the baseline. The aggregate net project emissions over the lifetime of the project are therefore estimated to be a net savings of 11,800 tons of CO2.

Risk

Explanation:

The overall risk rating for the project is "substantial" primarily on account of "high" political and governance risks resulting from unsettled issues concerning formation of the federal constituents after the promulgation of the constitution. These factors also contribute to a "substantial" macroeconomic risk rating for the project.

Risks relating to sector strategies and policies are "moderate" primary on account of difficulties at the time

of execution. In the roads sub-sector, political economy considerations can often prevent implementing institutions such as DOR from executing Prioritized Investment Plans (PIP) exactly as envisaged. The operation will face a similar risk relating to its support for an updated PIP. However, the transparency that the PIP provides offers an important tool in the continuing policy dialog with GON and is a valuable reference for planning the Association's further support to Nepal's Strategic Roads Network.

DOR is one of GON's most capable implementing institutions. However, capacity related risks remain "moderate" primarily on account of many demands and a limited number of seasoned engineers who are able to plan and manage works effectively. DOR's capacity is also continuing to recover from the April/May 2015 earthquakes which forced DOR to relocate different Kathmandu-based units in a dispersed fashion in response to safety concerns at DOR's damaged headquarters building.

Fiduciary risks associated with the proposed operation are "substantial." Government programs in Nepal remain vulnerable to fiduciary risks. Irregularities may still occur despite financial controls, procurement oversight, regular financial auditing, regular reporting, and other controls. While the introduction of e-bidding and general improvements in DOR's fiduciary systems have resulted in heartening progress, substantial residual risk remains.

Environment and social risks are "high" based on results from the Climate and Disaster Risk Screening assessment of the project undertaken during the Appraisal. Extreme precipitation (i.e. monsoon rains) and seismic events remain the foremost climate / disaster related events that could compromise service delivery under the project and imply a "high" level risk. This project includes mitigations for these risks in the form of the following: (i) slope protection works to reduce landslide risks; (ii) road surfacing to better manage extreme precipitation; (iii) bridge maintenance and replacement to increase the resilience of connectivity for beneficiary communities; and (iv) enhancements to DOR's emergency response capabilities through the staging of modular steel bridges and equipment throughout Nepal.

V. GRIEVANCE REDRESS

20. 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 www.worldbank.org/grs. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

Annex A RESULTS FRAMEWORK

Project Name:	Additional finance to Road Sector Development Project (P157607)	Project Stage:	Additional Financing	Status:	FINAL
Team Leader(s)	A.K. Farhad Ahmed	Requesting Unit:	SACNP	Created by:	Shubu Thapa on 18-Dec-2015
Product Line:	IBRD/IDA	Responsible Unit:	GTI06	Modified by:	Dominic Pasquale Patella on 01-Jun-2016
Country:	Nepal	Approval FY:	2016		
Region:	SOUTH ASIA	Lending Instrument:	Investment Project Financing		
Parent Project ID:	P095977	Parent Project Name:	Road Sector Development Project (P095977)		

Project Development Objectives

Original Project Development Objective - Parent:

The Project Development Objective is for the residents of beneficiary districts to have all season road access thereby reducing travel time and improving access to economic centers and social services.

Proposed Project Development Objective - Additional Financing (AF):

The Project Development Objective is for the residents of beneficiary districts to have all season road access thereby reducing travel time and improving access to economic centers and social services.

Results

Core sector indicators are considered: Yes

Results reporting level: Project Level

Project Development Objective Indicators							
Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
New	Enhanced resilience of RSDP roads	<input type="checkbox"/>	Kilometers	Value	0.00		20.00
				Date	16-Jun-2016		30-Jun-2019
				Comment			
New	Reduced bridge vulnerability	<input type="checkbox"/>	Percentage	Value	74.00		100.00
				Date	16-Jun-2016		30-Jun-2019
				Comment			
No Change	Percent increase in population in project districts to have all season road access within 20 minutes walking distance	<input type="checkbox"/>	Percentage	Value	8.00	15.00	14.00
				Date	25-Jun-2007	31-Jan-2015	30-Jun-2015
				Comment			
No Change	Percent decrease in journey times in the project area	<input type="checkbox"/>	Percentage	Value		35.00	35.00
				Date	25-Jun-2007	31-Oct-2013	30-Jun-2015
				Comment			
No Change	Decrease in journey times in the project area to key economic centers	<input type="checkbox"/>	Text Sub Type Supplemental	Value	4 hours		2.6 hours
No Change	Decrease in journey times in the project areas to key social centers	<input type="checkbox"/>	Text Sub Type Supplemental	Value	4 hours		3 hours
No Change	Direct project beneficiaries	<input checked="" type="checkbox"/>	Number	Value	200,000.00	752,000.00	800,000.00
				Date	25-Jun-2007	31-Oct-2014	30-Jun-2015
				Comment			

No Change	Female beneficiaries	<input checked="" type="checkbox"/>	Percentage Sub Type Supplemental	Value	50.00	53.00	50.00
No Change	Employment generated	<input type="checkbox"/>	Number	Value		6,681,000.00	250,000.00
				Date		31-Mar-2014	30-Jun-2015
				Comment			
No Change	Employment generated- Male	<input type="checkbox"/>	Number Sub Type Breakdown	Value		6,017,663.00	
				Date		31-Oct-2013	
				Comment			
No Change	Employment generated- Female	<input type="checkbox"/>	Number Sub Type Breakdown	Value		663,211.00	
				Date		31-Oct-2013	
				Comment			
No Change	Employment Generated- Dalit	<input type="checkbox"/>	Number Sub Type Breakdown	Value		1,280,907.00	
				Date		31-Oct-2014	
				Comment			
No Change	Employment Generated- Janajatis	<input type="checkbox"/>	Number Sub Type Breakdown	Value		3,280,292.00	
				Date		31-Oct-2014	
				Comment			
Marked for Deletion	Reduce percentage of blacktop SRN in poor condition to 15%	<input type="checkbox"/>	Text	Value	18%	11.27%	15%
				Date	25-Jun-2007	31-Oct-2014	30-Jun-2015
				Comment			

New	Enhanced access as reported by beneficiaries	<input type="checkbox"/>	Percentage	Value	0.00	0.00	70.00
				Date	16-May-2016	16-May-2016	15-Jul-2019
				Comment			% of users reporting positive perception of project interventions. Gender disaggregated satisfaction level results to be reported.

Intermediate Results Indicators

Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
New	Public disclosure of grievance redress report	<input type="checkbox"/>	Number	Value	0.00	0.00	3.00
				Date	16-May-2016	16-May-2016	15-Jul-2019
				Comment			Report on grievance redress summarizing complaints and remedies to be disclosed annually from FY 2017.
New	Strengthened planning for SRN Roads and Bridges	<input type="checkbox"/>	Text	Value	Last PIP Prepared in 2007		Revised PIP prepared and endorsed
				Date	19-Apr-2016		13-Jul-2018
				Comment			

New	Bridge rehabilitation and replacement	<input type="checkbox"/>	Meter(m)	Value	0.00		750.00
				Date	30-Jun-2016		30-Jun-2019
				Comment			
New	Major bridge maintenance	<input type="checkbox"/>	Meter(m)	Value	0.00		2,000.00
				Date	16-Jun-2016		30-Jun-2019
				Comment			
New	Minor bridge maintenance	<input type="checkbox"/>	Meter(m)	Value	0.00		9,500.00
				Date	16-Jun-2016		30-Jun-2019
				Comment			
Marked for Deletion	Roads Board Act Amendment and more training and logistics provided	<input type="checkbox"/>		Value	Act amendment drawn up and submitted to Ministry of Justice	RBN act has been tabled in the Parliament and under discussion in the Parliamentary sub-committee RBN has prepared five year business plan (2012-2017), and submitted to the Board. Board has appointed a sub-committee to review the business plan.	RBN act tabled to the Parliament. 100 percent of studies and training completed
				Date	25-Sep-2007	31-Oct-2015	06-Jun-2012
				Comment			
			Text				

Marked for Deletion	Government decision to benchmark RBN staff salaries to market rates	<input type="checkbox"/>	Sub Type Supplemental	Value		RBN staff salaries are paid on a competitive basis	RBN staff salaries benchmarked to market rates
Marked for Deletion	Human Resource Development Plan	<input type="checkbox"/>	Text Sub Type Supplemental	Value	No HRD Plan for RBN	RBN has prepared five year business plan (2012-2017), and submitted to the Board. Board has appointed a sub-committee to review the business plan.	HRD prepared and implemented
No Change	Roads rehabilitated, Non-rural	<input checked="" type="checkbox"/>	Kilometers	Value		680.00	705.00
				Date		31-Jan-2015	30-Jun-2015
				Comment			
No Change	Share of rural population with access to an all-season road	<input checked="" type="checkbox"/>	Percentage	Value	7.60	15.00	14.00
				Date	06-Nov-2007	31-Mar-2011	30-Jun-2015
				Comment			
No Change	Number of rural people with access to an all-season road	<input checked="" type="checkbox"/>	Number Sub Type Supplemental	Value	71,500.00	119,000.00	131,000.00
Marked for Deletion	Roads in good and fair condition as a share of total classified roads	<input checked="" type="checkbox"/>	Percentage	Value	82.00	88.70	85.00
				Date	06-Nov-2007	31-Oct-2014	30-Jun-2015
				Comment			

Marked for Deletion	Size of total classified roads	<input type="checkbox"/>	Number	Value	9,399.00	10,835.00	
			Sub Type				
			Supplemental				
No Change	700 km of target roads received upgrading works	<input type="checkbox"/>	Number	Value	0.00	680.00	705.00
				Date	01-Feb-2008	31-Jul-2015	30-Jun-2015
				Comment			
No Change	2550 km of highways received periodic maintenance	<input type="checkbox"/>	Number	Value	0.00	2,608.00	2,550.00
				Date	01-Feb-2008	31-Oct-2015	30-Jun-2015
				Comment			
No Change	Road Safety Action Plan & physical works	<input type="checkbox"/>	Text	Value	No action Plan	Road Safety Action Plan developed and approved. Its implementation has started.	Road Safety action plan implemented and physical works carried out
				Date	01-Feb-2008	31-Oct-2014	30-Jun-2015
				Comment			
No Change	Periodic maintenance of targeted highways and feeder roads backlog executed	<input type="checkbox"/>	Number	Value		1,692.00	1,000.00
				Date	01-Feb-2008	31-Jan-2015	30-Jun-2015
				Comment			

No Change	Capacity building in Geo-technical, Environmental and Social aspects and create awareness on HIV/AIDS	<input type="checkbox"/>	Text	Value		a) Geo-technical assessments carried out as recommended; b) Site specific EMAP and RAP monitoring being done periodically; c) Performance in creating awareness among project construction workers and road users on HIV/AIDS ongoing.	Capacity building in Geo-technical, Environmental and Social aspects and create awareness on HIV/AIDS and planned activities carried out
				Date		31-Jul-2015	30-Jun-2015
				Comment			
Marked for Deletion	DoR IT based MIS operational	<input type="checkbox"/>	Text	Value	WAN installed in DoR Offices in Kathmandu	Web based system being adopted for FMIS, GRM, CMS	IT based MIS operational in all DoR divisions
				Date	30-Sep-2010	31-Jul-2015	30-Jun-2015
				Comment			

Marked for Deletion	Road assessment management tools used for prioritization of road maintenance and upgrading works	<input type="checkbox"/>	Text	Value		This indicator will not be achieved as envisaged. Consultant for Road Inventory Survey and Software Development is on board. However, software development and Inventory Survey on pilot road is expected to be completed by end-2015.	Road assessment management tools used for prioritization of road maintenance and upgrading works
				Date		30-Apr-2015	30-Jun-2015
				Comment			
No Change	Improved quality assurance	<input type="checkbox"/>	Text	Value		The Central Road Lab has been carrying out internal quality audits of selected roads. Quality assurance has been monitored.	Quality monitoring plan prepared each year and quality audit carried out by Central Road Lab
				Date		31-Jul-2015	30-Jun-2015
				Comment			

No Change	Third party technical audit	<input type="checkbox"/>	Text	Value		Third Party Technical audit of upgrading and periodic maintenance works under RSDP has been carried on the selected contracts	Third party technical audit carried out for 20 percent of the project works each year
				Date		31-Jan-2015	30-Jun-2015
				Comment			
No Change	Improve staff capacity within DoR	<input type="checkbox"/>	Text	Value	HR policy updated and 3 year training plan finalized	Training being undertaken as per the business plan.	HR policy updated and 3 year training plan finalized. Domestic and international training provided for DoR staff as per policy and plan
				Date	22-Feb-2010	31-Jul-2015	30-Jun-2015
				Comment			

Annex B EXPLANATION FOR CHANGES TO RESULTS FRAMEWORK

Current (PAD)	Proposed	Rationale
<i>PDO indicators</i>		
Enhanced resilience of RSDP roads <i>Additional kilometers of RSDP roads upgraded with slope protection works and all weather surfacing</i>	Newly added	Important to ensuring all season access as envisaged by PDO as extreme precipitation can render unsurfaced roads unipliable.
Reduced bridge vulnerability <i>All bridges targeted for intervention have condition classifications of I (i.e. good condition) according to DOR's Bridge Management System following interventions.</i>	Newly added	For additional scope of bridge-related works under the Second AF Operation. These works are critical to achieving the PDO by providing access during annual monsoons when rivers / streams swell and vehicles / pedestrians cannot cross without bridges.
Reduce the percentage of blacktop SRN in poor condition to about 10%	Marked for deletion	Frequent changes to the roads classified as SRN makes this indicator no longer attributable
Enhanced access as reported by beneficiaries <i>Users' perception of the project interventions to enhance access. Gender disaggregated satisfaction level results will be reported.</i>	Newly added	Important to assessing impacts and gathering beneficiary feedback as relevant to PDO
<i>Intermediate Results indicators</i>		
Public disclosure of grievance redress report	Newly added	For beneficiary feedback monitoring.
Strengthened planning for SRN roads and bridges <i>Revised PIP prepared including road safety investments</i>	Newly added	For additional scope of work under the Second AF Operation.
Roads Board Act Amendment and more training and logistics provided	Marked for deletion	Nepal's political situation places the approval of legislation outside the scope of attribution for the project
Government decision to benchmark RBN staff salaries to market rates	Marked for deletion	Nepal's political situation places the approval of special pay provisions for RBN staff outside the scope of attribution for the project
Human Resource Development Plan	Marked for deletion	RBN has prepared five year business plan (2012-2017), and submitted to the Board. Board has appointed a sub-committee to review the business plan. A political decision would be required to approve and implement this plan. This is beyond the scope of the operation.
Road in good and fair condition as a share of total classified roads	Marked for deletion	Frequent changes to the roads classified as SRN makes this indicator no longer attributable to the project
Size of total classified roads	Marked for deletion	Frequent changes to the roads classified as SRN makes this indicator no longer attributable to the project

Current (PAD)	Proposed	Rationale
Major bridge maintenance <i>Major maintenance carried out on approximately 2,000 meters of bridges</i>	Newly added	For additional scope of work under the Second AF Operation.
Minor bridge maintenance <i>Minor maintenance carried out on approximately 9,500 meters of bridges</i>	Newly added	For additional scope of work under the Second AF Operation.
DOR IT based MIS operational	Marked for deletion	DOR has adopted selected web-based systems including a Financial Management Information System, Grievance Redress Mechanism, and Contract Management System. However, DOR has yet to decide on implementing a department wide IT system.
Road asset management tools used for prioritization of road maintenance and upgrading works	Marked for deletion	Partially completed under the parent operation. DOR was able to map the entire network and to develop annual maintenance plans according to a systematic approach. However, the use of HDM4 as the basis for decision making was not possible on account of limited capabilities and political economy constraints on using an automated system for prioritization.

Annex C COMPONENT SUMMARY AND AF FINANCING TABLE

1. The Second Additional Financing operation will consist of scale up and restructuring of two ongoing components of RSDP and will add an additional third component on resilience enhancements. Table 1 below summarizes linkages between the AF and the original components of RSDP (as amended at the time of the First Additional Financing).

Table 1 Summary of continuation and restructuring of RSDP components

Original RSDP Comp. /sub-comp.	Impact of Second Additional Finance
RSDP I: Road Development Component	<ul style="list-style-type: none"> ▪ Include the upgrading of approximately 20 km of roads with slope stabilization works and all weather surfacing under Component 1.A of the Project ▪ Revise Component 1.D to reflect broader scope of road safety audits ▪ Include new sub-components on major, and minor maintenance of quake affected bridges, bridge replacement and new bridge construction ▪ Renaming Component 1 to “Road and Bridge Development”
RSDP II: Institutional Strengthening and Policy Reform	<ul style="list-style-type: none"> ▪ Continuation / scaling up of support for technical auditing under Component 2 (ix) ▪ Include technical assistance and training to improved planning of DOR’s capital investment program and the execution of physical works projects (e.g. beneficiary outreach and feedback activities) and updating DOR’s Priority Investment Plan) ▪ Revise Component 2 (xi) to include development of one or more high-priority follow-up projects identified in the updated Priority Investment Plan

Component I – Road and Bridge Development (formerly Road Development)

2. Component I of the Second Additional Financing will support: (i) upgrading of approximately 20 km of RSDP roads (particularly sections along the Surkhet-Jumla road) with slope stabilization works and all weather surfacing, where needed; (ii) construction of 33 bridges along gaps in SRN roads and replacement of three earthquake damaged bridges with permanent structures in the Central Development Region; (iii) major maintenance of approximately 55 existing SRN bridges and quake affected bridges; (iv) road safety audits of all SRN highways to inform the identification of high priority road safety investments for inclusion in an updated Priority Investment Program; and (v) minor maintenance of approximately 300 bridges (9,500 meters) in the Central and Western Development Regions as identified during an IDA-supported post-quake assessment of bridges in the summer of 2015.

Component II – Institutional Strengthening and Policy Reform

3. Component II of the Second Additional Financing will continue to support technical audits of the civil works carried out under the Project (sub-component 2.ix) and implementation support (sub-component 2.x). The Second Additional Finance will also support technical assistance and training to improved planning of DOR's capital investment program and the execution of physical works projects, including: (a) training and capacity development for DOR/MoPIT staff; (b) updating the PIP for the further development of the Strategic Roads Network; (c) carrying out of beneficiary outreach and feedback collection activities. It will also support the undertaking of pre-investment studies for the preparation of one or more high-priority follow-up projects in the road sector as identified in the updated PIP (sub-component 2.xi).

Component III Resilience Enhancements

4. A new Component III under this second Additional Finance will support: (i) provision and staging of 1,600 meters of modular steel bridges; and (ii) provision and staging of heavy equipment at DOR's five heavy equipment division locations (for example: cranes, dozers, mix plants, and excavators) for rapid response to unforeseen failures along the Strategic Roads Network. Modular steel bridges and equipment to support emergency repairs will be staged at DOR's five regional offices or any other strategically suitable locations in order to provide access to different parts of the SRN and to strengthen overall resilience of the network.

Table 2 Summary of Second Additional Financing by component and sub-component

Comp.	Sub-Component	Total (all sources)	GON ²	IDA	IDA CRW
<i>Component I: Road and Bridge Development</i>		38.0	10.0	-	28.0
I.A	Upgrading and slope protection of SRN roads	8.0	4.0	0.0	4.0
I.D	Road safety audits	1.0	0.0	0.0	1.0
I.E	Bridge construction	12.0	6.0	0.0	6.0
I.F	Major maintenance of SRN road bridges & quake affected bridges	7.0	0.0	0.0	7.0
I.G	Minor maintenance on quake affected bridges	10.0	0.0	0.0	10.0
<i>Component II: Institutional Strengthening and Policy Reform</i>		7.0	-	5.0	2.0
II.(ix), (xi), and (xii)	Capacity development (PIP, beneficiary survey, technical audits)	4.0	0.0	4.0	0.0
II.(x)	Implementation support	3.0	0.0	1.0	2.0
<i>Component III: Resilience Enhancements</i>		20.0	-	-	20.0
III.A	Modular steel bridges for rapid response	14.0	0.0	0.0	14.0
III.B	Standby equipment	6.0	0.0	0.0	6.0
RSDP (Second AF) TOTAL		65.0	10.0	5.0	50.0
<i>Overall percentage share</i>			<i>15%</i>	<i>8%</i>	<i>77%</i>

² In the form of joint co-financing

Annex D FINANCIAL MANAGEMENT AND PROCUREMENT

Financial Management

1. Financial management arrangements for the Second AF operation will be similar to the ongoing RSDP which has achieved satisfactory performance thus far. Under the Second AF, DOR will prepare a consolidated work program and budget for project related expenditures and will present them to MoF annually for budget allocation and authorization to spend funds. MOF will allocate annual budgets to the project under a separate budget code. DOR will issue budget authorization to respective cost centers. Separate expenditure accounts following GON's accounting system and relevant Financial Procedure Act and Regulations will be maintained. DOR will maintain records of contractors, designated bank accounts, a grant register, a program ledger, and statements of expenditures. Trimester Implementation Progress Reports including Financial Monitoring Reports will be submitted by DOR within 45 days of the end of each trimester. The consolidated audit report of the original project and the Second Additional Financing will be submitted within 6 months of the end of the fiscal year.

2. The Second Additional Financing to RSDP will constitute further assistance from the Association for bridge maintenance beyond the financing that is already in place under the BIMP operation. As BIMP uses a results-based approach under the Program for Results instrument, there is a need to ensure that achievements under the Second Additional Financing are not claimed against Disbursement Linked Indicators that correspond to BIMP (i.e. no “double disbursement” for one set of results). The following mechanisms will serve to prevent any confusion between bridge works under BIMP and the Second Additional Financing to RSDP: (i) separate line items in the national budget; (ii) separate annual work programs; (iii) separate sets of accounts; and (iv) separate financial statements. The Financing Agreement for the Second Additional Financing to RSDP will also include an eligibility requirement stating that expenditures under the project will only be eligible for reimbursement provided that they have not been financed under other operations financed by the Association. This will also mitigate the risk of confusion between the Second Additional Finance and the remaining active IDA credit under the parent operation which is committed to ongoing contacts.

3. RSDP has experienced occasional delays in delivery of trimester Financial Monitoring Reports (FMRs) throughout implementation. However, all FMRs are currently up to date. The project's FY2014/15 audit report was previously overdue primarily on account of unrest following the promulgation of Nepal's new constitution in September 2015. However, this has now been received and accepted by the Association.

4. With support from the Second Additional Financing to RSDP, DOR will be taking measures to streamline its Financial Management Information System (FMIS) so that cost centers provide accurate data in timely manners. Similarly, the Second AF will also support deployment and further development of DOR's Contracts Monitoring System (CMS). The Second AF will organize periodic FM workshops/training to strengthen the capacity of the accounts staff (many of whom are new).

5. A Designated Bank Account in United States Dollars will be established at the Nepal Rastra Bank (Central Bank) on terms and conditions satisfactory to IDA. The Project Coordinator

and Accounts Officer within DOR will be authorized signatories for IDA disbursements and will manage the Designated Account. Disbursement will be report based as with the current RSDP.

Procurement

6. Procurement for goods, works and non-consulting services under the proposed operation will follow 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*," (2011), revised July, 2014.³ For consulting services, the project will follow the World Bank's "*Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers, (2011)*" as revised July, 2014.⁴ Procurement arrangements that have applied to RSDP (the parent operation) will remain valid in the proposed Second Additional Financing including procurement of all contracts through electronic-bidding. There will be only one exception to the previous arrangements as follows: the bridge maintenance contracts (both major and maintenance) will be procured by DOR's Bridge Branch in support of DOR's decision to manage bridge works in this fashion. The Bridge Branch will also be responsible for supervision of these contracts.

7. DOR and the Association have agreed a procurement plan for the first year of works under the Second Additional Financing. In subsequent years, DOR and the Association will agree the Project Procurement Plan prior to contracting for goods works or services. The Project Procurement Plan will define: (i) procurement or selection methods; (ii) estimated costs; (iii) prior review requirements; and (iv) envisaged procurement timelines. The RSDP Project Coordination Team will update the procurement plan at least annually or more frequently as required to adjust for actual performance, unforeseen risks, or other implementation stage realities.

³ Hereafter "Procurement Guidelines"

⁴ Hereafter "Consultant Procurement Guidelines"

Annex E ECONOMIC APPRAISAL

Introduction

1. Economic appraisal has been undertaken of slope stabilization and deferred improvement of some 18 km of RSDP roads, installation of 37 new bridges on RSDP roads and replacement of 2 temporary bridges necessitated by earthquake damage, major maintenance of 14 bridges and minor maintenance of 41 bridges. A third bridge replacement, of an earthquake damaged bridge, has not been included in the appraisal because of lack of traffic data.

2. The interventions are appraised over a period to 2035, and both the rate of discount and the opportunity cost of capital are taken to be 12 percent. Where road user costs are saved by an investment, these have been calculated using World Bank Roads Economic Decision Model (RED) software configured for Highway Development and Management Model (HDM-4) relationships, with user cost components and Vehicle Operation Costs (VOCs) for paved and earth roads tabulated. Cost components and resulting VOCs for paved and earth roads are appended. For practical reasons the “numeraire” of the appraisal is the USD rather than Nepali Rupee; the exchange rate is that of 2015 with 100 NRs /\$.

3. No detailed estimate has been made of VOC components or of conversion factors to translate financial cost to an economic equivalent; values are taken from a 2013 study of four roads in the Strengthening National Rural Transport Program (SNRTP). It is understood that intervention costs have changed little since 2013, and thus costs and benefits are both appraised in comparable terms.

Roads Appraisal

4. It has been indicated that the method of road appraisal is the use of RED software. Improvements are considered to six roads, and comprise of the main slope stabilization and upgrading from an earth to an Otta seal standard. Appraisal comprises upgrading of over 18Km of roads which could not be undertaken in the RSDP program because of unstable slopes. Table 3 sets out the scope of the economic appraisal in terms of the type of intervention proposed and the length of kilometers to which the intervention is applied. Intervention comprises slope stabilization of all sections and upgrading where appropriate.

Road Appraisal Assumptions

- All but 0.51 kms of the unimproved sections are earth and “without project” average lifetime roughness are taken to be generally IRI 20m/km. The very short section already paved, but subsided, is given an International Roughness Index (IRI) of 6m/km. “With project” IRI is 4m/km.
- Financial costs of \$150,000 per km for an Otta seal and \$75,000/km for slope stabilization are converted to economic by the application of a Safety Performance Function of 0.81.
- Analysis for RSDP roads in 2013 suggests that maintenance of an Otta seal costs \$160 more per km than of an earth pavement.

Table 3 Road Analysis Scope

	Intervention		Route Km	Economic Intervention Cost [\$ /m]	Without project IRI m/km	With project IRI m/km	2015 ADT
	Seal and Stabilize km	Stabilize only km					
Khodpe-Chainpur	0.235	0.18	0.415	0.056	20	6	149
Dailekh-Khidikyajula-Jumla	15.93		15.93	3.011	18	5	127
Chhinchu-Jajarkot	0.51		0.51	0.096	6	6	258
Gokulesshore-Darchula	0.3		0.3	0.057	20	6	130
Shitalpati-Musikot	0.81	0.27	1.08	0.170	20	6	397
Total	17.785	0.45	18.235	3.390			

Bridge Appraisal

5. Bridges covered by the appraisal comprise three categories:

- New construction of a missing bridge where installation of a new bridge reduces both distance and time costs of road use by shortening access distance, avoiding costs crossing the river by ford . Time taken to negotiate a ford is longer than even a single lane bridge and this has been taken into account.
- Bridges which may fail in the absence of appropriate intervention. The bridges requiring major and minor maintenance are in this category. No detailed information is available on the condition of these bridges so they are assumed to be at “medium” risk of failure, i.e., within the next 20 years with a probability of failure of 5 percent in any one year. Year by year this probability will increase by 5 percent a year until at the 20th year probability approaches p= 1.0. When a bridge becomes too weak to carry the projected traffic load and fails, two sets of costs may be incurred; the cost of providing a temporary crossing while the bridge is reconstructed -not considered in the present appraisal - and the costs of additional km driven as a detour is found.
- Bridges of reduced capacity, which are the two replacement bridges. Replacing a single-lane bridge by a two-lane structure avoids delays caused both by vehicles slowing to negotiate the narrower bridge and by waiting for approaching vehicles to cross. The appraisal will incorporate estimations of delays at single lane bridges based on an erlang queuing model. A single lane bridge would have a width of 3.5m. Similar delays from approaching traffic are also experienced in ford crossings

Bridge Appraisal Assumptions

6. Intervention costs have been given as \$13,000 per meter of span for bridge replacement, \$2,500 per meter for major maintenance and \$1000 for minor maintenance. The costs are shadow-priced by factors of 0.82 and 0.79 respectively.

7. Maintenance costs of newly constructed bridges are 1.8 percent of constructions costs, incurred after eight years. The cost of a temporary bridge, incurred when an existing bridge fails, is estimated at \$130/m of span (i.e. a new temporary bridge costing \$1300/m that is used 10 times).

8. A total of 92 bridges are included in the appraisal. To make analysis manageable, on each road bridge spans are averaged, and costs of intervention per road are the number of bridges by average span length.

9. For bridge maintenance, and assuming the probability of failure in 2015 is 0.05, probability is reduced by the ratio of maintenance costs to new construction. The device indicates a failure probability in 2015 of 0.0095 in the case of major maintenance and 0.0008 in the case of minor maintenance.

10. With failure, diversion is required until a temporary crossing and eventual replacement is in place. Without detail of topography, a uniform diversion route of 15 km is taken.

11. Table 4 summarizes the appraisal scope. The bridges for appraisal are grouped under three headings, those for which intervention will comprise new construction, those to receive minor maintenance and those to receive major maintenance. The Table includes characteristics relevant to each type of appraisal, together with indicative economic costs of intervention in terms of costs/m. Where a characteristic is not relevant it is flagged “not applicable” [n.a].

Table 4 Bridge Appraisal Scope and Assumptions

Road/ Intervention Type	No. Bridges	Average Span m	Economic Intervention Cost \$/m	Failure Probability in 2015	Crossing Type	Detour Route km	Current Crossing Distance	2015 ADT [a]
<i>New Construction</i>								
Chhinhu-Jarakot	13	30	4.2588	n.a	Ford	n.a	120	258
Khodpe-Chainpur	1	30	0.3276	n.a	Ford	n.a	120	149
Surkhet-Dailekh	3	25	0.819	n.a	Ford	n.a	100	152
Surket-Jumla	15	20	3.276	n.a	Ford	n.a	80	180
Shitalpati-Muskiot	2	25	0.546	n.a	Ford	n.a	100	397
Dumre-Chame	2	37.5	0.819	n.a	Temporary Bridge	n.a	n.a	1764
<i>Major Maintenance</i>								
Rapti Highway	2	90	0.378	0.95%	n.a	15	n.a	397
Mahakali Highway	1	41	0.0861	0.95%	n.a	15	n.a	222
Narayanghat-Mungling	2	276	1.1592	0.95%	n.a	15	n.a	7541
Khodpe-Chaingur	2	76	0.3192	0.95%	n.a	15	n.a	149
Chhinchu-Jarakot	1	8	0.0168	0.95%	n.a	15	n.a	258
Karnali Highway	6	38	0.4788	0.95%	n.a	15	n.a	154
<i>Minor Maintenance</i>								
Rapti Highway	3	30	0.0756	0.04%	n.a	15	n.a	397
Mahakali Highway	5	25	0.105	0.04%	n.a	15	n.a	222
Narayanghat-Mungling	18	40	0.6048	0.04%	n.a	15	n.a	7541
Khodpe-Chaingur	4	36	0.12096	0.04%	n.a	15	n.a	149
Chhinchu-Jarakot	7	19	0.11172	0.04%	n.a	15	n.a	258
Karnali Highway	4	30	0.1008	0.04%	n.a	15	n.a	154

Appraisal Traffic

12. Traffic volumes on the appraisal roads and over the appraisal bridges were taken from extant data; no specific surveys were undertaken. Traffic profiles on RSDP roads are narrow, with cars, 4WD and utilities recorded as a group. No distinction is made between trucks of different weights other than “light trucks and “trucks”, whereas data for Narayanghat-Mungling and Dumre-Besisahar-Chame comprises a wider spectrum of vehicles. Further, all counts include tractors which are not configured in HDM software. In order to use a traffic profile common to all appraisals, the following adjustments have been made:

- All truck volumes apart from light trucks are designated “heavy trucks”
- Microbuses and minibuses subsumed as a single category
- Tractors and light trucks form a single category, but with tyre costs increased, tractor tyres being much more expensive than light truck tyres.

Traffic Forecast

13. Recent studies of the road sector have used a traffic growth sector of around 6.5 percent. Indications are, however, that this projection may be conservative. Comparison of traffic counts undertaken on 10 RSDP roads in 2011 with counts on the same roads in 2015 shows an average annual increase of 35.5 percent. Further, data on fuel sales and vehicle registrations suggest that from 2005 to 2015 total fuel sales have been growing at an annual average rate of 15.3 percent and total vehicles registrations at 20.1 percent. While there may be doubts on the quality of the data, whether diesel fuel sales include sales to non-road users and whether registrations reflect the dynamics of the operational fleet, both series call into question the reasonableness of a 6.5 percent growth rate. Accordingly a rate of 9.5 percent has been adopted as a base case.

Appraisal Results

14. Appraisal results for each component of the appraisal, and for the program as a whole, are set out in Table 5. Results. The results are tabulated for Base Case assumptions [traffic growth at 9.5 percent annually, probability of bridge failure is 0.05, and detours necessitated by failure average 15 km] and are expressed principally as an Economic Internal Rate of Return [EIRR], a Net Present Value at a discount rate of 12 percent, and a Benefit to Cost Ratio.

15. In addition, the Table shows the relationship between NPV and Financial Capital cost [NPV/CAP]; the comparison is useful for ranking components of the appraisal. Switching values for costs and benefits are also shown. Switch Values indicate the degree to which costs can be increased and benefits lost before the investment becomes marginal, that is, an NPV = 0 and the EIRR equals the discount rate.

16. Each component offers an EIRR > 12 percent and the program an EIRR of 16.5 percent. The range of returns is from 13.3 percent for the roads component to over 30 percent for bridge maintenance.

Table 5 Base Case Measures of Worth

Appraisal Results	RSDP Road Slope Stabilization	New Construction 37 Bridges	Maintenance 55 Bridges	Total Programme
EIRR%	13.3	13.6	30.7	16.5
Present Value of Costs [\$ 000]	2964.7	11312.0	2706.82	16983.5
Present Value of Benefits [\$ 000]	3612.0	13706.1	8921.82	26239.9
Net Present Value [\$ 000]	647.4	2394.0	6215.0	9256.4
Capital Cost CAP [\$000]	11700.0	11510.0	3380.0	26590.0
NPV/CAP	0.06	0.21	0.21	0.21
Benefit to Cost ratio	1.2	1.2	3.3	1.5
Switch Value for Costs	22%	21%	230%	55%
Switch Value for Benefits	-18%	-17%	-70%	-35%

Sensitivity Testing

17. Reservations have been expressed at past projections of traffic growth in the region of 6.5 percent. If the rate were applied to all project components, the investment would become sub-marginal offering an EIRR of 11.5 percent. All measures of worth are set out for a low traffic growth case in Table 6.

Table 6 Traffic Growth of 6.5 percent

Appraisal Results	RSDP Road Slope Stabilization	New Construction 37 Bridges	Maint. 55 Bridges	Total Program
EIRR%	10.3	6.8	27.5	11.5
Present Value of Costs [\$ 000]	2964.7	11183.9	2706.82	16855.3
Present Value of Benefits [\$ 000]	2780.6	7241.7	6923.05	16945.4
Net Present Value [\$ 000]	-184.0	-3942.2	4216.2	90.0
Capital Cost CAP [\$000]	11700.0	11510.0	3380.0	26590.0
NPV/CAP	-0.02	-0.34	1.25	0.00
Benefit to Cost ratio	0.94	1.2	2.6	1.0
Switch Value for Costs	-6%	21%	156%	1%
Switch Value for costs of 55 percent Benefits	7%	-17%	-61%	-1%

18. A standard sensitivity test is for a cost increase of 20 percent. Table 7 shows a switching value for costs of 55 percent. A 20 percent increase would still yield a return of over 12 percent for each project component and an overall EIRR of 14.1 percent.

Table 7 Costs Increase by 20 Percent

Appraisal Results	RSDP Road Slope Stabilization	New Construction 37 Bridges	Maintenance 55 Bridges	Total Programme
EIRR%	13.3	12.2	25.6	14.1
Present Value of Costs [\$ 000]	3553.0	13468.8	2703.07	19724.9
Present Value of Benefits [\$ 000]	3612.0	13706.1	8155.42	25473.5
Net Present Value [\$ 000]	647.4	2394.0	5452.4	5748.7
Capital Cost CAP [\$000]	11700.0	11510.0	3380.0	26590.0
NPV/CAP	0.06	0.21	0.21	0.21
Benefit to Cost ratio	1.2	1.2	3.0	1.3
Switch Value for Costs	22%	21%	202%	29%
Switch Value for Benefits	-18%	-17%	-67%	-23%

19. Finally, the assumptions underlying the appraisal of bridge maintenance have been tested. The component has been the highest yielding of the program, due to the inclusion of bridges on the heavily trafficked Naranghat-Mungling highway. Accordingly bridge maintenance has been tested for a shorter – 10 km – detour rate and a lower failure probability [$p=0.025$]. Table 8 shows that although the EIRR of bridge maintenance reduces substantially, it is still above 12 percent and the return for the project as a whole offers 13.4 percent and switching values of 20 percent and -17 percent for costs and benefits respectively.

Table 8 10 km detour length

Appraisal Results	RSDP Road Slope Stabilization	New Construction 37 Bridges	Maintenance 55 Bridges	Total Program
EIRR%	13.3	13.6	13.3	13.4
Present Value of Costs [\$ 000]	2964.7	11312.0	2705.53	16982.2
Present Value of Benefits [\$ 000]	3612.0	13706.1	3036.09	20354.2
Net Present Value [\$ 000]	647.4	2394.0	330.6	3372.0
Capital Cost CAP [\$000]	11700.0	11510.0	3380.0	26590.0
NPV/CAP	0.06	0.21	0.21	0.21
Benefit to Cost ratio	1.2	1.2	1.1	1.2
Switch Value for Costs	22%	21%	12%	20%
Switch Value for Benefits	-18%	-17%	-11%	-17%

Annex F PROJECT AREA MAP (IBRD 42270)

