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Report No: ICR00005041

IMPLEMENTATION COMPLETION AND RESULTS REPORT

ON A

GRANT

IN THE AMOUNT OF SDR46.9 MILLION (US$72 MILLION EQUIVALENT)

AND A

CREDIT

IN THE AMOUNT OF SDR18.3 MILLION (US$28 MILLION EQUIVALENT)

TO

NEPAL

FOR A

PROJECT FOR STRENGTHENING THE NATIONAL RURAL TRANSPORT PROGRAM

November 2020

Transport Global Practice

South Asia Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective July 31, 2020)

Currency Unit =	Nepalese Rupees (NPR)
NPR 119.58 =	US$1
US$1.413070 =	SDR 1

FISCAL YEAR

July 16 - June 15

Regional Vice President:	Hartwig Schafer
Country Director:	Faris H. Hadad-Zervos
Regional Director:	Guangzhe Chen
Practice Manager:	Shomik Raj Mehndiratta
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ABBREVIATIONS AND ACRONYMS

ARMPs	Annual Rural Maintenance Plans
CPCU	Central Project Coordination Unit
CPS	Country Partnership Strategy
CSM	Construction Site Monitoring
DCRN	District Core Road Network
DDC	District Development Council
DoLIDAR	Department of Local Infrastructure Development and Agricultural Roads
DPRs	Detailed Project Reports
DTMPs	District Transport Master Plans
DTOs	District Technical Offices
GAP	Gender Action Plan
GDP	Gross Domestic Product
GON	Government of Nepal
GPS	Global Positioning System
GRS	Grievance Redress System
EIRR	Economic Internal Rate of Return
ESMPs	Environment and Social Management Plans
ICRR	Implementation Completion and Results Report
ICT	Information and Communication Technology
IDA	International Development Association
IDO	Infrastructure Development Office
ILO	International Labour Organization
IRI	International Roughness Index
LRN	Local Road Network
LRUC	Local Road Users Committee
MoFAGA	Ministry of Federal Affairs and General Administration
MoFALD	Ministry of Federal Affairs and Local Development
MPI	Maintenance Performance Indicator
NVC	National Vigilance Centre
OP/ BP	Operation Policy/ Bank Policy
OSH	Occupational Safety and Health
PAT	Performance Assessment Tool
PAPs	Project Affected People
PDO	Project Development Objective
RAIDP	Rural Access Improvement and Decentralization Project
RAP	Resettlement Action Plan
RMGs	Routine Maintenance Groups
RuTIMS	Rural Transport Information Management System
SNRTP	Strengthening National Rural Transport Program
TSA	Treasury Single Account
VOC	Vehicle Operating Cost
VCDP	Vulnerability Community Development Plan
VLDIMP	Voluntary Land Donation Impact Mitigation Plan
VRCC	Village Road Coordination Committee

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DATA SHEET

BASIC INFORMATION

Product Information

Project ID	Project Name
P132750	Project for Strengthening the National Rural Transport Program
Country	Financing Instrument
Nepal	Investment Project Financing
Original EA Category	Revised EA Category
Partial Assessment (B)	Partial Assessment (B)

Organizations

Borrower	Implementing Agency
Nepal	Department of Local Infrastructure

Project Development Objective (PDO)

Original PDO

The project development objective for this operation is to enhance the availability and reliability of transport connectivity for rural communities in participating districts.

FINANCING

	Original Amount (US$)	Revised Amount (US$)	Actual Disbursed (US$)
World Bank Financing			
IDA-53360	28,000,000	20,037,571	17,513,289
IDA-H8990	72,000,000	71,467,074	66,006,257
Total	**100,000,000**	**91,504,645**	**83,519,546**
Non-World Bank Financing			
Borrower/Recipient	63,900,000	75,400,000	66,053,915
UK: British Department for International Development (DFID)	11,500,000	0	0
Total	**75,400,000**	**75,400,000**	**66,053,915**
Total Project Cost	**175,400,000**	**166,904,645**	**149,573,461**

KEY DATES

Approval	Effectiveness	MTR Review	Original Closing	Actual Closing
23-Dec-2013	02-Apr-2014	17-Mar-2017	15-Jul-2019	15-Jan-2020

RESTRUCTURING AND/OR ADDITIONAL FINANCING

Date(s)	Amount Disbursed (US$M)	Key Revisions
07-Jun-2018	41.52	Change in Results Framework Change in Components and Cost Reallocation between Disbursement Categories
15-Feb-2019	63.56	Change in Implementing Agency Change in Results Framework Change in Loan Closing Date(s) Reallocation between Disbursement Categories Change in Disbursements Arrangements Change in Institutional Arrangements Change in Financial Management Change in Procurement Change in Implementation Schedule

KEY RATINGS

Outcome	Bank Performance	M&E Quality
Satisfactory	Satisfactory	Modest

RATINGS OF PROJECT PERFORMANCE IN ISRs

No.	Date ISR Archived	DO Rating	IP Rating	Actual Disbursements (US$M)
01	13-Apr-2014	Satisfactory	Satisfactory	0
02	27-Oct-2014	Moderately Satisfactory	Moderately Satisfactory	5.00
03	07-May-2015	Moderately Satisfactory	Moderately Satisfactory	7.65
04	03-Nov-2015	Moderately Satisfactory	Moderately Satisfactory	9.33
05	28-Apr-2016	Satisfactory	Moderately Satisfactory	17.76
06	29-Dec-2016	Highly Unsatisfactory	Unsatisfactory	17.92
07	22-Aug-2017	Highly Unsatisfactory	Unsatisfactory	17.92
08	21-Dec-2017	Moderately Unsatisfactory	Moderately Unsatisfactory	21.84
09	01-May-2018	Moderately Unsatisfactory	Moderately Satisfactory	39.20
10	12-Jun-2018	Moderately Satisfactory	Moderately Satisfactory	41.52
11	14-Dec-2018	Moderately Satisfactory	Moderately Unsatisfactory	63.56
12	23-Apr-2019	Moderately Satisfactory	Moderately Unsatisfactory	63.56
13	10-Jul-2019	Moderately Satisfactory	Moderately Satisfactory	69.15
14	02-Jan-2020	Moderately Satisfactory	Moderately Satisfactory	73.41

SECTORS AND THEMES

Sectors

Major Sector/Sector	(%)
Transportation	**100**
Public Administration - Transportation	20
Rural and Inter-Urban Roads	80

Themes

Major Theme/ Theme (Level 2)/ Theme (Level 3)	(%)
Finance	**10**
Finance for Development	10
Agriculture Finance	10
Urban and Rural Development	**90**
Rural Development	90
Rural Markets	10
Rural Infrastructure and service delivery	80

ADM STAFF

Role	At Approval	At ICR
Regional Vice President:	Philippe H. Le Houerou	Hartwig Schafer
Country Director:	Johannes C.M. Zutt	Faris H. Hadad-Zervos
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I. PROJECT CONTEXT AND DEVELOPMENT OBJECTIVES

A. CONTEXT AT APPRAISAL

Context

1. In the years prior to appraisal, Nepal had seen moderate gross domestic product (GDP) growth, significant poverty reduction and improvements in rural connectivity. Nevertheless, at the time of appraisal Nepal remained one of the least developed countries in the world and had the second lowest GDP in South Asia. Between 2005 and 2012, Nepal's real GDP grew at an average annual rate of 4.2 percent. Nepal had made significant progress in poverty reduction, with the poverty headcount falling from 49 percent of the population in 2004 to 25 percent in 2011. Over 90 percent of this poverty reduction took place in rural areas, where 83 percent of Nepal's population lives. Nepal's topography and geology, combined with a primarily rural population distribution, significantly complicated efforts to provide all weather connectivity to many rural communities. Improving connectivity throughout Nepal was identified as a key consideration for ensuring that economic growth reached rural areas.

2. At the time of appraisal in 2013, Nepal's spending on rural infrastructure was approximately 6 percent of its national budget (US$265 million). Consistent with decentralization policies, about 80 percent of this funding came from central government sources via the Ministry of Federal Affairs and Local Development (MoFALD)[1], which was responsible for supporting local infrastructure through its implementing arm, the Department of Local Infrastructure Development and Agricultural Roads (DoLIDAR). The works were implemented by the District Technical Offices (DTOs), as the technical arm of the local governments, in coordination with DoLIDAR.

3. The condition of Nepal's Local Road Network (LRN) was generally poor. Less than 20 percent of the network was passible during the rainy season (June-September), when many communities were isolated. Many local road linkages only offered seasonal access due to frequent failures because of inadequate drainage, low quality surfacing, the absence of crossing structures, and haphazard road construction without appropriate engineering. Local government transport officials were overwhelmed, under resourced, and capacity constrained. However, local governments were in the best position to deliver results in the rural transport sub-sector.

4. **Rationale for Bank Involvement.** This Project built on the two previous World Bank engagements in Nepal for supporting rural transport infrastructure. It was designed to improve transport connectivity across the country for inclusive economic growth and rural poverty reduction. These aims were consistent with the first pillar of the World Bank's Interim Strategy Note[2] for Nepal (FY12-FY13) related to enhancing connectivity and productivity for growth, and the twin Strategic Goals to reduce extreme poverty and increase shared prosperity amongst the bottom 40 percent, by increasing agricultural incomes in rural districts. The 33 districts initially selected were home to approximately 60 percent of Nepal's poor population.

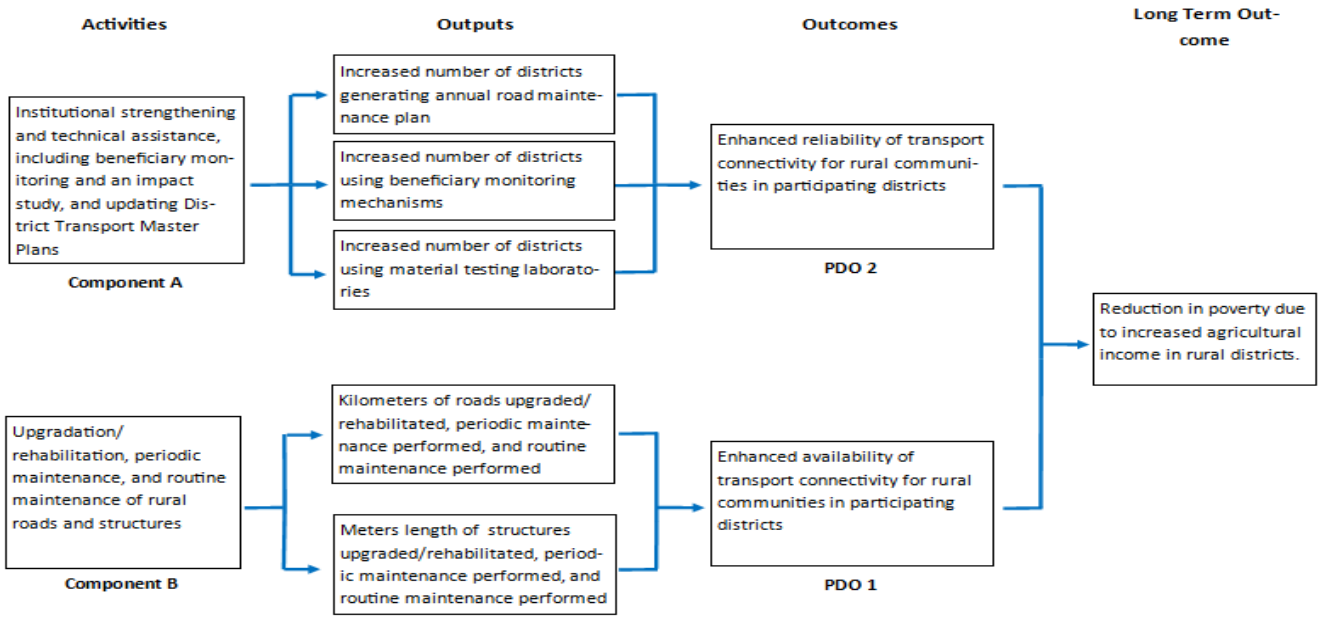
Theory of Change (Results Chain)

5. Figure 1 below depicts the retroactively developed Theory of Change for the Project.

[1] As a result of Federalism, it has been changed to Ministry of Federal Affairs and General Administration (MoFAGA).
[2] Report number 63381-NP discussed and approved the World Bank's Board on September 15, 2012.

Figure-1

Theory of Change: Project for Strengthening the National Transport Program (SNRTP)



Project Development Objectives (PDOs)

6. The PDO was to enhance the availability and reliability of transport connectivity for rural communities in the Participating Districts.

Key Expected Outcomes and Outcome Indicators

7. The PDO is a composite statement consisting of two main expected outcomes. The indicators for assessing the achievement of these outcomes are shown in Table-1 below.

Table-1: Indicators for Assessing Achievement of Outcomes

Expected Outcomes	Outcome Indicators
Increased access to all weather transport connectivity	Percentage of population within 2- and 4-hours walking distance in the participating *terai* and *hill* districts respectively from an all-weather road.
Improved reliability of rural transport infrastructure	Percentage of core road networks in participating districts rated in “good” or “fair” condition.

Components

8. The Project consisted of the following two components:

- **Component A: Institutional Strengthening and Technical Assistance (US$19.7 million).** This component included provision for:

(i) technical assistance and training to the participating districts, DOLIDAR, MOFALD and the National Vigilance Centre (NVC) for planning, preparation, implementation, revising standards and training for works according to their Project roles and responsibilities specified in the Project Operation Manual;
(ii) beneficiary monitoring of physical works under Component B (Civil Works) of the Project;
(iii) an impact study of selected Project interventions;
(iv) technical audits and verification activities as necessary to facilitate Component B; and
(v) analytical studies and technical preparation activities related to market infrastructure improvement or maintenance.

- **Component B: Civil Works (US$155.7 million).** This component consisted of two subparts (or "windows") in order to efficiently sequence the work.

(i) ***Window 1 Output Based Maintenance (US$50 million).*** To support periodic and routine road and crossing structure maintenance works. The release of International Development Association (IDA) funding support was tied to the completion of works according to a pre-specified set of performance indicators, which were cost-thresholds for various categories of works in *terai* and *hill* districts, and was capped at SDR650,000.[3] Window 1 only supported works within the existing rights of way along existing roads and crossing structures. The Districts were also required to operationalize Road Maintenance Groups (RMGs)[4] for routine maintenance under this category.

(ii) ***Window 2 Upgrading and Rehabilitation (US$105.7 million).*** To support upgrading (or rehabilitation) and new crossing structure construction as needed to provide all-weather connectivity in any participating district. The goal of Window 2 was to make improvements that yielded usable and connected stretches of roadway with uninterrupted year-round access.

B. SIGNIFICANT CHANGES DURING IMPLEMENTATION (IF APPLICABLE)

Revised PDOs and Outcome Targets

9. There were no revisions to either the PDOs or the PDO indicators.

Revised Components

10. The Project components were not revised. The Project was restructured twice. The first restructuring was motivated by the increases in the costs of some activities and field-level supervision requirements which became apparent as the Project came back on track after tackling the Project management and governance challenges. To address these factors, the restructuring dated June 7, 2018 revised the targets of various categories of civil works, component costs and disbursement category allocations. These included:

[3]The Government allocated funding to the District Technical Offices for each fiscal year to cover the agreed program of maintenance works, and IDA funds were subsequently disbursed to the Government. Window 1 disbursements were also dependent on successful Technical Audit reports, results assessment and unit Maintenance Performance Indicator (MPI)-based calculations provided by MoFALD. Thus, while the Window 1 disbursements were linked to verification/certification of implementation of works (outputs) in keeping with the pre-specified MPIs, the contracts or Routine Maintenance Group arrangements for carrying out individual maintenance works were not themselves output-based.
[4]This group-based length maintenance approach involved assigning teams of individuals to handle all routine maintenance tasks such as drain clearing, trimming back encroaching vegetation, pothole repair, shoulder maintenance, etc.; along a specified length of road. Individuals were predominantly selected from population centers near the roads of interest.

(i) revision to the cost of the components and corresponding changes to be financed through the IDA credit and GON;
(ii) changes to the results framework to adjust the targets of selected intermediate indicators (see Annex 1);
(iii) reallocation of the IDA grant across various categories in accordance with the above changes;
(iv) updating the IDA-financing percentage of expenditures under Category 2 (works under Part B.1 of the Project) to 2 percent; and
(v) revising the total contribution of the Government of Nepal upwards to US$75.4 million because the donor contribution of US$11.5 million to Window 1 envisaged at the time of appraisal did not materialize.

11. After the adoption of the new Constitution and the transition to federalism, the Project was restructured a second time in February 2019 to adjust to the new implementation structure comprising federal, provincial and local level governments. The names of implementation agencies were changed as part of this restructuring, e.g., DOLIDAR to Department of Local Infrastructure (DOLI) and DTO to Infrastructure Development Offices (IDOs). In addition, new disbursement categories were added to the financing agreement to accommodate the forecasted expenditures under the new implementing units in the Provincial Governments. Funds were reallocated between disbursement categories, and the closing date was extended by six months.

Rationale for Changes and Their Implication on the Original Theory of Change

12. The rationale for these changes is summarized above. These changes did not affect the scope or PDO of the Project, and the theory of change remained unaffected.

II. OUTCOME

A. RELEVANCE OF PDOs

Assessment of Relevance of PDOs and Rating

Rating: High

13. The PDO "*to enhance the availability and reliability of transport connectivity for rural communities in the Participating Districts*" continues to be relevant to Nepal's development priorities[5] of improving transport connectivity by expanding a good quality, reliable, affordable and safe transport network to contribute to national integration, socio-economic growth and development, regional balance, and rural poverty reduction.

14. The Project's aim of improving the availability and reliability of transport network remains highly relevant to the current WBG's Nepal Country Partnership Framework (CPF) (FY2019-FY2023), which highlighted poor transport connectivity as a top constraint to the business environment and aimed to address the persistent shortcoming in the strategic and local road networks through strengthened planning and management of Projects, improving the quality and resilience of transport infrastructure including bridges, and enhancing implementation capacity. The Project is fully consistent with the second objective of improving transport connectivity under Focus Area 2 of *Private Sector-led Jobs and Growth*.

[5] According to the Periodic Five-Year Plans published by the National Planning Commission – An Approach Paper to the thirteenth Five Year Plan 2013-2016 and 15th Periodic Five-Year Plan of Nepal- 2019/20-2023/24.

B. ACHIEVEMENT OF PDOs (EFFICACY)

Assessment of Achievement of Each Objective/Outcome

15. ***PDO Indicators.*** The Project significantly exceeded the PDO indicator 1 target of the increased population within 2- and 4-hour walking distance from an all-weather road (see Table-2 below). The PDO Indicator 2 of *roads in good and fair condition as a share of total classified network* could not be measured directly as there was no baseline and no monitoring system had been put in place for the entire classified network. To determine the Project's contribution to this metric, the condition of the roads (good or fair) as a share of the roads upgraded under this Project was measured. A survey of a sample set of Project-supported upgraded roads covering a total length of 278 km (that is, 23 percent of the revised target of 1,210 km for upgrading roads) indicates that 79 percent of them are in good or fair condition. [6]

Table-2: Achievement of PDO Indicator Targets

Indicator	Description	Target	Achievement	Remarks
Increase in population within 2- and 4-hours walking distance	Increment in population served in Terai districts	4%	12.35%	17.05% (maximum) in Kailali District
	Increment in population served in hill districts		11.81%	47.2% (maximum) in Salyan District
Roads in good and fair condition as a share of total classified network		50%	--	A system for directly measuring this indicator was not established.
Substitute Indicator: Roads in good and fair condition as a share of the roads Upgraded under the Project.		--	*79 %*	*This achievement was calculated based on the assessment of the condition of a sample set of roads upgraded under the Project.*

16. Both Project components contributed significantly to the achievement of the two PDO elements, as summarized below and detailed in Annex-7.

- ***Component A: Institutional Strengthening and Technical Assistance.*** Significant gains were made under this component, as summarized below and in Table-3.

i) *Technical Assistance through the International Labour Organization (ILO).* Technical assistance from ILO played an instrumental role in effective implementation and monitoring of works spread across several districts, particularly in promoting an effective maintenance culture within agencies and introducing agency staff to the use of information technology in asset management. Specific improvements included: development of a Rural Transport Information Management System (RuTIMS); RMGs; GPS and web-based mobile construction site monitoring (CSM); bioengineering works; introduction of a more systematic approach for improving the occupational safety and health (OSH) work culture; and extensive training and capacity building of over 2,700 professional staff and over 1,800 workers of construction and routine maintenance groups.

ii) *Other accomplishments* included the development of Annual Rural Maintenance Plans (ARMPs) for all Project districts, use of Local Road Users' Committees (RUCs), independent technical audits during implementation, the implementation of a Governance Accountability Action Plan (GAAP), implementation of a Performance Assessment

[6] This sample set comprised 20 roads (15 paved roads and 5 gravel roads) from 17 districts covering a length of 278 km in both Terai and Hills region. Of these, 185.9 km are paved roads, where 126.8 km (68 percent) percent were found to be in good or fair condition based on the International Roughness Index (IRI). The remaining gravel roads of 92.5 km were found to be in good condition based on visual observation and pre-defined rating system. Source: GIS Based Road Accessibility Study and Condition Survey, Draft Final Report, Aviyaan Consulting, December 2019.

Tool (PAT) in three districts, and a study of impacts at Project completion. The Project also conducted comprehensive training programs related to technical, fiduciary, and safeguards for 650 participants from DoLIDAR/DoLI, DTO/IDOs and Project staff. Review and planning workshops and periodic orientations were regularly conducted to disseminate the provisions and requirements of the Project where over 1,154 officials participated.

- ***Component B: Civil Works:*** The Project was able to achieve and, in some cases exceed, most of the targets for maintenance, upgrading and rehabilitation of road works and crossing structures, as indicated in Table-3 below.

Justification of Overall Efficacy Rating

17. The Project either fully or almost fully achieved the targets of all outcome and output indicators, as summarized in Table-3 below.

Table-3: Summary of Achievements of Output and Outcome Indicators

Indicator	Baseline	Target	Achievement at Closing Date on 15 January 2020		Achievement incl. progress after closing (as of June 2020)	
			Numbers	Percentage	Numbers	Percentage
Output Indicators						
Roads Upgraded or Rehabilitated (km)	0	1210	1048	87	1166	96
Periodic Maintenance for Roads (km)	0	1400	1587	113	1601	114
Routine Maintenance for Roads (km)	0	5500	5500	100	NA	NA
New or Rehabilitated Crossing Structures (m)	0	1270	1178	93	1270	100
Periodic Maintenance for Crossing Structures (m)	0	2100	4427	211	NA	NA
Routine Maintenance for Crossing Structures (m)	0	4000	4000	100	NA	NA
Number of Districts with Maintenance Planning	30	37	37	100	NA	NA
Number of Districts with Beneficiary Monitoring	16	37	37	100	NA	NA
Number of Districts with Material Testing Laboratories	30	37	37	100	NA	NA
Outcome Indicators						
Percentage of population within 2- and 4-hours walking distance in the participating terai and hills districts respectively from all-weather road	0.00	4%	12.17 %		NA	NA
Percentage of core road networks in participating districts rated in "good" or "fair" condition	0.00	50%	NA		NA	NA
Substitute Indicator: Roads in good and fair condition as a share of the roads upgraded under the Project.	--		79%		NA	NA

18. A study of impacts[7] carried out near the end of the closing date also underscored the notable contribution of the Project to various key development objectives/outcomes. The findings of the study related some salient parameters are tabulated below.

[7]Under this study, the sample respondents covered comprised 1,620 households and other stakeholders such as, for example, community, vehicle owners and drivers, transport associations, hotel operators, from 21 out of the 37 participating districts. The Report of the study carried by M/s Full Bright Consultancy can be accessed at: *http://www.doli.gov.np/wp-content/uploads/2020/08/SNRTP-Impact-Study-Report.pdf*

Table-4: Finding of Study of Impacts

In/From the Zone of Influence		
Parameter	**In the case of Paved Roads**	**In the case of Gravel Roads**
(a) For the people to reach an all-weather road		
The average distance decreased by	*60%*	*44%*
The average travel time decreased by	*61%*	*42%*
(b) Average travel time for the people to reach socio-economic services reduced by	24%	15%
(c) Travel time to seek health services during pregnancy of women decreased by	18%	
(d) Average travel time to seek immunization services for children decreased by	21%	
(e) The Vehicle Operation Cost (VOC) decreased by	28%	17%
(f) The number of shops and restaurants increased by	63% and 47%	57% and 69 %

19. Overall, the Project achievements contributed significantly to the objective of *enhancing the availability and reliability of transport connectivity for rural communities,* by: (a) introducing best practices, tools and capacity building; (b) improving over 2,760 km of roads through upgrading and periodic maintenance activities; and (c) routine maintenance of 5,500 km of roads. Details of activities and accomplishments are contained in Annex-6. Considering the external and internal factors (as discussed in Section III below) that affected Project implementation, this is a notable achievement. In view of the above, efficacy is rated "**Substantial**".

C. EFFICIENCY

Assessment of Efficiency and Rating

20. **Economic Analysis**. Based on the methodology used at appraisal, an economic analysis was carried out for ten sample completed road sections (two periodic maintenance sections, four upgraded to gravel road sections, and four upgraded to paved road sections) totaling 148.3 km. The combined EIRR at completion was 32.2 percent (against 30 percent at appraisal), which confirms the economic viability of the Project. The details of the economic analysis, including the methodology, assumptions, and results are in Annex-4.

21. **Design and Implementation.** The Project components were designed appropriately, with the works component designed to focus not only on upgrading works but also periodic maintenance as well as routine maintenance activities, and the institutional strengthening component designed conservatively in consideration of local agency capacity limitations. A notable aspect of the design was the maintenance component, where a relatively small sum of SDR 650,000 (equivalent of about US$918,450 at July 2020 exchange rate) was leveraged to encourage the Government to spend over US$31 million towards the often-neglected routine and periodic maintenance activities. To support effective planning and spending of this allocation in a capacity-constrained context, the Project included robust technical assistance via ILO. Implementing the routine maintenance through the RMGs was also a noteworthy feature as it gave preference to women, the disadvantaged, and poor households, and created 3.4 million workdays of paid employment for rural workers.[8,9] Costs initially estimated based on limited available information had to be revised based on conditions on the ground. This resulted in reducing the targets for the more expensive rehabilitation and upgradation work and increasing the targets for the less expensive routine maintenance work. Implementation was affected by several external factors, including

[8] Nepal: Empowering Women though Jobs to Maintain Roads. The World Bank. November 2018. *https://www.worldbank.org/en/results/2018/11/14/nepal-empowering-women-livelihoods-manage-roads*

[9] A day in the life of Road Maintenance Workers, ILO. 2017. *https://www.ilo.org/kathmandu/info/public/vid/WCMS_543760/lang--en/index.htm*

constitutional changes that affected implementation arrangements and natural disasters, as well as the usual startup delays when a framework approach is adopted. Nevertheless, the Project was completed with only a six-month extension to the closing date. As against the allocation of SDR 65.2 million, the Project utilized SDR 59.1 million (90.6 percent) at completion, mainly because of the depreciation of the Nepali Rupee against the US Dollar (from NPR 98.26 to the US dollar at appraisal to NPR 120.67 to the US dollar at completion) and the SDR.

22. Based on the above discussion, the efficiency of the Project is rated **Substantial**.

D. JUSTIFICATION OF OVERALL OUTCOME RATING

23. Based on the ratings of relevance (High), efficacy (Substantial) and efficiency (Substantial), the overall outcome of the Project is rated **Satisfactory**.

E. OTHER OUTCOMES AND IMPACTS

Gender

24. The Project recognized gender equity and social issues during the safeguard assessment and provided measures in response to these inequities. The selection criteria for RMG workers were designed to give preference to women, the disadvantaged, and poor households. Based on social assessments, about 88 site-specific Gender Action Plans (GAP) were prepared and implemented to enhance the skills and employability of women. Also, in about 148 skills training sessions carried out across the Project districts as part of the Vulnerable Community Development Plan (VCDP) and GAP, women accounted for 39 percent of the 1,855 participants.[10]

25. Among 2,697 RMG workers, 64 percent consisted of women,[11] of whom 180 were single women. The maintenance works had a direct impact on the quality of life in these households. In addition, concerted efforts were made by the Project to include female staff among the District Road Maintenance Engineers and District Road Maintenance Sub Engineers. On average, 14.2 percent of the engineers and sub-engineers involved in supervision of the maintenance works were women.

Institutional Strengthening

26. The Project strengthened sector institutions through technical assistance from ILO, beneficiary monitoring, technical audits, piloting of the performance assessment tool, the grievance redress mechanism, and capacity building under Component A.

Poverty Reduction and Shared Prosperity

27. The contribution of the Project to poverty reduction and shared prosperity, as measured through the study of impacts, included: (i) increase in the value of trade by 25 percent and 59 percent in the zone of influence of paved roads and gravel roads, respectively; (ii) 40 percent improvement in employment within the roadway zone of influence; and (iii) approximate doubling of land value adjacent to improved roads. The improved road access by the Project proved to be a catalyst for overall socio-economic development and prosperity of the people in the Project areas.

[10] Including participants from vulnerable and disadvantaged groups, viz., 18.38 percent Dalit, 27.70 percent Janajati and 53.92 percent other groups.
[11] Including 33 percent from Dalit Communities, 34 percent Ethnic/Janjati, 22 percent Brahman/Chetri, 2 percent Muslim and 9 percent other disadvantages groups.

Other Outcomes and Impacts

28. ***Social Development Outcomes.*** The impact study revealed a positive outcome in the zone of influence area, including improvement in the socio-economic status of the beneficiaries, access to service facilities and financial institutions, increase in economic activities, decrease in commodity prices, and increase in annual average household income in the Project areas due to enhanced employment opportunities. Improved access to cheaper inputs and essential services and easier transport of agricultural products to markets have enabled farmers to increase farm productivity and production. Gender disparity was reduced due to the greater involvement women in community activities.

29. ***Employment Opportunities***. The Project was able to provide employment to about 2,700 maintenance workers organized in over 650 RMGs. The works carried out by the RMGs constituted 63 percent of the total cost of routine maintenance works and provided NPR 1,344.91 million (about US$11.2 million) in wages to RMG workers. The workers included 64 percent women, 35 percent Dalits and 37 percent indigenous people. In addition, the Project provided employment opportunities for workers through upgradation and periodic maintenance activities. In total 6.5 million person-days of employment was generated from upgrading and maintenance activities.

30. In addition to formal employment opportunities, RMG workers were provided services and training, including: (i) first aid training from local health service providers; (ii) free monthly health check-ups; (iii) accident insurance; (iv) free transportation to work; (v) access to digital banking services through free bank accounts to receive remuneration; (vi) financial literacy training; (vii) credit linkages to cooperatives for income generating activities; (viii) loan facilities with flexible repayment schedules; and (ix) training on environmental protection and bioengineering activities.

III. KEY FACTORS THAT AFFECTED IMPLEMENTATION AND OUTCOME

A. KEY FACTORS DURING PREPARATION

31. The Project was prepared in less than one-and-a-half years and was declared effective within three-and-a-half months of Board approval in April 2014. Key factors that affected preparation include:

(i) *Project Design.* The Project design incorporated lessons from the predecessor Rural Access Improvement and Decentralization Project (RAIDP), including (a) a “maintenance first” approach, in which a relatively small IDA support was leveraged to encourage the Government to make substantive allocations for maintenance, (b) use of RMGs with priority for women, (c) establishing implementation structures to ensure ownership, and (d) substantive technical assistance to enhance capacity and ensure effective monitoring. Cost estimation and M&E design had some limitations, as explained in the sections on design (para 21) and M&E (Section IV below), respectively.

(ii) *Risk Identification and Mitigation.* The overall risk to achieving the PDO was rated as ‘High’, due to limited district-level capacity. Project design as well as the management of environment and social safeguard risks were both rated moderate and materialized during implementation. Some of the major risks, such as the impact of the adoption the new constitution, Project management capacity, and supervision capacity, were either not envisaged during preparation or underestimated.

(iii) *Implementation Readiness.* The Project adopted a detailed technical framework, including a set of performance indicators for accessing funds for works, verification requirements, technical guidelines for civil works, and requirements to strengthen beneficiary monitoring. However, the systems for measuring and monitoring key PDO indicators had not yet been established at the start of implementation. Furthermore, individual roads were not selected until 1-2 years into implementation. Cost estimates for upgrading works (which accounted for the majority of IDA funding support) were based

on the assumption that roads would be selected exclusively from a pool of roads that met a specified quality standard used for the predecessor RAIDP Project. However, many of the roads selected for implementation were of relatively lower quality than envisaged and were upgraded to relatively higher specifications as per the Nepal Rural Road Standard 2071 (geometric). These factors, along with increases in the costs of labour and construction materials, necessitated recalibration of targets during implementation.

B. KEY FACTORS DURING IMPLEMENTATION

32. Implementation of the Project was affected by several factors. The Government, in consultation with the Bank team, took actions to overcome most of these challenges as discussed below.

(i) *Initial Delays.* The Project had a slow start due to delays in (a) mobilizing and operationalizing the two Project Management Units (PMUs), (b) finalizing road selection and cost estimates for maintenance works, (c) achieving optimal coordination between the Central Project Coordination Unit (CPCU), the PMUs and the District Technical Offices, and (d) streamlining the application of fiduciary and safeguard frameworks.

(ii) *Natural Disasters and Political Factors.* Two major earthquakes struck central Nepal in April and May 2015, resulting in 9,000 fatalities and 20,000 injuries; over a million people were rendered homeless. The post-earthquake reconstruction efforts caused a shortage of skilled labour in the quake affected SNRTP districts. The disasters also resulted in an influx of workers from other (non-affected) districts, and in turn there were increased complaints from Project communities on worker behavior at camps. In addition, construction activities, site visits and other field work in over half of the Project districts in the Terai region were affected due to political instability and civil unrest. Also, an informal blockade at the Indian border significantly impacted the cost of fuel and transport of material to Project sites.

(iii) *Project Management and Governance.* The Project faced serious governance challenges, including the sudden transfer of senior Project management staff, inconsistencies in Project supervision, gaps at the sub-Project level in technical (quality of DPRs and construction works), procurement, and safeguards compliance, and delay in operationalization of the grievance redress system. An action plan was implemented in February 2017, focusing on enhanced supervision and auditing, enhancing the use of IT-based tools such as RuTIMs and CSM for effective monitoring, and additional checks on safeguard compliance. Implementation of this action plan enabled the Project to get back on track. In tandem, the eleven contracts identified as problematic were subjected to an independent review, and a *good practice guidance note* on procurement and contract management was prepared and adopted. This resulted in substantial improvement in procurement.

(iv) *Safeguard Performance.* Key challenges included (a) high turnover of Environment and Social Consultants, (b) weak public consultation, (c) impact of the constitutional change on local, provincial and federal level institutions involved in Project implementation, and (d) OSH performance and labour camp management during the initial implementation period. These issues were satisfactorily addressed subsequently, albeit with some delay.

(v) *Change in Governance Structure*. The adoption of a new Constitution in 2015 resulted in the transfer of frontline Project implementation responsibility from the District Development Councils (DDCs) and District Technical Officers (DTOs) to the Provincial Governments. The Project had to sign Memorandum of Understanding (MoUs) with the respective Provincial Governments and to revise the Project Operation Manual. This transition took nine months (July 2018 to March 2019), significantly delayed key procurements and deliverables. CPCU, in consultation with the Bank, managed this transition through Project restructuring and extension of the Project closing date, and additional orientation and training programs for staff in the new implementation agencies. Here, it is noteworthy that this was the first Bank-financed Project

in Nepal that embraced the concept of cooperative federalism by duly restructuring its implementation to be carried out through the agencies under the aegis of the respective Provincial Governments. Implementing the remaining activities under the Project with due involvement of the Provincial Governments has thus provided a workable model for designing similar Projects in the spirit of the cooperative federalism, which can be emulated in the road sector and beyond.

(vi) *Fraud and Corruption*. The Integrity Vice Presidency conducted an administrative inquiry which substantiated allegations of corruption involving certain Project officials, who were subsequently removed from the Project.

33. In summary, Project implementation was virtually halted on three separate occasions for 6-12 months each due to: (i) the slow initial establishment and mobilization of PMUs; (ii) investigations of suspected collusion in a few procurement cases; and (iii) the dissolution of DTOs and the transfer of frontline responsibilities for implementation to the new offices under the Provincial Governments. Consequently, three years into implementation the Project had only disbursed US$17.92 million (17.92 percent of the original grant and credit). Disbursements picked up after the action plan (mentioned above) was implemented. The Project closing date was extended by six months to allow sufficient time for the completion of remaining key activities, especially for upgrading and rehabilitating roads and bridges. At closing, the Project disbursed US$83.5 million (SDR 59.1 million, i.e., 90.6 percent of the original SDR grant and credit); the undisbursed amount was largely due to exchange rate fluctuations.

IV. BANK PERFORMANCE, COMPLIANCE ISSUES, AND RISK TO DEVELOPMENT OUTCOME

A. QUALITY OF MONITORING AND EVALUATION (M&E)

M&E Design

34. The Project adopted a three-tiered structure for monitoring and evaluation at the Project, district, and sub-Project levels to measure outputs, process performance, impacts and outcomes. The M&E design included monthly reports, trimester reports, beneficiary monitoring, and impact studies. The Results Framework (RF) included two PDO indicators and nine intermediate indicators to measure Project outcomes and outputs. While the two PDO level indicators used to assess the achievement of connectivity and reliability were reasonable, the quality and sustainability aspects of the network (which depended on the ability of the network to withstand rains, floods and continuity of routine maintenance) could have been better captured. The achievement on the first PDO indicator, viewed in light of the substantial increase in population in the participating districts, showed that the benefit of access to all-weather connectivity has been reaped by many more people than originally envisaged. The second PDO indicator for measuring the condition of the road network was included without the baseline.

35. Intermediate results indicators included the number of districts implementing certain desired institutional reforms, including improved maintenance planning, improved transparency and accountability in the implementation of works, and the laboratories for material testing. In many cases, the targets were “yes” or “no”, which offer little scope for capturing the extent, quality, or likely longevity of these improvements. The RF also did not include any specific indicators on capacity building or environmental and social safeguard management and gender-specific actions.

M&E Implementation

36. The M&E was generally implemented as designed and progress was regularly monitored and reported. A notable limitation was the absence of a system to regularly monitor and measure the condition of the core road network roads for assessing performance against the second PDO indicator. The Project therefore relied on a substitute measure, i.e., the

condition of a sample set of roads upgraded under the Project. Detailed monitoring during implementation assisted in decision making and adjusting response to the changing circumstances, including revision in indicator targets (number of participating districts, targets for upgrading of roads and bridges/crossing structures, cumulative targets for routine and periodic maintenance). The trimester reports were shared with the Bank regularly and most of the Project documentation was made available in the public domain (*www.snrtp.gov.np*).

M&E Utilization

37. The utilization of M&E during Project implementation was initially average but improved significantly after the operationalization and implementation of Project management tools such as RuTIMS, CSM, PAT and the Grievance Redress System.

Justification of Overall Rating of Quality of M&E

38. Considering the above performance, M&E quality is rated 'Modest'.

B. ENVIRONMENTAL, SOCIAL, AND FIDUCIARY COMPLIANCE

39. The Project was classified as a Category "B" Project, reflecting moderate and largely reversible environmental and social impacts, and triggered the following Bank safeguard policies: OP/BP 4.01 Environmental Assessment; OP/BP 4.04 Natural Habitat; OP/BP 4.10 Indigenous Peoples; OP/BP 4.11 Physical Cultural Resources; OP/BP 4.12 Involuntary resettlement; OP4.20 Gender and Development; and OP/BP 4.36 Forests. In line with OP 4.01, an Environmental and Social management framework (ESMF) was prepared and disclosed and was used as a guiding framework for impact assessment and mitigation planning. The following environmental and social management plans were also prepared and implemented to address specific impacts; (i) Environmental and Social Management Plan; (ii) Voluntary Land Donation Impact Mitigation Plan; (iii) Resettlement Action Plans (RAPs); (iv) Gender Action Plan (GAP); and (v) Vulnerable Community Development Plan (VCDP). Each of these plans received a budget allocation and was implemented satisfactorily. A three-tiered monitoring mechanism at the CPCU, PMUs, and sub-Project levels were in place for the management of environmental and social risks.

40. ***Environmental Safeguards.*** Environmental and social management plans were prepared, separate budgets were allocated and implemented to address the site-specific impacts for each sub-Project. Bioengineering works were carried out for slope stabilization and Local Road Users Committees (LRUCs) were involved on bioengineering works, apart from the contractors. Environmental safeguards performance at the end of the Project was rated 'Moderately Satisfactory'.

41. ***Social Safeguards.*** Project activities involved: acquisition of strips of land and involuntary resettlement; disturbance and disruption of livelihood activities; and loss of common property resources (CPRs). As per the findings of VDIMP/RAP, 921 Residential Structures and 1371 Minor Structures and 31 peoples' livelihoods were affected due to sub-project intervention. Hundred (100) percent of structure and livelihood losses were paid as per the provision of ESMF. A total of 11,033 Project Affected People (PAPs) lost land from road construction activities. Of these, 9,263 were duly compensated in line with the RAPs. The Project has achieved 93.6 percent of progress in terms of assistance/compensation distribution to those impacts which covers NRs. 120,981,880.00 out of total NRs. 129,282,519.00. Similarly, deed transfer of affected land strip has been completed 81.4 percent by plot and 83.4 percent by area. The remaining 1,770 PAPs were absent from the sub-project locations and have not claimed their compensatory payments; hence, the Project has deposited the compensation amount in an Escrow Account (Dharauti Khata) of the concerned IDOs from where the affected persons can collect their respective payments at their convenience. The DoLI will continue to monitor compensation payments. Social safeguards performance at the end of the Project was rated 'Moderately Satisfactory'.

42. ***Procurement.*** Procurement risks identified during appraisal included (i) the relatively large number of procuring entities, (ii) the scattered nature of activities, and (iii) the significant procurement workload needed to execute many small value works. To address these risks, the Project: (i) established two separate PMUs, each with dedicated procurement specialists to support and oversee district-led procurement; (ii) conducted regular procurement trainings to central and field-based staff; (iii) permitted the district-led procurement of works packages, only after additional due diligence for review and clearance by the CPCU of the evaluation report and contract award recommendation; (iv) adopted competitive bidding for all upgrading, rehabilitation, and periodic maintenance works packages; and (v) adopted model NCB bid documents for works. A total of 254 contracts were awarded for civil works; of these, 240 contracts were completed by the closing date, an additional seven contracts were completed by June 2020, and the final seven were in progress as of June 2020. A large number of individual consultants were hired to provide support in the implementation of the Project, including for procurement and contract management. Overall, procurement management is rated 'Moderately Satisfactory'.

43. ***Financial Management (FM).*** The FM performance of the Project was initially rated as 'Moderately Unsatisfactory' due to delays in: (i) the appointment of Accountants at the PMUs; (ii) signing of the tripartite MoUs; (iii) finalization of the Project Operations Manual; and (iv) the approval of the annual work plan and budget authorization. As these issues were addressed and the rating was upgraded, other FM-related issues emerged, leading to the reversal of the rating at various stages. These included: (i) non-compliance with the provisions of the Financing Agreement relating to funds flow to the DDCs; (ii) delays in payments to the consultants**;** (iii) delays in depositing liquidated damages**;** (iv) delays in the establishment and staffing of implementation offices at the provincial level; (v) frequent turnover in the Finance Officer position; and (vi) lack of documentary evidence of fixed assets and documents handed over to IDOs. Gradually, these issues too were resolved and there was significant improvement in financial management. The Project maintained the required books of account and submitted the trimester financial monitoring reports. The audit reports were submitted with some delay and were acceptable to the Bank. Overall, Project FM is rated 'Moderately Satisfactory'.

C. BANK PERFORMANCE

Quality at Entry

44. The Bank made concerted efforts to ensure that Project design catered to the key challenges in enhancing the availability and reliability of transport connectivity in the Project areas, largely by introducing best practices in planning and monitoring of works, and investments for upgrading and maintenance. The Bank ensured that lessons from the RAIDP Project were incorporated, notably the experience of using standard designs and completing multiple small-scale civil works simultaneously using group-based local labour for routine maintenance. The Bank commissioned several thematic papers and reviewed the technical, financial, economic, and safeguards aspects of the Project, including the investment program, cost analysis, the environmental and social safeguard assessment and management framework which formed the basis of the Project design. To address fiduciary risks, the Project incentivized districts to use Nepal's Treasury Single Account (TSA) system effectively, consistent with the WBG Interim Strategy Note for Nepal. The Bank also assisted the GON in mobilizing the support of ILO in operationalizing routine and periodic maintenance tasks. The institutional strengthening component was designed conservatively, keeping in mind the implementation capacity of the districts.

45. Road selection, however, did not occur until one to two years into implementation. Some of the key risks realized during implementation (as presented in Section III) were underestimated or not envisaged during preparation.

Quality of Supervision

46. The Bank conducted twelve implementation support reviews at an average of two reviews per year, supplemented by multiple technical visits. The review teams were multi-disciplinary, with an appropriate skill mix. The Bank responded proactively in identifying problems and challenges (as highlighted in Section III B) and recommended appropriate solutions. Mission aide memoires, management letters, and implementation status and results reports were candid and detailed. The mid-term review in 2017 was followed up by two restructurings in mid-2018 and 2019, which identified the adjustments needed for the Project to achieve its outcomes. Detailed action plans were prepared, adopted and supervised to improve project governance, including intensive spot checks for withdrawals and accounts, additional checks on essential safeguard compliance, and faster reporting and enhanced monitoring of supervision activities. The rigorous implementation of these action plans, coupled with close supervision, resulted in the completion of almost all project activities and the achievement of objectives, with only a six-month extension despite various external issues and challenges.

Justification of Overall Rating of Bank Performance

47. Based on the above discussion on Bank performance in ensuring quality at entry and during supervision, overall Bank Performance is rated '**Satisfactory**'.

D. RISK TO DEVELOPMENT OUTCOME

48. Risk to sustainability of Project outcomes is high, mainly because it is currently not clear how well the Provincial Governments will continue to adhere to various best practices introduced under the Project, and mobilize the technical assistance that played a significant role in planning, procurement and implementation of works. This risk can be largely mitigated, if the respective governments continue to: (i) develop, utilize and maintain Master Plans and Annual Road Maintenance Plans to inform and prioritize various categories of works; (ii) accord high priority to road maintenance and allocate adequate funds; (iii) engage RMGs for routine maintenance works; (iv) use tools such as RuTIMS, CSM, and grievance redress system; and (v) use beneficiary monitoring mechanisms.

V. LESSONS AND RECOMMENDATIONS

49. Given several significant external and internal impacts and slow progress early in implementation, it is remarkable that the Project was able to recover so well and meet most of its indicator targets. Accordingly, this Project would make an excellent case study for analyzing implementation intervention strategies for future Projects in the sector. The following lessons may inform similar Project settings in Nepal and elsewhere:

(i) Ensure the design elements are sufficient to address all key challenges. Maintenance of rural roads often receives, inadequate attention as a mainstream intervention option to ensure reliable access, and usually suffers from inadequate allocation of resources and low institutional capacity. The Project design tackled all these challenges, through (a) giving a strong fillip to "maintenance first" approach; (b) leveraging a small amount of IDA financing to mobilize several multiples of Government spending toward maintenance; (c) building in a mechanism to ensure robust technical assistance and implementation support via ILO; and (c) harnessing workforce from the communities adjacent to the roads. All these elements together have helped the Project to provide strong impetus to periodic and routine maintenance activities.

(ii) *Providing good jobs for local communities.* RMGs were mobilized for routine maintenance predominantly from the local areas near each road. These groups improved efficiency, created employment opportunities (3.5 million workdays

of paid employment), supported livelihoods, and empowered women.[12,13] The Project adopted a policy of preferential employment of locals and women, particularly marginalized communities (the poor, Dalits, and IPs), with strict enforcement of minimum wage and equal pay rules for men and women. The Project also provided free health care, free transportation to the work site, accident insurance, and other worker benefits as summarized in Section III.

(iii) *Need for effective approaches and additional resources for monitoring.* The Project was spread across a wide geographic area and had multiple layers of capacity constraints, which required additional supervision and Bank implementation support. These challenges were addressed through intensive monitoring with the support from the ILO and enhanced implementation support from the Bank, both of which required substantive allocation of resources from the Project as well as the Bank. The Project also harnessed IT-based systems, such as RuTIMS and CSM, for monitoring works contracts. These initiatives could be adopted in the management of other rural road Projects.

(iv) *Technical aspects and implementation readiness.* In the construction of rural roads, efficient drainage systems, slide and erosion risk mitigation, bio-engineering and roadside plantation need to be assessed and integrated early in sub-Project designs and cost estimates. Technical design quality increased dramatically after the PMUs distributed standard templates of detailed Project reports. The identification and preparation of detailed designs and cost estimates of at least the works to be implemented in the first year would help the Project better assess funding requirements and initiate early implementation of works.

(v) *Occupational Safety and Health (OSH).* The Project responded well to the OSH concerns and issues identified during implementation by pioneering a systematic OSH compliance approach, preparing OSH guidelines, enhancing capacity building and awareness measures. The new bid document introduced in March 2018 contained provisions for each works contract to include: (i) a separate amount earmarked for OSH requirements, e.g., personal protective equipment (PPE); (ii) a designated OSH officer; (iii) standards for establishing labour camps with basic amenities and sanitation, and guidelines for managing camps; and (iv) strict monitoring for avoiding under-aged workers. The Project enforced a zero-tolerance policy on the use of child labour and encouraged the use of PPE.

(vi) *Responding to unanticipated exogenous changes.* The Government and the Bank embraced the concept of cooperative federalism and accordingly realigned the implementation modalities and brought the Project to a successful close, thereby providing a workable model that can be replicated for similar Projects in future. Even so, the change from a unitary system to federalism posed several challenges, including delays due to political unrest and the transition to new implementing entities. Dismantling of the District Technical Offices prior to the new provincial implementation units being fully operational led to significant delays. To the extent possible, future Projects assess the impact of such changes in close coordination with the relevant agencies and orchestrate the timing of agency transitions in order to minimize impacts.

[12] Nepal: Empowering Women though Jobs to Maintain Roads. The World Bank. November 2018. *https://www.worldbank.org/en/results/2018/11/14/nepal-empowering-women-livelihoods-manage-roads*

[13] A day in the life of Road Maintenance Workers, ILO. 2017. *https://www.ilo.org/kathmandu/info/public/vid/WCMS_543760/lang--en/index.htm*

ANNEX 1. RESULTS FRAMEWORK AND KEY OUTPUTS

A. RESULTS INDICATORS

A.1 PDO Indicators

Objective/Outcome: To enhance the availability and reliability of transport connectivity for rural communities

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
PDO-1: Increased access to all weather transport infrastructure	Percentage	0.00 23-Dec-2013	4.00 15-Jul-2019	4.00 15-Jan-2020	12.17 15-Jan-2020

Comments (achievements against targets):

The population within 2- and 4- hours walking distance from an all-weather road in the participating *Terai* and *Hill* districts, increased by 12.17%.

In the Terai districts, the population within 2-hours walking distance from an all-weather road increased by 12.35%, whereas, in the Hill districts, the population within 4 hours walking distance from an all-weather road increased by 11.81%.

Source: GIS based Road Accessibility Study Report, December 2019.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Roads in good and fair	Percentage	0.00	50.00	50.00	79.00

condition as a share of total classified roads		23-Dec-2013	15-Jul-2019	15-Jan-2020	15-Jan-2020
Size of the total classified network	Kilometers	3787.00	3787.00	3787.00	3787.00

Comments (achievements against targets):

Performance against this indicator could not be measured directly as there was no baseline and no monitoring system had been put in place for the entire classified network. To determine the project's contribution to this metric, the condition of the roads (good or fair condition) as a share of the roads upgraded under this project have been measured. A survey of a sample set of project-supported upgraded roads (20 roads -15 paved roads and 5 gravel roads) covering a total length of 278 km (that is, 23 percent of the revised target of 1,210 km for upgrading roads) indicates that 79% of them are in good or fair condition.

Source: GIS Based Road Accessibility Study and Condition Survey, Draft Final Report, Aviyaan Consulting, December 2019.

A.2 Intermediate Results Indicators

Component: Component A: Institutional Strengthening, T.A., and Monitoring

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Improved maintenance planning	Number	30.00 23-Dec-2013	33.00 15-Jul-2019	37.00 15-Jan-2020	37.00 15-Jan-2020

Comments (achievements against targets):

All 37 participating districts generated Annual Road Maintenance Plans by using the Rural Transportation Information Management System (RuTIMS).

Source: ISR of January 2020.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Improved transparency and accountability in the implementation of physical works	Number	16.00 23-Dec-2013	33.00 15-Jul-2019	37.00 15-Jan-2020	37.00 15-Jan-2020

Comments (achievements against targets):

Sub-project level Local Road Users Committees (LRUCs)/ Village Road Co-ordination Committee (VRCC) were formed for improved transparency and accountability. A study on beneficiary engagement under the Project, covering 14 sub-projects in 11 districts, highlighted the role and contribution of the community structures such as LRUCs in strengthening the benefits of the project.

Source: ISR of January 2020 and Beneficiary Engagement Study, January 2019.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Improved quality of civil works	Number	30.00 23-Dec-2013	33.00 15-Jul-2019	37.00 15-Jan-2020	37.00 15-Jan-2019

Comments (achievements against targets):

Material testing laboratories were established in all 20 IDOs covering the 37 project districts. These labs are rated as moderately satisfactory according to DoLI standards, by CPCU/PMUs.

Source: ISR of January 2020.

Component: Component B: Maintenance, upgrading, and rehabilitation

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Roads rehabilitated, Rural	Kilometers	0.00 18-Oct-2013	2221.00 15-Jul-2019	1210.00 15-Jan-2020	1048.00 15-Jan-2020

Comments (achievements against targets):

As of Project Closing Date, that is, January 15, 2020, upgrading of a total of 1,048 km roads was completed.

With subsequent continuation of the works by the Government from their own resources, as of June 2020, the total length of roads upgraded reached 1,166 km.

Source: Project Progress Report and Borrower's Project Completion Report.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Improved periodic	Kilometers	0.00	2309.00	1400.00	1587.00

maintenance of district core road network roads		23-Oct-2013	15-Jul-2019	15-Jan-2020	15-Jan-2020

Comments (achievements against targets):
As of Project Closing Date, that is, January 15, 2020, periodic maintenance of a total of 1,587 km roads was completed.

With subsequent continuation of the works by the Government from their own resources, as of June 2020, the total length of roads covered under periodic maintenance reached 1,601 km.

Source: Project Progress Report and Borrower's Project Completion Report.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Improved routine maintenance of district core road network roads	Kilometers	80.00 23-Dec-2013	3067.00 15-Jul-2019	5500.00 15-Jan-2020	5500.00 15-Jan-2020

Comments (achievements against targets):

As against the peak annual target of 5,500 km in 5th year, the Project achieved 5,543 km in 2nd year and maintained achievement of 5,000+ km in subsequent years. In the year, 2015-2016, total length of the roads under routine maintenance surpassed 5,700 Km.

Source: ISR of January 2020.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
New or rehabilitated crossing structures on district core road networks	Meter(m)	0.00 23-Dec-2013	4500.00 15-Jul-2019	1270.00 15-Jan-2020	1178.00 15-Jan-2020

Comments (achievements against targets):
As of Project Closing Date, that is, January 15, 2020, rehabilitation of 1,178 meters of crossing structures was completed.

With subsequent continuation of the works by the Government from their own resources, as of June 2020, the total length of rehabilitated crossing structures reached 1,270 meters.

Source: Project Progress Report and Borrower's Project Completion Report.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Improved periodic maintenance of crossing structures on district core road networks	Meter(m)	0.00 23-Dec-2013	2469.00 15-Jul-2019	2100.00 15-Jan-2020	4427.00 15-Jan-2020

Comments (achievements against targets):
As of Project Closing Date, that is, January 15, 2020, periodic maintenance of 4,427 meters of crossing structures was completed.

Source: Project Progress Report.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Improved routine maintenance of crossing structures on district core road network	Meter(m)	0.00 23-Dec-2013	5850.00 15-Jul-2019	4000.00 15-Jan-2020	4000.00 15-Jan-2020

Comments (achievements against targets):
As against the peak annual target of 4,000 meters in 4th and 5th year, the Project achieved 6,694 meters in 2nd year and maintained 4,000+ meters in 3rd and 4th years.

Source: ISR of January 2020.

B. KEY OUTPUTS BY COMPONENT

Component	Key Outcomes or Outputs
Component A: Institutional Strengthening and Technical Assistance	
A1. Technical assistance and Training	• Material testing laboratories established in 20 IDOs covering all 37 Project districts. • A number of trainings and workshops were organized for all staff (from senior management to workers in the Road Maintenance Groups) on a wide range of subjects, such as progress reviews, livelihood development planning, road maintenance planning and management, RuTIMS and CSM, quality assurance, occupational safety and health, OSH, procurement and financial management etc., through Bank financed assistance from ILO.
A2. Beneficiary monitoring of physical works under Component B of the Project	Sub-Project level Local Road Users Committees (LRUCs)/ Village Road Co-ordination Committee (VRCC) were formed for improved transparency and accountability. A study on beneficiary engagement under the Project highlighted the role and contribution of the community structures such as LRUCs in strengthening the benefits of the Project.
A3. An impact study of selected Project interventions	Impact Study completed covering 11 districts and confirmed positive outcomes in the zone of influence.
A4. Technical audits and verification activities as necessary to facilitate component B	Technical Audits were completed for years 2015, 2017, 2018 and 2019 through the National Vigilance Centre (NVC).
A5. Analytical studies and technical preparation activities related to market infrastructure improvement or maintenance	• Annual Road Maintenance Plans prepared by all 37 districts using the Rural Transportation Information Management System (RuTIMS). • Provincial Transport Master Plans (PTMPs) completed for Province 1 and Karnali Province. • The Performance Assessment Tool (PAT) for contract monitoring was successfully completed in Kaski, Syangja, Palpa and Bara districts.
Component B: Civil Works	
B1. Output Based Maintenance	**Periodic Maintenance:** 1,587 km of *roads* and 4,427 meter *crossing structures* were completed. **Routine Maintenance:** 5,500 km of *roads* and 4,000 meter of *crossing structures* completed.
B2. Upgrading and Rehabilitation	1,048 km of *roads* and 1,178 meter of *crossing structures* upgraded/rehabilitated.

ANNEX 2. BANK LENDING AND IMPLEMENTATION SUPPORT/SUPERVISION

A. TASK TEAM MEMBERS

Name	Role
Preparation	
A.K. Farhad Ahmed/ Dominic Pasquale Patella	Task Team Leaders
Shambhu Prasad Uprety	Sr. Procurement Specialist(s)
Yogesh Bom Malla	Financial Management Specialist
Neena Shrestha	Procurement Team
Annu Rajbhandari	Environmental Specialist
Drona Raj Ghimire	Sr. Environmental Specialist
Parthapriya Ghosh	Sr. Social Specialist
Rekha Shreesh	Social Specialist
Shubu Thapa	Team Member
Bibash Shrestha	Team Member
Supervision/ICR	
Sri Kumar Tadimalla/ Dominic Pasquale Patella	Task Team Leader(s)
Chandra Kishor Mishra	Procurement Specialist(s)
Shambhu Prasad Uprety	Sr. Procurement Specialist(s)
Bishwa Raj Basaula	Financial Management Specialist
Yogesh Bom Malla	Financial Management Specialist
Franck Bessette	Sr. Governance Specialist
Caroline Mary Sage	Sr. Social Specialist
Jun Zeng	Sr. Social Specialist
Alidu Babatu Adam	Sr. Social Specialist
Jaya Sharma	Sr. Social Specialist
Annu Rajbhandari	Environmental Specialist

Shubu Thapa	Operations Analyst
Bibash Shrestha	Team Member
Neena Shrestha	Procurement Team
Tema Alawari Kio-Michael	Team Member
Reenu Aneja	ICR TTL
Ramesh Raj Bista	Procurement Team
Hari Prasad Bhattarai	Team Member
Bhaskar Maskey	Team Member
Ram Hari Sharma	Team Member
Prakash Awasthi	Team Member
Pradeep Kumar Shrestha	Team Member
Michael Tessitore	ICR Team Member

B. STAFF TIME AND COST

Stage of Project Cycle	Staff Time and Cost	
	No. of staff weeks	US$ (including travel and consultant costs)
Preparation		
FY13	29.564	139,131.03
FY14	30.762	160,579.45
Total	**60.33**	**299,710.48**
Supervision/ICR		
FY14	9.915	76,386.69
FY15	32.892	179,424.13
FY16	28.687	180,495.93
FY17	33.013	254,460.87
FY18	28.903	246,870.21
FY19	37.302	176,069.67
FY20	23.422	116,519.96

Total	**194.13**	**1,230,227.46**

ANNEX 3. PROJECT COST BY COMPONENT

(in $ million equivalent)

Components/Activities	Original at the time of Appraisal	Revised at Restructuring in June 2018	Actual by the end of Project (As of August 19, 2020)	Percent of Appraisal
A: Institutional strengthening & Tech. Assistance	**19.7**	**26.9**	**22.1**	**112**
B: Maintenance, Upgrading & Rehabilitation of Roads and Crossing Structures	**155.7**	**148.5**	**127.5**	**82**
Of which, Window 1: Output-based maintenance	50.0	45.9	32.3	65
Window 2: Upgrading and rehabilitation	105.7	102.6	95.2	90
Of which, Roads	*75.0*	*87.4*	*82.8*	*110*
Crossing Structures	*30.7*	*15.2*	*12.4*	*40*
Grand Total	**175.4**	**175.4**	**149.6**	**85**

ANNEX 4. EFFICIENCY ANALYSIS

1.0 Summary of Results and Conclusions from the Economic Analysis at the End of Project

1. Economic evaluation was carried out for completed Strengthening the National Rural Transport Program (SNRTP) covering ten sample road sections (two periodic maintenance sections, four upgraded to gravel road sections and four upgraded to paved road sections) totalling 148.3 km length. In the analysis, the '*with Project'* improvement alternative was compared with the '*without Project'* alternative of minimum maintenance of the existing road: "Do Minimum" i.e.: (i) *Base case* (Without improvements and with annual *"Do Minimum"* maintenance); and (ii) *Improvement Alternative* (with improvement/upgradation and annual "routine maintenance" supplemented by a periodical maintenance at five year intervals). The results of the economic analysis conducted considering: (i) final completion costs; (ii) actual implementation period; and (iii) observed traffic growth rate during the implementation period on completion of Project packages and their sensitivity analysis after 20 percent reduction in benefits are summarized in the following tables:

Table A4-1: Results of the Economic Analysis by Road Section

Package	Road Name	Length (Km)	Base Case		Scenario with 20 percent reduction in Benefits	
			EIRR (%)	NPV US$ Million	EIRR (%)	NPV US$ Million
1A	Road: Khalanga- Baluwasangrahi - Gravel Section	14.4	29.1	0.24	20.7	0.12
1B	Road: Khalanga- Baluwasangrahi - Paved section	18.0	38.4	1.80	31.9	1.28
2	Road: Karmaiya-Hathiyol	20.2	34.8	0.44	24.8	0.24
3A	Road: Trishuli-Meghang	13.0	32.4	0.04	23.2	0.02
3B	Road: Trishuli-Meghang	9.0	38.6	0.05	27.0	0.03
4A	Sandhikharka-Balkot-Tamghash Road - Paved section	18.6	24.5	1.15	19.7	0.67
4B	Sandhikharka-Balkot-Tamghash Road - Gravel Section	11.8	23.4	0.38	17.7	0.18
5	Chhorepatan-Kristi-Nirmalpokhar-Bharatpokhari	23.5	33.6	1.77	27.3	1.19
6	Devpura-Ghodghas-Fulgama-Tulsiyahi Road	13.7	41.3	1.32	34.0	0.93
7	Daldale- Munde-Kumsot Road (Munde-Kumsot Section)	6.1	30.6	0.48	24.6	0.31
	Total / Average	**148.3**	**32.2**	**7.66**	**25.6**	**4.97**

Table A4-2: Results of the Economic Analysis by Type of Intervention

Packages	Intervention Type	Length (Km)	Base Case		Scenario with 20 percent reduction in Benefits	
			EIRR (%)	NPV US$ Million	EIRR (%)	NPV US$ Million
3A & 3B	Periodic Maintenance	22.0	35.0	0.09	24.9	0.05
1A, 2, 4B & 6	Upgrade to Gravel Road	60.2	33.8	2.37	25.8	1.47
1B, 4A, 5 & 7	Upgrade to Paved Road	66.1	31.2	5.20	25.5	3.45
	Total	**148.3**	**32.2**	**7.66**	**25.6**	**4.97**

2. The end-of-Project EIRRs of the above road stretches of SNRTP are in the range of 23.4 percent to 41.3 percent which indicates that most of the sample road sections became economically viable with increased construction cost and time overrun. NPV discounted at 12 percent are positive for all road sections. The combined SNRTP sample Project road sections are found with 32.2 percent EIRR and 7.66 million as ENPV, confirming the economic viability of the Project. Even in the sensitivity analysis, considering 20 percent reduction of yearly benefits for the analysis period, the EIRRs obtained for road stretches are in range of 17.7 percent to 34.0 percent with combined EIRR of 25.6 percent. During the appraisal stage, only six sample packages in four roads were considered for analysis and of which one sample Project road was not implemented. However, on completion stage, five sample packages in four road sections are added to the analysis. Hence comparison of the analysis results between appraisal and completion stage on combined basis is difficult.

3. For the three comparable packages, the EIRRs were found reduced for one package and increased in two packages in the completion stage, as shown in the table A4-3 below.

Table A4-3: Comparison of Economic Analysis Results

Package	Road Name	Length (Km)	EIRR (%)	
			Processing Stage	Completion Stage
1A	Road: Khalanga- Baluwasangrahi - Gravel Section	14.4	32.50	29.08
1B	Road: Khalanga- Baluwasangrahi - Paved section	18.0	37.70	38.41
2	Road: Karmaiya-Hathiyol	20.2	6.60	34.79

4. The first reason which explains the differences in the EIRR, is the higher Project cost at completion stage (about 60 percent for gravel upgradation, 85 percent for paved upgradation and 36 percent for periodic gravel maintenance) than the cost considered at the processing stage (Table A4-4). The second reason is increase in Project implementation period with time overrun of about 11 months on an average with reduced the operation period and Project benefit stream and further resulted in reduction Project benefits. The third reason is the increased observed traffic during the implementation period of 2013 – 2019 (Table A4-5). These together have resulted in increased savings on VOC and travel time cost than estimated at appraisal, further resulting in increase of EIRRs. Completion stage EIRR of 32.2 percent for sample packages, higher to the EOCC of 12 percent, confirms that the upgrading of the roads is economically viable.

Table A4-4: Comparison of Project Cost

No.	Intervention type	Cost / Km (US$)		
		Processing Stage	Completion Stage	Increase percentage
1	Upgrade to Gravel	42,011	67,372	60.4
2	Upgrade to Otta seal (Paved Road)	56,632	1,04,655	84.8
3	Periodic gravel maintenance	4,933	6,714	36.1

Table A4-5: Increased Traffic Growth Rates During 2013 - 2019

Vehicle Type	Annual growth Rate	
	Observed growth rate (%)	Used in the Processing Stage Analysis
Bus & Mini- Bus	20.3	3.6
MAV	0.0	3.6
3-Axle Trucks	33.7	3.6
2-Axle Trucks	43.7	3.6
LCV	0.0	3.6
Two Wheelers	47.4	4.6
Car /Van/Jeep & Auto	6.1	4.6

5. **Conclusions.** The above results show the economic feasibility indicators under normal and adverse sensitivity scenarios including significant decrease in benefits, for all sample Project packages were found more than the required minimum EIRR of 12 percent. Also, these base analysis and sensitivity are unlikely to happen as: (i) traffic is expected to grow to accompany the current economic growth; (ii) there is no uncertainty on the cost of the works as all the contracts are completed; and (iii) VOCs are unlikely to be reduced in view of the past trend for the price of inputs such as fuel, lubricants, tires, and salaries. Also, the estimated economic feasibility results are on the conservative side as the qualitative Project benefits like tourism development, increased road safety, better highway environment are not considered in this analysis.

2.0 Summary of Economic Analysis at Appraisal

6. At the time of appraisal of the Project, economic analysis was carried out for four sample roads with different improvement options within the roads. Improvement options considered include periodic gravel maintenance, upgrade to paved road and upgrade to gravel road. The existing carriageway configuration of all packages was generally single lane. The economic viability of Project sections due to improvement options was obtained considering reduction in vehicle operation cost and saving in travel time cost of passengers with respect to without improved Project sections. The summary of the Economic Internal Rate of Return (EIRR) for the sample road sections is presented in Table A4-6.

Table A4-6: Results of the Processing Stage Economic Feasibility (2013)

Road Section	Length Km	Improvement proposal	Capital Cost US$ Million	EIRR (%)
Khalanga- Baluwasangrahi - Section 1	7.97	Upgrade to Engineered earthen Road	0.294	32.50
Khalanga- Baluwasangrahi - Section 2	12	Rehabilitate paved section	0.61	15.50
Khalanga- Baluwasangrahi - Section 3	12.53	upgrade to paved road	0.71	37.70
Karmaiya-Hathiyol - Section 1	15	upgrade to gravel	0.707	6.60
Karmaiya-Hathiyol - Section 2	5	upgrade to paved road	0.283	-2.90
Trishuli-Meghang	15	Periodic gravel maintenance	0.074	4.06

3.0 Approach and Methodology for the Economic Analysis for ICRR

7. The economic analysis carried out in 2013, at the Project appraisal stage, was revised and updated for the Implementation Completion and Results Report (ICRR) report with actual data as on completion of works. For this, completed SNRTP ICRR, ten sections in seven sample roads (including three roads considered for processing stage analysis) totalling 148.3 km road length are considered, and analysed using the Highway Development and Management Model (HDM-4).

8. The details of sample sections and their improvement proposals are presented in **Table A4-7**.

Table A4-7: Details of Upgrade Road Sections for ICRR Analysis

Section No.	Road Name	Length (Km)	Intervention Type	Road condition Before Intervention	
				RF	Curvature/Km
1A	Khalanga- Baluwasangrahi	14.4	Upgrade to Gravel Road	20	300
1B	Khalanga- Baluwasangrahi	18.0	Upgrade to Paved Road	20	300
2	Karmaiya-Hathiyol	20.2	Upgrade to Gravel Road	10	100
3A	Trishuli-Meghang	13.0	Regravelling	20	300
3B	Trishuli-Meghang	9.0	Regravelling	15	250
4A	Sandhikharka-Balkot-Tamghash	18.6	Upgrade to Paved Road	15	250
4B	Sandhikharka-Balkot-Tamghash	11.8	Upgrade to Gravel Road	15	250
5	Chhorepatan-Kristi-Nirmalpokhar-Bharatpokhari	23.5	Upgrade to Paved Road	15	250
6	Devpura-Ghodghas-Fulgama-Tulsiyahi	13.7	Upgrade to Gravel Road	15	250
7	Daldale- Munde-Kumsot (Munde-Kumsot Section)	6.1	Upgrade to Paved Road	15	250
	Total / Average	**148.3**		**16**	**244**

9. Cost increase for different improvement types is given above in Table A4-4. However, cost comparison for few common road sections is attempted. The following Tables A4-8 presents the variation in costs in the upgrading contracts from processing (2013) to Project completion (2020).

Table A4-8: Comparison of Initial Cost (2013) and Completed Cost (2020) for selected sample Roads

Road Section	Length Km	Capital Cost US$ / km		
		Processing Stage (2013)	Completion Stage (2020)	Cost Increase (%)
Khalanga- Baluwasangrahi - Section 1	7.97	36,888	44,086	20
Khalanga- Baluwasangrahi - Section 3	12.53	56,664	81,417	44
Karmaiya-Hathiyol - Section 1	15.00	47,133	53,030	13
Trishuli-Meghang	15.00	4,933	8,834	79
Total	**50.50**	**36,405**	**46,842**	**29**

10. ***Approach.*** The economic evaluation is carried out within the broad framework of social cost-benefit analysis assuming the analysis period of 5 to 20 years (5 years for periodic maintenance improvement and 20 years for upgrade to gravel / paved road) including the achieved construction period. There will be reduction in road user costs of motorized traffic (MT) upon the improvement of the existing road. The economic savings at significant levels in the following areas are expected to occur due to improvement of the existing roads.

- *Savings in VOCs*
- *Savings in journey time of passengers and goods*

11. The economic analysis is based on comparison of costs and benefits under two scenarios: 'without the upgradation Project' and 'with upgradation road Project'. All costs and benefits are valued in monetary terms and expressed in economic prices to obtain the analysis on resource-based framework. The analysis is made section-wise and the results are expressed in terms of Economic Internal Rate of Return (EIRR) and Economic Net Present Value (ENPV).

12. ***Construction Program.*** The analysis period of the Project has been taken as 20 years including construction time. The completed construction program for SNRTP sample roads is summarized below (Table A4-9), in which the actual construction period only considered in the analysis by leaving the spill over works in the beginning and end. For the analysis purpose, it is assumed that traffic is opened on completion of all construction activities.

Table A4-9: Construction Program (Project Phasing on Completion)

Sl. No.	Road Name	Length Km	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Total
1	Road: Khalanga- Baluwasangrahi	32.4	-	-	33.08	57.35	49.35	52.44	14.25	206.47
			0.0%	*0.0%*	*16.0%*	*27.8%*	*23.9%*	*25.4%*	*6.9%*	*100.0%*
2	Road: Karmaiya-Hathiyol	20.2	-	9.00	33.05	62.97	0.40	-	-	105.42
			0.0%	*8.5%*	*31.3%*	*59.7%*	*0.4%*	*0.0%*	*0.0%*	*100.0%*
3.1	Road: Trishuli-Meghang	13.0	-	-	-	-	8.50	-	-	8.50
			0.0%	*0.0%*	*0.0%*	*0.0%*	*100.0%*	*0.0%*	*0.0%*	*100.0%*
3.2	Road: Trishuli-Meghang	9.0	-	-	-	-	-	9.74	-	9.74
			0.0%	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*100.0%*	*0.0%*	*100.0%*
4	Sandhikharka-Balkot-Tamghash Road	30.4	-	-	-	107.43	178.00	53.36	-	338.79
			0.0%	*0.0%*	*0.0%*	*31.7%*	*52.5%*	*15.8%*	*0.0%*	*100.0%*
5	Chhorepatan-Kristi-Nirmalpokhar-Bharatpokhari	23.5	-	-	-	36.45	147.86	55.37	0.03	239.71
			0.0%	*0.0%*	*0.0%*	*15.2%*	*61.7%*	*23.1%*	*0.0%*	*100.0%*
6	Devpura-Ghodghas-Fulgama-Tulsiyahi Road	13.7	-	8.92	5.96	51.99	39.97	1.21	-	108.05
			0.0%	*8.3%*	*5.5%*	*48.1%*	*37.0%*	*1.1%*	*0.0%*	*100.0%*
7	Daldale- Munde-Kumsot Road (Munde-Kumsot Section)	6.1	-	-	6.11	19.66	35.88	1.76	-	63.41
			0.0%	*0.0%*	*9.6%*	*31.0%*	*56.6%*	*2.8%*	*0.0%*	*100.0%*
	Total	148.3	-	17.92	78.20	335.85	459.96	173.88	14.27	1,080.09
			0.0%	*1.7%*	*7.2%*	*31.1%*	*42.6%*	*16.1%*	*1.3%*	*100.0%*

13. ***Procedure for Estimation of Benefits.*** The following procedure has been followed to estimate the aforesaid benefits:

- Estimation of processing stage traffic volume was from field surveys in 2013
- Estimation traffic growth rate
  - based on the completion stage traffic survey data (2019), the observed traffic growth rates during the period 2013-2019 for different vehicle categories are worked out and used in the analysis
  - for the period beyond 2019, the growth rates used in the processing stage analysis is adopted
- The time values and other HDM IV model unit data used in the VOC / time value estimation at processing stage are retained.
- Usual maintenance provisions and costs in 'with' and 'without' conditions considered in processing stage analysis at 2013 prices are retained for the present ICRR.
- Except the changed variables during implantation (construction cost, construction phasing and observed traffic growth during 2013-2019, all other variables used during the processing stage were retained.
- Base year used in processing stage analysis (2013) is retained for the present ICR analysis and all completed costs were converted to the Base Year (2013)
- The model used for analysis is HDM-4
- EIRR and NPV Estimation with the sum of benefits from
  - VOC savings
  - Time savings

14. **Components of Cost.** From the financial costs of completed packages of SNRTP, the economic cost has been worked out by multiplying the financial cost by a factor of 0.9 and is presented below (Table A4-10).

Table A4-10: Financial for proposed Sample Road Sections

Section No.	Road Name	Length (Km)	Completed Project cost			Economic Cost	
			NPS Million	NPS Million/Km	US$ /Km	NPS Million/Km	US$ /Km
1A	Khalanga- Baluwasangrahi	14.4	62.47	4.33	44,086	3.51	35,710
1B	Khalanga- Baluwasangrahi	18.0	144.00	8.00	81,417	6.48	65,947
2	Karmaiya-Hathiyol	20.2	105.42	5.21	53,030	3.96	40,303
3A	Trishuli-Meghang	13.0	8.50	0.65	6,654	0.50	5,057
3B	Trishuli-Meghang	9.0	9.74	1.08	11,014	0.82	8,371
4A	Sandhikharka-Balkot-Tamghash	18.6	232.00	12.50	1,27,214	10.13	1,03,043
4B	Sandhikharka-Balkot-Tamghash	11.8	106.79	9.05	92,105	7.33	74,605
5	Chhorepatan-Kristi-Nirmalpokhar-Bharatpokhari	23.5	239.71	10.20	1,03,856	8.27	84,123
6	Devpura-Ghodghas-Fulgama-Tulsiyahi	13.7	108.05	7.89	80,266	5.99	61,002
7	Daldale- Munde-Kumsot (Munde-Kumsot Section)	6.1	63.41	10.43	1,06,135	8.45	85,969
	Total / Average	**148.3**	**1,060.76**	**7.15**	**72,804**	**5.77**	**58,713**

15. **Maintenance Cost.** The maintenance works considered in the analysis include:

- Annual *Routine* maintenance
- Periodic Maintenance

The financial costs and maintenance costs pertaining to maintenance operations considered in the processing stage, as given in Table A4-11, is adopted for the ICR analysis.

Table A4-11: Maintenance Cost (US$)

Details	Unit	Financial Cost	Economic Cost
I. ANNUAL			
A. Paved			
i. Potholing	m2	7.04	5.21
ii. Crack sealing	m2	2.14	1.58
B. Gravel			
i. Grade	km	24.96	20.45
ii. Spot Re-gravel	m3	5.37	3.97
iii. Routine	km	772.96	571.99
C. Earthen			
i. Grade	km	24.96	20.45
ii. Spot Re-gravel	m3	1.43	1.05

iii. Routine	km	784.22	580.33
II. PERIODIC			
A. Paved	M2	2.86	2.11
B. Gravel	m3	5.37	3.97
C. Paved Rehabilitation	M2	7.14	5.29

16. **Traffic Specific parametric values.** The economic unit costs (Year 2013) parametric values for motorized vehicles have been taken from the Base Analysis (2013) during the processing stage, are used in HDM Model inputs.

17. **The Residual Value.** For periodical maintenance program, no residual value is considered. But for the upgrade interventions, 10 percent residual value is considered in the present analysis.

18. **Volume of Traffic and Growth Rates.** The AADT traffic on different road sections during 2013 in the processing stage is given below in Table A4-12. For analysis, the AADT adopted during the processing stage (2013) is adopted. Observed traffic growth during 2013-2019 (Table A4-13) and the traffic growth rates used in the initial analysis for the period beyond 2019 are used for the present analysis (Table A4-14).

Table A4-12: AADT traffic on Different Road Packages adopted for analysis (2013)

Vehicle Type	Road: Khalanga-Baluwasangrahi		Road: Karmaiya-Hathiyol		Road: Trishuli-Meghang		Sandhikharka-Balkot-Tamghash Road		Chhorepatan-Kristi-Nirmalpokhar-Bharatpokhari		Devpura-Ghodghas-Fulgama-Tulsiyahi Road		Daldale-Munde-Kumsot Road (Munde-Kumsot Section)	
	No. of vehicles	percent	No. of vehicles	percent	No. of vehicles	percent	No. of vehicles	percent	No. of vehicles	percent	No. of vehicles	percent	No. of vehicles	percent
Bus	**71**	*23.8*	**0**	*0.0*	**0**	*0.0*	12	*12.4*	0	*0.0*	0.00	*0.0*	0	*0.0*
Mini Bus	56	*18.8*	5	*8.8*	3	*8.8*	32	*34.3*	54	*37.2*	5	*2.6*	23	*29.4*
MAV	0	*0.0*	0	*0.0*	0	*0.0*	0	*0.0*	0	*0.0*	0.00	*0.0*	0	*0.0*
3-Axle Trucks	0	*0.0*	2	*4.4*	2	*4.4*	0	*0.0*	2	*1.4*	10	*5.2*	0	*0.0*
2-Axle Trucks	100	*33*	3	*5.3*	2	*5.3*	5	*5.1*	0	*0.0*	18	*9.4*	1	*1.6*
LCV	0	*0.0*	0	*0.0*	0	*0.0*	0	*0.0*	0	*0.0*	0.00	*0.0*	0	*0.0*
Two Wheelers	0	*0.0*	0	*0.0*	0	*0.0*	0	*0.0*	36	*25.0*	0.00	*0.0*	22	*27.6*
Car /Van/Jeep	71	*23.8*	44	*81.6*	30	*81.6*	45	*48.2*	53	*36.5*	159	*82.8*	33	*41.4*
Autorickshaw	0	*0.0*	0	*0.0*	0	*0.0*	0	*0.0*	0	*0.0*	0.00	*0.0*	0	*0.0*
Total Fast Vehicles	**298**	***100.0***	**54**	***100.0***	**37**	***100.0***	**93**	***100.0***	**145**	***100.0***	**192**	***100.0***	**79**	***100.0***
Cycles	179	*60.0*	11	*100.0*	47	*100.0*	78	*100.0*	36	*100.0*	95	*100.0*	46	*100.0*
Cycle rickshaw	0	*0.0*	0	*0.0*	0	*0.0*	0	*0.0*	0	*0.0*	0	*0.0*	0	*0.0*
Animal Drawn Vehicles	120	*40.0*	0	*0.0*	0	*0.0*	0	*0.0*	0	*0.0*	0	*0.0*	0	*0.0*
Total Slow Vehicles	**299**	***100.0***	**11**	***100.0***	**47**	***100.0***	**78**	***100.0***	**36**	***100.0***	**95**	***100.0***	**46**	***100.0***
Total	**597**		**65**		**84**		**171**		**181**		**287**		**125**	

Table A4-13: Observed Vehicular Growth Rate for Sample Roads During 2013 - 2019

Vehicle Type	Road: Karmaiya-Hathiyol		Road: Sandhikharka-Balkot-Tamghash Road		Road: Chhorepatan-Kristi-Nirmalpokhar-Bharatpokhari		Road:Devpura-Ghodghas-Fulgama-Tulsiyahi Road		Road:Daldale-Munde-Kumsot Road (Munde-Kumsot Section)		Total		
	2013	2019	2013	2019	2013	2019	2013	2019	2013	2019	2013	2019	CGR percent (2013-2019)
Bus & Mini-Bus	25	183	44	91	54	0	5	114	23	69	151	457	**20.3**
MAV	0	0	0	0	-	0	0	0	0	0	0	0	
3-Axle Trucks	12	69	0	23	2	0	10	46	0	0	24	137	**33.7**
2-Axle Trucks	13	120	5	51	-	137	18	17	1	0	37	326	**43.7**
LCV	0	103	0	34	-	60	0	9	0	111	0	317	
Two Wheelers	100	360	0	186	36	269	0	509	22	300	158	1623	**47.4**
Car /Van/Jeep & Auto	104	123	45	80	53	63	159	96	33	199	393	560	**6.1**
Total Fast Vehicles	**254**	**957**	**93**	**465**	**145**	**529**	**192**	**790**	**79**	**679**	**763**	**3420**	**28.4**
Cycles	11	454	78	14	36	9	95	572	46	14	266	1063	26.0
Cycle rickshaw	0	0	0	0	-	0	0	17	0	0	0	17	
Animal Drawn Vehicles	0	137	0	0	-	0	0	0	0	0	0	137	
Total Slow Vehicles	**11**	**592**	**78**	**14**	**36**	**9**	**95**	**589**	**46**	**14**	**266**	**1217**	**28.9**
Total	**265**	**1549**	**171**	**480**	**181**	**537**	**287**	**1378**	**125**	**693**	**1029**	**4638**	**28.5**

Note:

1. Processing stage traffic survey data for 2013.

2. Traffic counted from the video documentary of the Road Condition Survey in November and early December 2019 and calculated to AADT by utilizing NRRS and other standards, coefficients/factors

Table A4-14: Traffic Growth Rates Adopted for Analysis

Vehicle Type	Annual growth Rate (%)	
	2013-2019	From 2020
Bus & Mini-Bus	20.3	3.6
MAV	0.0	3.6
3-Axle Trucks	33.7	3.6
2-Axle Trucks	43.7	3.6
LCV	0.0	3.6
Two Wheelers	47.4	4.6
Car /Van/Jeep & Auto	6.1	4.6

4.0 Project Benefits

19. ***Vehicle Operating Cost Savings.*** HDM - 4 has been used to estimate the Vehicle Operating Costs (VOC) for traffic in each vehicle category on each selected road *with* and *without improvement*. The model estimates VOC in both the with- and without-Project situations taking into account the speed and travel time including surface quality and road congestion. The model comprehensively predicts the performance and operating costs of motorized vehicles in the selected fleet. Motorized vehicle performance

predictions include speeds (free flow and congested conditions) and consumptions. Predictions for vehicle operating costs include fuel, oil, tire and parts costs, crew and maintenance labour costs, capital depreciation, borrowing costs, and overhead costs.

20. ***Travel Time Saving.*** The model estimates the Value of Travel Time (VOTT) for passengers and goods in transit in both the *with*- and *without*-Project scenarios taking into account speed and travel time including surface quality, road congestion etc.

5.0 Economic Viability

21. The economic internal rate of return is calculated by the model applying a Project discount rate of 12 percent to the annual undiscounted net differences of the economic elements considered in the analysis. The sum of these discounted values gives the net present value (NPV) of the Project which is generated and presented, together with the associated EIRR from HDM output.

22. Economic evaluations were carried out for packages and for the scenarios described below: In the analysis, the 'with Project' improvement alternative was compared with the base option of 'without Project' alternative of maintaining the existing road and minimum maintenance "Do Minimum" i.e.,

1. **Base case:** Without improvements and with annual "Do Minimum" maintenance

2. **Improvement Alternative:** With improvement / rehabilitation and annual "Routine Maintenance" supplemented by a Structural Overlay at 4.5 IRI.

23. The results of section wise economic analysis conducted considering modified cost of Project packages and their sensitivity analysis after 20 percent reduction in benefits are summarized in following table A4-15. Also, improvement activity wise analysis result is given in Table A4-16.

Table A4.15: Results of the Economic Analysis

Package	Road Name	Length (Km)	Base Case		Scenario with 20 percent reduction in Benefits	
			EIRR (%)	NPV US$ Million	EIRR (%)	NPV US$ Million
1A	Khalanga- Baluwasangrahi - Gravel Section	14.4	29.1	0.24	20.7	0.12
1B	Khalanga- Baluwasangrahi - Paved section	18.0	38.4	1.80	31.9	1.28
2	Karmaiya-Hathiyol	20.2	34.8	0.44	24.8	0.24
3A	Trishuli-Meghang	13.0	32.4	0.04	23.2	0.02
3B	Trishuli-Meghang	9.0	38.6	0.05	27.0	0.03
4A	Sandhikharka-Balkot Tamghash Road - Paved section	18.6	24.5	1.15	19.7	0.67
4B	Sandhikharka-Balkot-Tamghash Road - Gravel	11.8	23.4	0.38	17.7	0.18

	Section					
5	Chhorepatan-Kristi-Nirmalpokhar-Bharatpokhari	23.5	33.6	1.77	27.3	1.19
6	Devpura-Ghodghas-Fulgama-Tulsiyahi	13.7	41.3	1.32	34.0	0.93
7	Daldale- Munde-Kumsot (Munde-Kumsot Section)	6.1	30.6	0.48	24.6	0.31
	Total / Average	**148.3**	**32.2**	**7.66**	**25.6**	**4.97**

Table A4-16: Results of the Economic Analysis - Intervention Activity wise

Packages	Intervention Type	Length (Km)	Base Case		Scenario with 20 percent reduction in Benefits	
			EIRR (%)	NPV US$ Million	EIRR (%)	NPV US$ Million
3A & 3B	Periodic Maintenance	22.0	35.0	0.09	24.9	0.05
1A, 2, 4B & 6	Upgrade to Gravel Road	60.2	33.8	2.37	25.8	1.47
1B, 4A, 5 & 7	Upgrade to Paved Road	66.1	31.2	5.20	25.5	3.45
	Total	**148.3**	**32.2**	**7.66**	**25.6**	**4.97**

24. The EIRR obtained for road sections of SNRTP are in range of 23.4 percent to 41.3 percent with the overall EIRR of 32.2 percent. EIRRs for all road sections were found with more than the minimum required 12 percent. Hence, it can be concluded that the Project is found economically viable after absorbing the changes happened during the implementation like (i) increased construction cost (ii) experienced time delays and (iii) increased traffic during the implementation period of 2013-2019. These results show changes with respect to earlier study due to:

- Increase in the observed traffic growth rates (6.1 percent to 47.4 percent) against the rates used in the processing stage analysis (3.6 percent to 4.6 percent) during the implementation period of 2013-2019, as discussed above in Table A4-5 earlier. This higher in increase in traffic had resulted in more Project benefits in terms of VOC and time savings.
- On an average increase of 11 months in implementation period, as shown below in Table A4-17.
- Considerable cost increase from the cost considered in the initial analysis, as discussed above in Table A4-4, is one of the main reasons for the change in EIRR at completion stage. Cost increase was in the range of 36 percent to 85 percent for different maintenance activities.
- Adverse effects in the analysis due to increase in Project cost and implementation period were compensated by the increased traffic for all Project roads during 2013-2019 so as to maintain the combined EIRR at 32.2 percent.

Table A4.17: Results of Time Overrun and Cost Overrun Analysis

Section No.	Link No.	Package No.	Length (Km)	Contract implementation					
				Contract award date	Target completion date	Actual/ Likely completion date	Target Period (Months)	Delay Period (Months)	Delay Period (%)
1	Road: Khalanga-Baluwasangrahi	SNRTP-SAL-W-NCB-23.03-UG-070-71	32.42	08-Oct-15	06-Oct-17	26-Oct-19	24	24	100%
2	Road: Karmaiya-Hathiyol	SNRTP-SAR-W-NCB-25.01-UG-070-71	20.231	02-May-16	17-Nov-17	03-Jun-18	18	6	33%
3A	Road: Trishuli-Meghang	SNRTP-NUW-W-NCB-16.04-PM-070-71	13	11/10/2015	5/8/2016	1/1/2017	10	5	50%
3B	Road: Trishuli-Meghang	SNRTP-NUW-W-NCB-16.06-PM-072-73	9	10/26/2016	10/26/2017	3/10/2018	12	12	100%
4	Sandhikharka-Balkot-Tamghash Road	SNRTP-ARG-W-NCB-1.03-UG-070-71	30.36	26-Jul-16	17-Jan-18	28-Sep-18	18	8	44%
5	Chhorepatan-Kristi-Nirmalpokhar-Bharatpokhari	SNRTP-KAS-W-NCB-12.02-UG-070-71	23.49	14-Sep-16	27-Mar-18	06-Aug-18	18	4	22%
6	Devpura-Ghodghas-Fulgama-Tulsiyahi Road	SNRTP-DHAN-W-NCB-7.01-UG-070-71	13.7	18-Jun-15	17-Sep-16	24-Sep-17	15	12	80%
7	Daldale- Munde-Kumsot Road (Munde-Kumsot Section)	SNRTP-NAW-W-NCB-15.03-UG-070-71	6.08	24-Sep-15	07-Jan-17	10-May-18	15	16	107%
			148.281				**16**	**11**	**67%**

25. **The sensitivity analysis** is conducted after 20 percent reduction of yearly benefits during the analysis period and EIRR obtained for road stretches are also more than required 12 percent. However, this decrease in benefit sensitivity is unlikely to happen due to following:

- As traffic is expected to grow to accompany the current economic growth
- there is little uncertainty on the cost of the works as all the contracts are nearing completion and the costs have been updated to take into account the price escalation as well as variations, and
- VOCs are unlikely to be reduced in view of the past trend for the price of inputs such as fuel, lubricants, tires, and salaries.

ANNEX 5. BORROWER, CO-FINANCIER AND OTHER PARTNER/STAKEHOLDER COMMENTS

1. The Borrower's key comments on the Bank ICRR are summarized below.

2. Overall. The ICR team has prepared and analyzed all aspects of activities performed during planning, design, implementation and evaluation of the program. The report has covered analysis on every component like capacity development & institutional strengthening, upgrading & rehabilitation, maintenance, crossing structures, technical audits, etc. Extensive exploration on achievement of PDO indicator targets, overall efficacy rating, efficiency rating, output & outcome rating and program impacts, financial management, safeguard management, procurement & contract administration, employment generation, factors affecting program implementation and result, program risks, quality assurance, M & E, lesson learnt and best practices with recommendation has made the report acceptable to every stakeholder. The study on intermediate result indicators, its target & achievement, Project costing, proper economic analysis, Project benefits, governance has justified the realistic quality of the report. SNRTP became a successful program from the support of every stakeholder: three tiers of government of Nepal, the World Bank, ILO and private sectors.

3. Other suggestions and comments.

- **Social Development Outcomes.** Based on the recommendation of social screening/ assessment, 88 Vulnerable community Development Plans (VCDPs) were prepared for life skill development and promotion of income generation activities/ entrepreneurship development focusing Project affected people, indigenous community and poor family. About 148 training sessions were conducted across the Project districts covering 1855 participants.[14]
- **Safeguard Performance.** Environmental and social safeguards consultants (ESCs/SSCs) were mobilized at respective districts/sub Projects to look after the safeguards concerns with due consultation with the locals on site. Public consultations were frequently carried during design, implementation and even in monitoring of the sub Project activities and was well recorded. Public consultation is one of the strongest aspects of the Project and should not be mentioned as a challenge affecting the safeguard performance. Likewise, we suggest to omit the term 'high' in describing the turnover of Environment and Social consultants.
- It is stated that, "The disasters also resulted in an influx of workers from other (non-affected) districts, and in turn there were increased complaints from Project communities on worker behavior at camps." The Project is unaware of such complains being registered verbally or in written form in the Project district, PMUs or at CPCU.
- **Environmental Safeguards**. The Environmental safeguard is to be rated as Satisfactory based on the following measures, which may also be included in the ICRR.
  - Environmental and social management plans were prepared and integrated in design and BoQ, separate budgets were allocated and implemented with onsite facilitation by safeguards consultant to address the site-specific impacts for each sub-Project.
  - Proper measures for OSH compliance, safe disposal of spoil, borrow pit management, quarry site reinstatement, drainage management and dust control were ensured through a systematic procedure

[14] Participants from vulnerable and disadvantaged groups include 16.7 percent Dalit, 28.1 percent Janajati and 55.3 percent other groups.

and mobilizing dedicated safeguard personnel at CPCU, PMUs and district. More than 464184 sq.m. (90 percent of the target).
  - Bioengineering works were carried out for slope stabilization, 157242 nos of saplings were planted and Local Road Users Committees (LRUCs), RMGs were involved on bioengineering and plantation works, apart from the contractors.
  - More than 90 percent of the target EMP measures were accomplished till the end of the Project (15 Jan 2020) and the remaining works are substantially completed as per the action plan agreed by the respective IDOs.
  - Department level Environmental and Social Management Framework (ESMF) for Local Transport Projects and Environmental and Social management Guidelines (ESMG) for all working sectors of DoLI has been prepared and a dedicated unit (Environmental and Social Management Section (ESMS)) was established to administer the framework.
- **Procurement.** The Procurement is to be rated as Satisfactory as the transparency and fairness has been ensured based on the following measures, which may also be included in the ICRR.
  - Publication of bid notice in national newspaper.
  - Electronic government procurement (EGP) bidding was used in the procurement of works.
  - Use of standard bidding documents for procurement.
  - Bid opening check list were circulated to the all-stakeholder immediately after the bid opening.
  - Letter of intent (LoI) was published in the national Paper to inform to all the concerned stakeholders.
  - Due to the fair competition on an average the contract were 15 percent less than the Engineer Estimate.
- On the part of contract management, too, following activates carried out by the Projects may be included in the ICRR.
  - Previously, the time extensions were granted on the ad-hoc basis but the Project made it mandatory for the contractors to submit Extension of Time (EoT) Reports in order to claim compensation events with supporting documents. This practice improved the documentation and recording keeping system of both the contractors and the implementation agencies. The EoT reports were carefully analyzed before granting the time extensions.
  - The Project also levied the liquidated damage as a penalty for the delay caused by the contractors thereby affecting the intended completion date.
  - Variation order were issued only after the rigorous field verification and only technically justifiable variations were carried out. Also, there was no cost overrun in the total Project cost due to variation.
  - Effective communication between client and the contractors, proper documentation, supervision and monitoring was carried out in the Project.
- **Financial Management.** The Financial Management is to be rated as Satisfactory based on the following measures:
  - Publication of bid notice in national newspaper.
  - Completion of all the contract payments under SNRTP.
  - Reimbursement of 99 percent of the expenditure incurred in the Project.
  - Expenditure of nearly 90 percent of the Project budget.
  - Financial management trainings and monitoring was regularly conducted.
  - Successful restructuring of the fund flow mechanism in compliance with the changed institutional mechanism.
  - Timely submission of trimesters reports- audited and unaudited reports to the World Bank.
- **Social Safeguards.** The Social Safeguard performance is to be rated as Satisfactory.

ANNEX 6. SUPPORTING DOCUMENTS

Country and Sector Context

- An Approach Paper to the Thirteenth Plan (2013-2016) and Fifteenth Plan (2019-2023), National Planning Commission, Government of Nepal.
- Country Partnership Strategy for Nepal, FY14-18, World Bank Group, April 2014.
- Country Partnership Framework for Nepal, FY19-FY23, Report No 121029-NP, World Bank Group, July 10, 2018.

Project Design and Restructurings

- Project Appraisal Document, Report No. 82226-NP, November 14, 2013
- Financing Agreement. Credit Number 5336-NP, Grant Number H899-NP. March 24, 2014.
- Financing Agreement amendments dated June 7, 2018 and February 15, 2019.
- Restructuring Papers for the Project: Report No. RES32135, June 2018 and Report No. RES35455, February 2019.

Project Preparation and Implementation Support

- Aide Memoires and Management Letters, 2013 to 2020.
- Implementation Status and Results Reports, 2013-2020.

Project Manuals, MoUs and Other Documents

- Project Operations Manual, 2014, Department of Local Infrastructure Development and Agricultural Roads (DoLIDAR).
- Project Operation Manual (Revised) 2016, DoLIDAR.
- Project Operation Manual (Revised) 2018, DoLIDAR.
- Tripartite Memorandum of Understandings between Government of Nepal Ministry of Federal Affairs and General Administration (MoFAGA), Department of Local Infrastructure, (DoLI), and Provincial Government / Ministry of Physical Infrastructure Development (MoPID) for seven individual provinces, December 2018.
- Sample Bid Document for Periodic Maintenance, Project for Strengthening the National Rural Transport Program (SNRTP), Periodic Maintenance of Khandbari-Kalchebesi-Dake-Pangtha-Sabhapokhari Road (18km), April 2019.
- Sample DPRs for Periodic Maintenance, Roads, and Bridges.
- Road Maintenance Groups (RMG) Guidelines, Government of Nepal, Department of Local Infrastructure Development and Agricultural Roads, March 2016.

Project Analyses and Studies

- Economic Analysis, Final Write-up, October 2013.
- GIS Based Road Accessibility Study and Condition Survey, Draft Final Report, Aviyaan Consulting, December 2019.
- Impact Study Report, Full Bright Consultancy, 2019.
- Beneficiary Engagement Study Report, Devtec Nepal, January 2019.
- Project Completion Report, SNRTP, June 2020.

ANNEX 7. SALIENT ACTIVITIES AND ACCOMPLISHMENTS UNDER THE TWO COMPONENTS

1. **Component A: Institutional Strengthening and Technical Assistance**

(a) ***Technical Assistance through the International Labour Organization (ILO).*** With the assistance of ILO, SNRTP introduced an effective system for planning and implementation of rural road maintenance and built capacity in the District Technical Offices/ Infrastructure Development Offices. Some of the elements of that system included:

(i) *Routine and Periodic Maintenance.* Technical assistance for periodic maintenance included support for preparation of Detail Project Reports (DPRs), bidding document, bid evaluation reports, quality assurance and Project completion reports. It also supported emergency maintenance works and spots improvements to improve all-weather access.

(ii) *Rural Transport Information Management System (RuTIMS).* Developed a data repository for management of rural roads through real-time monitoring and data collection on the condition of the roads. The digitization of 13,955 km of the road inventory in the participating districts in RuTIMS application, proved to be an asset and would be useful for DoLI and the provinces in future planning of works on the District Road Core Network.

(iii) *Construction Site Monitoring (CSM).* This is a Global Positioning System (GPS) enabled and a web based mobile monitoring application, to help users to remotely monitor the field activities. Reports are prepared and uploaded directly by technical and safeguards field personnel. Field visit reports with photo/ videos are stored by road and district on the RuTIMS webpage. The monitoring agency can remotely view the work progress and frequency of site visits by all parties through the CSM web portal. This tool has dramatically helped the client to achieve improved construction quality and safeguards oversight of civil works through systematic monitoring and reporting.

(iv) *Occupational Safety and Health (OSH) and Zero-tolerance Policy towards Child Labour.* In response to the concerns and issues identified during the course of implementation regarding OSH and suspected presence of under-aged workers at one of the work sites, the Project pioneered a systematic approach to address these issues and effectively monitor them. These measures included preparation of OSH guidelines and enhancing capacity building and awareness measures, covering several critical areas including labour camp management, labour registration and incident management. Also, the new bid document introduced in March 2018, contained provisions for each works contract to include: (i) a separate amount earmarked for OSH requirements, e.g., Personal Protective Equipment (PPE); (ii) a designated OSH officer (iii) standards for establishing labour camp with basic amenities and sanitation, and guidelines for managing it; and (v) strict monitoring for avoiding under-aged workers. The Project strictly implemented a zero-tolerance policy on the use of child labour and encouraged the use of personal protective equipment.

(v) *Capacity Building.* Extensive training and capacity building of 2,769 professional staff of the implementing agencies including training on technical, safeguard, procurement, managerial and fiduciary aspects of rural roads maintenance and international exposure visits. In addition, 1,810 construction and Routine Maintenance Group (RMG) workers were trained.

(vi) *Bioengineering works.* With the help of the RMGs, carried out 162,293 sq. metre of bio-engineering works[15] at a total cost of NPR 9.26 million, and 84,672 number of roadside plantations were implemented (with a survival rate of 80 percent) at a cost of NPR 51.4 million.

[15] Included grass planting, brush layering, palisades, live check dams, fascines and tree planting.

(b) ***Provisional Transport Master Plans.*** Based on the guidelines, the District Transport Master Plans (DTMPs) were prepared for all the participating districts which identified the District Core Road Network (DCRN) for maintenance, improvements (upgradation and rehabilitation) and new construction in a priority order. Notwithstanding delays in identifying DCRN in some districts, the road selection of the sub-Projects was undertaken from the existing DTMP following the priority ranking.

(c) ***Technical Audits.*** The Project completed independent technical audits through NVC of all routine and periodic maintenance works based on the technical standards for the quality of maintenance works and DoLI's RMG Guidelines. The technical audit reports were treated as the basis for triggering disbursement for the outputs delivered and payment calculation against each district's agreed Window 1 program. The Project reported to have disposed of all the non-conformities issued by the auditor.

(d) ***Performance Assessment Tool (PAT) for Contract monitoring.*** PAT was successfully completed and adopted in Kaski, Syangja, Palpa and Bara districts. However, the tool could not be replicated at a wider level at other districts due to change in the implementation agencies in the wake of Federalism.

(e) ***Beneficiary Monitoring.*** The Project adopted the use of the Local Road Users Committees (LRUCs) for each 10km of sub-Projects and sought to further strengthen the beneficiary monitoring mechanism to facilitate improved transparency, accountability, and monitoring during physical works implementation. However, given the multitude of other challenges, by the time the Bank and SNRTP could reach an agreement on the terms of reference and procurement of consultants for this activity, a sizeable portion of works were already completed and/or under implementation. Hence, the scope of this activity was changed to field surveys and documentation of the various beneficiary monitoring practices adopted by the Project, assess their impact and provide recommendations for future Projects. The study[16] highlighted the role and contribution of the various community structures such as LRUCs and District level Independent Monitoring Committees, in strengthening the benefits of the Project.

(f) ***Impact Evaluation.*** The study of impacts[17] concluded that the improved road access generated by the Project has proven to be a catalyst for overall socio-economic development and prosperity of the people in the Project areas (many of whom include farmers and women). The access increased economic activities, which in turn, led to enhanced employment opportunities to the local people and improved income levels by providing access to cheaper goods, access to more lucrative markets to sell agricultural goods, and improved access to essential services. Improved road conditions have also led to reductions in vehicle operating costs and travel time.

(g) ***Market Infrastructure Study.*** The study was dropped from the Project considering uncertainties regarding its continued relevance or being a priority activity in the changed administrative circumstances.

(h) ***Governance Accountability Action Plan (GAAP).*** The Project also adopted and implemented GAAP to mitigate governance, accountability and technical risks in the following areas:

(i) integrity and transparency in the bidding process through use of e-procurement and revision in bidding documents;

(ii) quality assurance of civil works through adoption of QA manuals & technical guidelines, maintaining material testing laboratories in 36 existing districts (though retaining lab technicians continues to be a challenge), technical audits by NVC, and performance audit by the Office of Auditor General;

(iii) grievance redressal mechanism through approval of Grievance Handling Policy and Guidelines and adoption

[16] Beneficiary Engagement Study, Devtec Nepal, January 2019. http://www.doli.gov.np/wp-content/uploads/2020/08/SNRTP-Beneficiary-Engagement-Study-Report.pdf

[17] Impact Study Report, Full Bright Consultancy, 2019. http://www.doli.gov.np/wp-content/uploads/2020/08/SNRTP-Impact-Study-Report.pdf

of ICT-based system to handle complaints. Altogether, 1,623 grievances were recorded. While all the Project-related eligible complaints and grievances have been resolved, twenty-one (21) complaints falling out of the scope of the Project were referred to the appropriate authorities for resolutions.

(iv) transparency and beneficiary outreach through installation of Project information signboards (though not fully complied in all sub-Projects); creation and updating of Project website; use of print and electronic media for information dissemination in districts/ provinces; and designation of Information Officers in districts.

2. **Component B: Civil Works. The Project has been substantially able to achieve and, in some cases, exceed the targets of maintenance, upgradation and rehabilitation of road works and crossing structures as discussed below:**

(a) ***Window 1 – Maintenance of Roads and Crossing Structures***

(i) ***Routine Maintenance.*** The Project was successful in exceeding the envisaged annual targets for routine maintenance of roads beginning from the second year of the Project and maintained an achievement of 5000+ km in subsequent years till the closing date. In case of bridges/ crossing structures, the Project has been consistently able to succeed the annual achievements against the targets from the second year onwards and maintained 4000+ km in the remaining years.[18]

(ii) ***Periodic Maintenance.*** In the case of roads, as against the target of 1,400 km, the Project contracted for 1,601 km under 125 contracts in 35 participating districts, of which, works covering 1,587 km are completed under 123 contracts and the remaining work on two contracts covering a length of 20 km has been completed after Project closing. In the case of bridges/crossing structures, as against the target of 2,100 meters, the Project contracted for works covering 4,427 meters (including periodic maintenance undertaken on road contracts) and all works are completed.

(b) ***Window 2 - Upgradation & Rehabilitation of Roads and Bridges/Crossing Structures.*** The Project has substantially completed rehabilitation/ upgradation works on a length of 1048 km against a cumulative revised target of 1,210 km by the Project closing date. Additional 118 km was completed by June 2020 taking the total upgraded roads to 1166 km. The remaining ongoing works on six contracts covering a length of 44 km are likely to be completed by December 2020.[19] In the case of the bridges, as against the target of 1,270 meters, the Project contracted for 1,312 meters under 39 contracts. Of these, works on 1178 meters was completed by the Project closing date and 1,270 meters were completed under 37 contracts by June 2020. The remaining work on the two bridges (42 meters) are under construction and likely to be completed by December 2020.

[18] Although near the end of implementation, several structures envisaged for routine maintenance were determined to require periodic maintenance, thereby reducing the structure length of periodic maintenance achieved.

[19] GON target of completing these remaining works by September 2020 is impacted due to COVID-19 lockdown.