Government of Nepal

Ministry of Physical Infrastructure and Transport,

Department of Roads

Development Cooperation Implementaion Division;
Ministry of Industries, Commerce and Supplies; and

Ministry of Forests and Environment

Bangladesh-Bhutan-India-Nepal (BBIN) Multi-phase Programmatic Approach (MPA) Regional Transport and Trade Facilitation Program - Nepal Phase 1

Environmental and Social Management Framework

March 2022

Cover Photo: The photo on cover page shows the East-West Highway passing through a community forest near Gorusinghe

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List of Acronyms

ABMS	Automated Border Management System
ASYCUDA	Automated System for Customs Data
CBOs	Community Based Organizations
CBS	Central Bureau of Statistics
CDC	Compensation Determination Committee
CDO	Chief District Officer
CF	Community Forest
CFUG	Community Forest User Group
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CSC	Construction Supervision Consultant
DCC	District Coordination Committee
DDC	District Development Committee
DFO	District Forest Office
DG	Director General (of Department of Roads)
DoLI	Department of Local Infrastructure
DoR	Department of Roads
DPSU	District Project Support Unit
DWSC	Department of Watershed and Soil Conservation
EA	Environmental Assessment
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPA	Environmental Protection Act,1996
EPR	Environmental Protection Rules,1997 (amended 2019)
ESF	Environment and Social Framework
ESS	Environment and Social Standards
ESMF	Environmental and Social Management Framework
EWH	East West Highway
GDP	Gross Domestic Product
GESU	Geo-Environment and Social Unit, DoR
GIS	Geographic Information System
GoN	Government of Nepal
GPS	Global Positioning System
HMIS	Highway Management Information System
HRD	Human Resource Development
ICB	International Competitive Bidding
IEE	Initial Environmental Examination
IPPF	Indigenous Peoples Planning Framework
IPDP	Indigenous Peoples Development Plan
LAA	Land Acquisition Act
LCF	Local Consultative Forum
LMP	Labour Management Procedure
LFB	Local Forum of Beneficiaries
LRO	Land Revenue Officer
MIS	Management Information Systems
MoEST	Ministry of Environment, Science and Technology
MoF	Ministry of Finance
MoFE	Ministry of Forest and Environment
MoLD	Ministry of Local Development
MoICS	Ministry of Industries, Commerce and Supplies
MoPIT	Ministry of Physical Infrastructure and Transport
Nbs	Nature-based Solutions
NEPAP	Nepal Environmental Policy and Action Plan
NGO	Non Governmental Organization
NPC	National Planning Commission
NTFP	non-timber forest product
OP	Operational Policy
PAF	Project Affected Families
PAP	Project Affected Persons
PIU	Project Implementation Unit
PWD	Public Works Directive
RAP	Resettlement Action Plan
RM	Rural Municipality
RoW	Right of Way
RP	Resettlement Plan
RPF	Resettlement Policy Framework
SEP	Stakeholder Engagement Plan
TAL	Terai Arc Landscape
ToR	Terms of Reference
WTO	World Trade Organisation

EXECUTIVE SUMMARY

The Government of Nepal is preparing the Bangladesh-Bhutan-India-Nepal (BBIN) Multi-phase Programmatic Approach (MPA) Regional Transport and Trade Facilitation Program - Nepal Phase 1 (hereinafter referred to as BBIN 1 or the Project) for World Bank financing. The main objective of the Project is to increase the efficiency and resilience of trade and transport along selected corridors in Nepal. The Project has the following components:

- **Component 1: Digital Systems for trade**. This component may support the adoption and Implementation of Digital and Automated Systems for improvement of Nepal's cross-border clearances: (a) Development of electronic Automated Border Management including electronic cargo tracking system, (b) Business Intelligence and Data Analytics Package and Risk Engine (c) Development of web-based supply MIS for automation of registration processes and permits.
- **Component 2: Green and Resilient Transport and Trade Infrastructure**. This component will support (a) Upgrading of Butwal-Gorusinghe-Chanauta Road Section of the East-West Highway from 2 to 4 lanes, (b) Construction of a green resilient urban bridge (including detailed design/urban design and construction), and (c) Support for development and implementation of a green resilient highway concept, integrating transportation functionality and ecological sustainability.
- **Component 3: Institutional and Policy Strengthening for Transport and Trade**. This component will provide support in streamlining the policy environment for regional trade and cross-border movement of goods through (a) Bangladesh-India-Nepal Motor Vehicle Agreement related reforms, (b) Customs reforms, (c) Private sector support initiatives, (d) Capacity Strengthening, and (e) Project preparation studies.
- **Component 4: Contingency Emergency Response** will support unforeseen emergency needs. In case of a major natural or human made disaster, GoN may request the Bank to re-allocate project funds to this component to support its quick response and reconstruction.

The Department of Roads (DOR) is the implementing agency for the road-related works and the Ministry of Industries, Commerce and Supplies (MOICS) will be the implementing agency for the trade-related works. The Ministry of Forests and Environment (MOFE) will be responsible for forest development activities to support the green-resilient highway activities.

The civil work investments of the Project mainly include the upgradation of existing roads from 2 lanes to four lanes, the construction of new bridges and facilities at cross-border land ports for installation of digital systems, and afforestation/forest management activities. For the proposed Butwal – Gorusinghe section, an Environmental and Social Impact Assessment (ESIA) was conducted following a detailed feasibility study, and this document has been publicly disclosed prior to the appraisal of the project. For green resilient urban bridge, the feasibility studies are yet to be carried out, and the locations are yet to be finalized. This Environmental and Social Management Framework (ESMF) has been prepared to guide the screening, assessment and management of environmental and social risks and impacts of subprojects whose designs and specific locations cannot be identified at appraisal. The ESMF is prepared based on the World Bank Environmental and Social Framework (ESF), the World Bank Group General EHS guidelines, and the Government of Nepal (GON) Environmental Protection Rules (EPR 2020). The ESMF was also guided by the ESMF of DOR, which was prepared and adopted in 2007 and further updated in 2013 with World Bank support. Along with this ESMF, a Resettlement Policy Framework (RPF) and an Indigenous Peoples Planning Framework (IPPF) have been prepared to guide the preparation of Resettlement Action Plans (RAPs) and Indigenous Peoples Development Plan (IPDP) for the proposed subprojects during implementation.

Key risks and impacts

Based on the consultations and field surveys conducted, it appears that the BBIN sub-project's proposed under the current program, including highway and bridge program, will have varying environmental and social impacts. The significant impacts will arise from the land acquisition and resettlement, Occupational Health and Safety (OHS) and Community Health and Safety (CHS), including traffic safety, cutting of forest vegetation, and risk of pollution from the construction activities. For road subprojects, the upgrading and widening will be carried out within the existing right of way of Butwal-Gorusinghe-Chanauta section. Cultural and historical sites, including temples and sacred trees, may be threatened by road upgradation. There may also be an increase in labor influx during construction and the consequent social impacts related to it, such as gender-based violence, child and forced labor and poor labor and working conditions for workers. Some subprojects may potentially impact physically or economically on Indigenous Peoples (IPs) and IP communities and vulnerable and disadvantaged groups, although the scale is expected to be low to moderate, to the extent, they cannot be avoided. With prudent management options incorporated in the planning, it is believed that most of these impacts can adequately be mitigated. The ESMF makes provision that all roads considered under this program will have an Environmental & Social Management Plan, including a Resettlement Action Plan, and Indigenous Peoples Development Plan, as required.

Environmental and Social Management Framework

This Environmental and Social Management Framework report (ESMF) is prepared by the DoR along with MoICS and MoFE to provide a guidelines and set out the principles, rules, and procedures to screen, assess, manage and monitor the potential environmental and social risks and impacts and to prepare the ESIAs/ESMPs for Gorusinghe-Chanauta Road section, green resilient urban bridge, forest and climate resilient activities and other minor works that will be supported under the project. The environmental and social impacts refer to: (i) any change, potential or actual, to the physical, natural or cultural environment, and (ii) impact on people (including social aspects of labor, health, safety, IPs, disadvantaged and vulnerable groups, equity and security) resulting from project implementation.

The framework integrates into a step-wise approach the most important environmental and social considerations into all stages of project preparation, implementation, monitoring and operation and is applicable to all future sub-projects funded under the BBIN1. The key steps to be followed for E&S management of each sub-project are as follows.

Step1: Screening of the proposed subprojects to assess the requirement of Environmental and social management instruments to be prepared (IEE or EIA for the government and ESIA/RAP/IPDP for the World Bank) for the subprojects.

Step2: E&S Studies –preparation of ESIA/RAP for the World Bank and EIA or IEE for the MoFE. Primary baseline environmental data of the project influence area (covering physical, chemical, biological and socioeconomic environment) will be collected. Scoping Report and ToRs for subprojects that require EIAs (for the government) will be prepared. Census surveys of the affected households will also be carried out. Assessment of impacts and their significance and development of mitigation measures will be undertaken to prepare ESIAs/RAPs/IPDPs for the World Bank and IEE or EIA for the government.

Step3: Consultations with the stakeholders (including affected communities) prior to E&S studies and after completion of draft ESIA/IEE/EIA and RAP will be conducted. The ESIAs/ESMPs and RAPs (including translated summaries) and other necessary E&S instruments will be disclosed on DOR and MOICS websites

Step 4: The ESIAs/ESMPs, RAPs and other necessary E&S instruments will be submitted to the World Bank, and IEEs will be submitted for the MOPIT/MOICS approval. Submission of EIAs for the MOFE Approval will also be required.

Step 5: Preparation of environmental and social specifications for bidding documents, including preparation of BOQs and inclusion of ESMP in the bidding documents.

Step 6: Contractors will develop site-specific construction-ESMPs and OHS Plans and will implement them. Regular monitoring and reporting of compliance by the Construction supervision consultants and E&S staff of the PCUs will be undertaken.

Step 7: Preparation of regular monitoring reports on the performance of ESMP implementation of the subprojects

Step 8: Post-construction audits of the projects whose EIAs were approved by MOFE.

Stakeholder consultation

Public participation, consultation and information dissemination in a project will be an integral part of all environmental and social impact assessment activities during project preparation. A detailed project stakeholder engagement plan (SEP) has been prepared with detailed procedures and strategies by which the DoR,MoICS and MoFE will consult project stakeholders. Detailed consultations have been carried out, during the initial stages of preparation of ESMF and after disclosure of draft ESMF on DoR's and World Bank websites, with various key institutional and community stakeholders, including federal government ministries, provincial and municipal authorities, Divisional Forest Authorities, and Forest User Groups. A total of 544 stakeholders, 418 men and 126 women, were consulted through all these meetings. Key issues highlighted during consultation are potential social distortion during construction, consideration of public safety, local employment generation, pollution management, forest conservation and tree plantation, protection of temples, proper drainage, crossing structure for people and wildlife. These initial feedbacks and suggestions were incorporated in the main report. The project has established a GRM which can be accessed by any stakeholder and households to address project-related grievances including Sexual exploitation and sexual harassment (SEA/SH). The GRM to address grievances related to workers will be established as per Labor Management Procedures (LMP).

Key Gaps between GoN and ESF

The ESMF has included a gap analysis between the GoN requirements vis-à-vis WB ESF. The analysis indicated that each World Bank ESS has counterpart country legislations except that some of these legislations are not formally covered in the EIA scope and process. The main gap is that the relevant provisions of these laws are not yet integrated into the EIA process, both in terms of formal regulations or guidelines and in practice. Naturally, the agencies that are mandated to implement these laws are also not involved in the EIA process, even as oversight during project implementation.

In terms of the specific requirements of the ESSs, the few critical gaps include the following:

1) Although each ESS has a counterpart law, the current Screening protocol under the country EIA system does not examine relevant risks and impacts with respect to these laws (such as health & safety), hence do not cover all standards;
2) Natural habitats are not specifically required to be assessed in the EIA nor require Biodiversity Management Plan even where biodiversity impact is found significant in the EIA

3) Resettlement Action Plan (RAP) is not required. The eminent domain land acquisition procedure is already fixed by law and hence it does not afford for the consideration of participatory planning or for compensation options with the affected people;

4) Although the government recognizes Indigenous People and respect their rights, the current system does not require preparation of an IP plan and free, prior and informed consent, where the situation dictates that these should be required; and,

5) Partly as a result of the non-involvement of the agencies mandated to implement them, occupational health and safety standards and community health and safety are weakly enforced, with impacts and risks to community health and safety often also poorly assessed.

These gaps are addressed in this ESMF to meet the requirements of the ESF, including the preparation, adoption and implementation of the RPF, IPDF, SEP, LMP.

Institutional Arrangement

The road works will be implemented by DOR, trade-related works will be implemented by MOICS and forest related works will be implemented by MOFE. The DCID in the DOR will act as the PCU, the existing PCU in MoICS will act as the PCU and a new PCUs will be established in the MOFE. The PCUs will hire environmental and social staff for implementation of the ESMF, hire environmental and social consultants to prepare the required E&S instruments, and contractors with adequate environmental, health and safety (ESHS) specialists for implementation of the subprojects.

DOR has extensive experience working with the World Bank and other donor-funded projects. It has a permanent Geo-Environment and Social Unit (GESU) with four environmental and social staff. The DCID, which will act as the PCU, has four existing environmental and social staff. MOICS is a longtime client and partner of the World Bank and is quite familiar with Bank safeguard policies and Bank processes. It currently implements Nepal-India Regional Trade and Transport Project (NIRTTP) and other donor-funded projects. It has a good experience, performance and acceptable track record in implementing the ESMP for trade-related projects and other infrastructures, including implementing ESMPs. MOFE has been working with World Bank on REDD Readiness Preparation Program, Emission Reduction Program and Nepal Forests for Prosperity Project.

This ESMF has 8 chapters:

- **Chapter 1** introduces the project, its components and its strategic relevance to the GoN.
- **Chapter 2** covers the methodological framework for carrying out environmental and social assessment studies and its integration into the project cycle, including environmental and social screening of subprojects.
- **Chapter 3** summarizes the legal acts, policies, regulations and guidelines of the GoN and the World Bank's Environmental and Social Standards that are relevant and applicable to the project.
- **Chapter 4** describes the baseline environmental and social features in the BBIN 1 project area.
- **Chapter 5** covers the analysis of potential environmental and social risks and impacts of road projects.
- **Chapter 6** provides the environmental and social management framework and measures employing mitigation hierarchy (avoid, minimize, mitigate and compensate) to manage environmental and social risks and impacts. This chapter also highlights the good practices that the DoR has used for managing environmental and social risks and impacts in other road projects it implements.

- **Chapter 7** covers stakeholder engagement, consultations and disclosure of information all throughout the ESIA process and during the implementation of the project. The stakeholder engagement process is further elaborated in the Standalone SEP prepared for the project.
- **Chapter 8** describes the institutional framework for implementing the ESMF and the capacity building program of DOR, MOICS and MOFE.

The project will also allocate sufficient resources to implement this ESMF, including staffing and capacity building of the DOR, MOICS and MOFE.

कार्यकारी सारांश

नेपाल सरकारले विश्व बैंकको ऋण सहयोग बाट बंगलादेश भुटान भारत नेपाल, बहुचरणीय कार्यक्रमात्मक दृष्टिकोण क्षेत्रीय सडक तथा व्यापार सहजीकरणआयोजना अन्तर्गत पहिलो चरणको (जसलाई अब उपरान्त बी.बी.आई.एन-१ (BBIN-1) वा आयोजना उल्लेख गरिनेछ) कार्यान्वयन गर्नका लागि तयार गरिँदै छ । आयोजनाको मुख्य उद्देश्य पूर्व पश्चिम राजमार्गको पश्चिम तर्फ सिमानाको वारिपारी व्यापार पारवाहन साथै मानिसहरुको सहज आवत जावतको लागि न्यून लागतमा अधिक प्रतिफलका साथै जलवायु अनुकुलीत विकासमा टेवा पुऱ्याउनु रहेको छ ।

यस आयोजनाका निम्न घटकहरु रहेका छन् ।

घटक १: व्यापार सहजीकरण प्रणाली: यस घटक अन्तर्गत व्यापारलाई सहजीकरण गरि सीमा व्यवस्थापन गर्न डिजिटल र स्वचालित प्रणालीहरुको प्रयोग गरिने छ । (क) भन्सार तथ्याङ्क व्यवस्थापन प्रयोजनको लागि नयाँ मोड्युलको स्वचालित प्रणालीको विकास गर्नु । (ख) स्वचालित सीमा व्यवस्थापन प्रणालीको विकास गरि समावेश गर्नु ।

घटक २: क्षेत्रीय यातायात र व्यापार पूर्वाधारको बृद्धि गर्दै सुधार गर्नु: (क) पूर्व-पश्चिम राजमार्ग अन्तर्गतको बुटवल-गोरुसिंघे-चनौटा खण्डलाई हालको २ लेनबाट ४ लेनमा स्तरोन्नती गरिने । (ख) तिनाउ पुलको निर्माण (विस्तृत डिजाइन/शहरी डिजाइन तथा निर्माण) । (ग) यातायात कार्यक्षमता र पारिस्थिक दिगोपन (ecological sustainability) लाई मध्यनजर गरि हरित मैत्री राजमार्ग निर्माण गर्ने अवधारणाको कार्यान्वयनको लागि सहयोग गरिने । (घ) संवेदनशील तथा महत्वपूर्ण स्थानमा व्यापार सुविधाहरुको स्तरोन्नती गरिने ।

घटक ३: यस घटक अन्तर्गत क्षेत्रीय तथा सीमा पारवाहन सम्बन्धी नितीहरुलाई सुब्यवस्थित गर्दै (क) यातायात तथा व्यापार सम्बन्धी नितीहरुको सुधार (ख) स्थानीय समुदायलाई सहयोग पुग्ने गरि यातायात क्षेत्रको सुधार (ग) तालिम तथा क्षमता अभिबृद्धि (घ) आयोजना तयारीका लागि अध्ययन ।

भौतिक पूर्वाधार तथा यातायात मन्त्रालय अन्तर्गत रहेको सडक विभाग यो आयोजना कार्यान्वयनको लागि प्रमुख निकाय हो भने उद्योग, वाणिज्य तथा आपूर्ति मन्त्रालयले व्यापार तथा पारवाहन सम्बन्धी कार्यक्रमहरु कार्यान्वयन गर्नेछ ।

घटक २ अन्तर्गत प्रस्तावित लगानी मुख्यतया: बिद्यमान २ लेन सडकलाई ४ लेनमा स्तरोन्नती गर्न भौतिक संरचनाहरुको निर्माण गर्न, नयाँ पूलहरु निर्माण गर्न र सम्भावित सुख्खा बन्दरगाहहरुको स्तरोन्नतीको साथै नयाँ निर्माण गरिनेछ ।

प्रस्तावित बुटवल-गोरुसिंघे खण्डको अध्ययन पश्च्यात अगष्ट २०२१ देखि जनवरी २०२२ समय सिमामा वातावरणीय तथा सामाजिक प्रवाह मुल्याङ्कन प्रतिवेदन तयार गरि, विश्व बैंकबाट आयोजनाको मुल्याङ्कन हुनु अगावै सर्वसाधरणलाई आयोजना सम्बन्धी सुसूचित गरि प्रतिवेदन सार्वजनिक गरिनेछ ।

गोरुसिंघे-चनौटा खण्ड अन्तर्गत प्रतिष्ठित पुल (signature bridge) र सुख्खा बन्दरगाहहरुको (यदि समावेश गरिने खण्डमा) लागि विस्तृत सम्भाव्यता अध्ययन र स्थान छनौटको कार्य भने बाँकी नै रहेको छ ।

यस वातावरण तथा सामाजिक व्यवस्थापन रुपरेखा (ESMF) ले मुख्यतया: आयोजना मुल्याङ्कनको चरणमा समेटिन नसकेका विभिन्न उप-आयोजनाहरुको स्थान छनौट नभई विस्तृत अध्ययन तथा डिजाइन नगरिएका र वातावरणीय तथा सामाजिक प्रभावहरुको अध्ययन गर्न बाँकी रहेका आयोजनाहरुको प्रारम्भीक मुल्याङ्कन तथा वातावरणीय तथा सामाजिक जोखीम/प्रवाहहरुको मुल्याङ्कन तथा व्यवस्थापनका लागि मार्गनिर्देशन गर्न सहज होस् भन्ने अभिप्रायले तयार गरिएको हो । यो वातावरणीय तथा सामाजिक व्यवस्थापन रुपरेखा प्रतिवेदन विश्व बैंकको वातावरणीय तथा सामाजिक रुपरेखा, विश्व बैंक समूहको स्वास्थ्य तथा सुरक्षा सम्बन्धी निर्देशीका तथा नेपाल सरकारको वातावरण संरक्षण नियमावली २०७७ अनुसार तयार पारिएको छ ।

यस वातावरणीय तथा सामाजिक व्यवस्थापन रुपरेखालाई विश्व बैंकको सहयोगमा परिमार्जित गरिएको सडक विभागको वातावरणीय तथा सामाजिक व्यवस्थापन रुपरेखा २००७ (परिमार्जित सन् २०१३) ले निर्दिष्ट गरिएको छ । यस ESMF संग संगै प्रस्तावित उप-परियोजनाहरुको लागि यथोचित आवास कार्ययोजना (RAP) र आदिवासी जनजाति विकास योजना (IPDP) को तयारीलाई मार्गनिर्देशन गर्न एक यथोचित आवास नीति रुपरेखा (RPF) र आदिवासी जनजाति योजना रुपरेखा (IPPF) समेत तयार गरिनेछ ।

<u>प्रमुख जोखिम र प्रवाहहरु</u>

हालै गरिएको परामर्श र स्थलगत सर्वेक्षणको आधारमा प्रस्तावित BBIN अन्तर्गत उप-आयोजनाहरु, राजमार्ग तथा व्यापारिक सुविधाहरुको स्तरोन्नती तथा पुल निर्माण इत्यादि उप-आयोजनाहरुले विभिन्न वातावरणीय तथा सामाजिक प्रभाव पार्ने देखिन्छ ।

जग्गा अभिग्रहण तथा यथोचित आवास व्यवस्थापन, सामुदायिक स्वास्थ्या तथा व्यवसायिक स्वास्थ्य र सुरक्षा लगायत ट्राफिक सुरक्षा, बन बनस्पति कटान निर्माण कार्यहरुबाट उत्पन्न प्रदुषणको जोखिमबाट महत्वपूर्ण प्रवाहहरु उत्पन्न हुने देखिन्छ ।

बुटवल-गोरुसिंघे-चनौटा सडक स्तरोन्नति उप-आयोजना खण्डको कार्य विद्यमान सडक विभागले प्रस्तावित सिमारेखा (ROW) भित्र नै सिमित रहने छ । यद्यपि प्रस्तावित ब्यापारिक सुविधा सुद्धृधिकरणका उप-आयोजनाहरु टुंगो लाग्न बाँकी भएता पनि यस अन्तर्गत मुख्यतया विद्यमान पूर्वाधारहरुमा साना तथा मझौला प्रकृतिको सुधार र स्तरोन्नतीका कार्यहरु समावेश रहने छ ।

सडक स्तरोन्नतीले सांस्कृतिक तथा ऐतिहासिक स्थलहरु लगायत मठ मन्दिर, धार्मिक आस्थाका रुखहरुमा क्षती पुग्ने देखिन्छ ।

निर्माणको क्रममा वाह्य श्रमिकहरुको आवागमनले सामाजिक संरचनामा प्रभाव परि त्यसबाट सिर्जित प्रवाहरु जस्तै लैङ्गिक हिंसा, बाल श्रम शोषण, तथा अब्यवस्थित कार्यशैलीहरुमा बृद्धि हुनसक्ने देखिन्छ ।

कतिपय आयोजनाहरुमा सम्भावित रुपमा आदिवासी, जनजाती तथा समुदाय र कमजोर तथा विपन्न समुहहरुमा भौतिक तथा आर्थिक रुपमा प्रवाह पर्न सक्ने देखिन्छ र यसको प्रवाह न्यून देखि मध्यम हुने अपेक्षा गरिए तापनि यिनिहरुलाई नकार्न सकिदैन । यी अधिकांश उल्लेखित नकारात्मक प्रवाहहरुलाई उप-आयोजनामा समावेश गरिएका विवेकपूर्ण ब्यवस्थापन विकल्पहरुबाट पर्याप्त रुपमा न्यूनिकरण गर्न सकिने विश्वास लिईएको छ ।

यो ESMF मा यस कार्यक्रम अर्न्गत प्रस्तावित सबै सडक उप-आयोजनाअहरुमा आवश्यक्ता अनुरुप यथोचित आवास कार्ययोजना, आदिवासि जनजाती विकास योजना सहितको वातावरणीय तथा सामाजिक योजना प्रतिवेदनहरु बनाउनुपर्ने प्रावधानहरुको सुनिश्चितता गरिएको छ ।

वातावरण तथा सामाजिक रुपरेखा

यो वातावरण तथा सामाजिक रुपरेखा प्रतिवेदन सडक विभाग र उद्योग, बाणिज्य तथा आपूर्ति मन्त्रालयको संयोजकत्वमा तयार पारिएको छ । यस रुपरेखाले कुनैपति उप-आयोजनाको वातावरण तथा सामाजिक प्रवाहहरुको प्रारम्भिक तथा विस्तृत मुल्याङ्कन अध्ययन गर्न आवश्यक सिद्धान्त, नियम तथा कानूनहरुको प्रतिपादन गरि प्रक्रियालाई दिशा निर्दिष्ट गर्ने गर्दछ । यस रुपरेखाले गोरुसिंघे-चनौटा सडक र तिनाउ खोलामा signature bridge निर्माण, ब्यापारिक सुविधाहरुको सुद्धृधिकरण तथा स्तरोन्नती र अन्य स-साना उप-आयोजनाका कार्यहरुको लागि आवश्यक पर्ने ESRA/ESMP प्रतिवेदनहरु तयार पार्नका लागि समेत निर्दिष्ट गर्नेछ । वातावरण तथा सामाजिक प्रवाह भन्नाले निम्न कुराहरुलाई जनाउँदछ । (क) भौतिक, प्राकृतित वा सांस्कृतिक वातावरणमा कुनैपनि परिवर्तन, (ख) आयोजना प्रवाहबाट मानिसमा पर्ने प्रवाहरु समावेश गरि (श्रम स्वास्थ्य सुरक्षा, विपन्न वर्ग, सामाजिक जोखिममा रहेको वर्ग, समता तथा सुरक्षा इत्यादि) बुटवल र गोरुसिंघे सडक खण्डको ESIA प्रतिवेदन तयार गरिएको छ र उक्त प्रतिवेदन BBIN-1 आयोजनाको मुल्याङ्कन हुनु पूर्व नै सर्वसाधरणको जानकारीको लागि सार्वजनिक गरिने छ ।

आयोजना, तयारी, कार्यान्वयन, अनुगमन र संचालनका क्रममा महत्वपूर्ण वातावरण तथा सामाजिक पक्षहरुलाई BBIN-1 अन्तर्गत लागु हुने सबै उप-आयोजनाहरुमा समेटि यस ESMF का प्रावधानहरु चरणबद्ध रुपमा लागु गरिने छ ।

प्रत्येक उप-आयोजनाको ESF ब्यवस्थापनको लागि पालना गर्नुपर्ने मुख्य चरणहरु निम्न अनुसार छन् ।

प्रथम चरणः उप-आयोजनाहरुको प्रारम्भिक वातावरणीय तथा सामाजिक अध्ययन गरि तयार गर्नुपर्ने प्रतिवेदन/दस्तावेजहरुको मुल्याङ्कन (नेपाल सरकारको लागि IEE वा EIA तथा विश्व बैंकको लागि ESIA/RAP/IPPD)

द्वितिय चरणः वातावरण तथा सामाजिक प्रवाह मुल्याङ्कन विश्व बैंकको लागि ESIA/RAP/IPF इत्यादि तथा नेपाल सरकारको लागि EIA वा IEE । आयोजना प्रभावित क्षेत्रको प्राथमिक आधारभूत वातावरणीय तथ्याङ्क (भौतिक, रासायनिक, जैविक र सामाजिक आर्थिक वातावरण) संङ्कलन गरिने छ । नेपाल सरकारको EPA/EPR को प्रावधान अनुरुप EIA

अध्ययन प्रतिवेदनको लागि चाहिने scoping तथा Terms of Reference (ToR) प्रतिवेदन । यसको साथ साथै प्रभावित घरपरिवारको जनगणना साथै घरधुरी पनि सर्वेक्षण गरिने छ । विश्व बैंकको लागि ESIA/RAPs/IPPDs र नेपाल सरकारको लागि IEE वा EIA प्रतिवेदन तयार गर्न प्रवाहहरु र तिनिहरुको महत्वको मुल्याङ्कन र न्यूनीकरणका उपायहरु प्रस्तावित गरिने छ ।

तेश्रो चरण: E&S अध्ययन गर्नु पूर्व र ESIA/EIA र RAP को मस्यौदा तयार भए पश्च्यात सरोकारवालाहरु (प्रभावित समुदायहरु सहित) अध्ययनका दौरानमा संकलित/उपलब्ध तथ्यांङ्क तथा निष्कर्षहरुको बारेमा छलफल र मुख्य मुख्य सुझावहरुलाई भविष्यमा कार्यान्वयनका लागि ESIA/EIA प्रतिवेदनमा समावेश गरिनेछ । ESIAs/ESMPs र RAPs का प्रतिवेदनहरुका साथै नेपालीमा अनुवाद गरिएका कार्यकारी सारांश लगायत अन्य E&F सम्बन्धी दस्तावेजहरु सडक विभाग र उद्योग, वाणिज्य तथा आपूर्ति मन्त्रालयको वेवसाइट मा सर्वसाधरणको पहुंचको लागि सार्वजनिक गरिनेछ ।

चौथो चरण: ESIAs/ESMPs र RAPs लगायत अन्य दस्तावेजहरु विश्व बैंकमा पेश गरिनेछ । IEEs प्रतिवेदन भौतिक पूर्वाधार तथा यातायात मन्त्रालय/उद्योग, वाणिज्य तथा आपूर्ति मन्त्रालयमा स्वीकृतिको लागि पेश गरिने छ । EIA प्रतिवेदहरुको सन्दर्भमा वन तथा वातावरण मन्त्रालयमा पेश गरि आवश्यक स्वीकृति पनि लिनुपर्ने छ ।

पाँचौ चरण: बोलपत्र दस्तावेजमा समावेश गर्न वातावरणीय र सामाजिक विनिर्देश (specification) तयार गरि BoQ तयार गरिनेछ र ESMP लाई पनि बोलपत्र दस्तावेजमा समावेश गरिनेछ ।

छैठौं चरण: ठेकेदारहरुले site specific construction-ESMP (C-ESMP) र OHS दस्तावेजहरु तयार गर्नेछन् र तिनिहरुका प्रावधान र विद्यमान प्रावधानहरुलाई आयोजना कार्यान्वयन चरणमा लागु गर्नेछन् । निर्माण सुपरिवेक्षण परामर्शदाता र PCUs का E&S कार्मचारिहरु द्वारा अनुपालनको नियमित अनुगमन गरि रिपोर्टिङ्ग गरिनेछ ।

सातौं चरण: उप-आयोजनाहरुको ESMP कार्यान्वयनको कार्यसम्पादनमा नियमित अनुगमन गरि प्रतिवेदन तयार गरिनेछ ।

आठौं चरण: वन तथा वातावरण मन्त्रालयद्वारा EIAs स्वीकृत भएका उप-आयोजनाहरुको निर्माण पछिको वातावरणीय तथा सामाजिक परिक्षण (Environment and Social Audit) गरिने छ ।

<u>सरोकारवालाहरु संगको परामर्श</u>

आयोजना तयारीको प्रारम्भिक चरणमा सबै वातावरणीय र सामाजिक प्रभाव मुल्याङ्कन गतिविधीहरुमा जन सहभागिता, परामर्श र सूचना प्रवाह/प्रसारण सरोकारवालाहरु संगको परामर्शका अभिन्न अंगहरु हुन् । SEP तयार गरिनेछ र दस्तावेजमा परामर्शका लागि चाहिने विस्तृत प्रक्रिया र रणनीतिहरु समावेश गरिएको हुनेछ र यस दस्तावेजले निर्दिष्ट गरे अनुरुप सडक विभाग र उद्योग, वाणिज्य तथा आपूर्ति मन्त्रालयले आयोजनाका सरोकारवालाहरु संग परामर्श गर्नेछन् ।

प्रारम्भिक परामर्शले विभिन्न प्रमुख संस्थागत र सामुदायिक सरोकारवालाहरु संग संलग्नता गरिएको छ र जसमा संघीय सरकारका मन्त्रालयहरु, प्रदेश र नगरपालिका/गाउँपालिकाका अधिकारिहरु, डिभिजनल वन कार्याल, वन प्रयोगकर्ता समूहहरु समाविष्ट छन् । प्रारम्भिक परामर्शमा उठाईएका मुख्य मुख्य बुंदाहरु यसप्रकार रहेका छन् : निर्माणका क्रममा देखिने सम्भावित सामाजिक विकृति, सामाजिक सुरक्षा, स्थानिय रोजगारी सिर्जना, प्रदुषण व्यवस्थापन, वन संरक्षण बृक्षारोपण, मठ-मन्दिरको संरक्षण, उचित ढल निकास, समाजका सबै वर्ग/तपकाका मानिस तथा वन्यजन्तु/घरपालुवा चौपायाहरुको लागि सडक पार गर्ने संरचनाहरु इत्यादि । यी प्रारम्भिक प्रतिक्रिया सुझावहरु मुख्य प्रतिवेदनमा समावेश गरिसकेका छन् ।

आयोजनाले गुनासो सुनुवाई संयन्त्र (GRM) को स्थापना गरिसकेको छ । कुनैपनि सरोकारवाला अथवा घरधुरी/परिवारद्वारा लैङ्गिक हिंसा (GBV) लगायत आयोजना सम्बन्धी गुनासाहरु सम्बोधन गर्न यो संयन्त्र सर्वसाधरणको लागि पहुंचयोग्य पनि रहेको छ । यस ESMF अनुसार कामदारहरुको गुनासाहरु सम्बोधन गर्न पनि GRM को स्थापना गरिने छ ।

<u>नेपाल सरकारको EPA/EPR र विश्व बैंकको ESF विचको मुख्य अन्तरहरु</u>

यस ESMF ले नेपाल सरकारका प्रावधानहरुका साथै विश्व बैंकको ESF बिचको अन्तर विश्लेषण गरि समावेश गरिएको छ । विश्लेषण अनुसार प्रत्येक विश्व बैंकको ESS मा समकक्षीय स्वदेशी कानूनहरु विद्यमान छन् भने केहि कानून तथा प्रावधानहरु औपचारिक रुपमा EIA को दायरा र प्रक्रियामा समेटिएका छैनन् । यी कानूनका सान्दर्भिक प्रावधानहरु, औपचारिक नियम लगायत निर्देशीकाहरु दुवै EIA प्रक्रियामा व्यवहारिक रुपमा एकिकृत गरिएका छैनन् र यो नै दुवै बिचको मुख्य अन्तर हो । स्वभाविक रुपमा यी कानूनहरु लागु गर्न जिम्मेवार निकायहरु, परियोजना कार्यान्वयनको क्रममा निरिक्षण गरे तापनि EIA प्रक्रियामा संलग्न छैनन् । ESS का विशेष प्रावधानहरुको सन्दर्भमा केहि महत्वपूर्ण अन्तरहरु निम्नानुसार रहेका छन् ।

(क) यद्यपि प्रत्येक ESS मा एक समकक्षिय कानून विद्यमान भए तापनि देशको EIA प्रणाली अर्न्गत हालको screening protocol ले यी कानूनहरु (जस्तै स्वास्थ्य र सुरक्षा) को सन्दर्भमा सान्दर्भिक जोखिम र प्रवाहहरुको मुल्याङ्कन गर्दैन, त्यसैले सबै मापदण्डहरु समावेश गर्दैन ।

(ख) प्राकृतिक वासस्थान विशेष रुपमा EIA मा मुल्याङ्कन गर्न आवश्यक मानिदैन र EIA प्रतिवेदन अनुसार जैविक विविधतामा विशेष प्रवाह देखिए तापनि जैविक विविधता व्यवस्थापन योजना (biodiversity managemetn plan) तयार गर्नु पर्दैन ।

(ग) यथोचित आवास कार्ययोजना (RAP) को आवश्यक्ता नपर्नु । जग्गा अधिग्रहण प्रक्रिया पहिले नै कानून द्वारा तय गरिएको र फलस्वरुप जनसहभागिता वा प्रभावित व्यक्ति विशेषहरु संग क्षतिपूर्तिका विकल्पहरु माथि थप छलफल/विचार मन्थन गर्न आवश्यक नदेखिनु ।

(घ) यद्यपि सरकारले आदिवासी जनजातिहरुलाई मान्यता दिएको छ र उनीहरुको अधिकारको पनि सम्मान गरेको छ । तर हालको प्रणालीले IP Plan र free, prior and informed consent (FPIC) लागि परिस्थितिले आवश्यक छ भनि निर्देशन गरे तापनि यसलाई गम्भिर रुपमा विचार गरेको देखिंदैन ।

(ङ) सामुदायिक स्वास्थ्य र सुरक्षामा पर्ने प्रभावहरु र जोखिमहरु प्रति कमजोर रुपमा मुल्याङ्कन गरिएको छ । यसको प्रमुख कारण यी प्रावधान कार्यान्वयन गर्ने निकायहरु संग आंशिक रुपमा संलग्नता नभएको कारण व्यवसायिक स्वास्थ्य र सुरक्षा मापदण्डहरु र सामुदायिक स्वास्थ्य र सुरक्षा कमजोर रुपमा लागु भएका छन् ।

RPF, IPDF, SEP, श्रम व्यवस्थापनमा प्रक्रिया (EMP) तयारी तथा कार्यान्वयनका क्रममा देखिएका अन्तरहरुलाई यस ESMF ले ESF का प्रावधानहरु समावेश गरि सन्बोधन गरेको छ ।

संस्थागत व्यवस्था

सडक निर्माण सम्बन्धी कार्यहरु सडक विभाग र व्यापार सम्बन्धी कार्यहरु उद्योग, बाणिज्य तथा आपूर्ती मंत्रालय द्वारा कार्यान्वयन गरिने छ । सडक विभागमा विकास साहायता कार्यान्वयन महाशाखाले परियोजना व्यवस्थापन एकाईको रुपमा काम गर्नेछ र उद्योग, बाणिज्य तथा आपूर्ती मंत्रालयमा नयाँ परियोजना व्यवस्थापन एकाई स्थापना गरिने छ ।

परियोजना व्यवस्थापन एकाईहरुले ESMF को कार्यान्वयनका लागि वातावरणीय र सामाजिक विशेषज्ञहरु नियुक्ति गर्नेछन् । आवश्यक E&S अवधारणाहरु तयार गर्न वातावरणीय र सामाजिक परामर्शदाताहरु र उप-आयोजनाहरुमा E&S प्रावधानहरु कार्यान्वयनका लागि पर्याप्त वातावरणीय, स्वास्थ्य र सुरक्षा (ESHS) विशेषज्ञहरु समावेश गरिएका ठेकेदारहरु नियुक्त गरिने छन् ।

सडक विभाग सित विश्व बैंक लगायत अन्य दातृ निकायहरु संग आयोजनामा काम गरेको व्यापक अनुभव छ । सडक विभागमा चार वातावरणीय र सामाजिक कर्मचारिहरु सहितको स्थायी भू-पर्यावरण र सामाजिक एकाई (GESU) स्थापित छ ।

विकास साहायता कार्यान्वयन महाशाखामा (जसले परियोजना व्यवस्थापन एकाईको भूमिका निर्वाह गर्नेछ) चार विद्यमान वातावरणीय र सामाजिक कर्मचारिहरु छन् । उद्योग, बाणिज्य तथा आपूर्ती मंत्रालय र विश्व बैंक बिचको साझेदारि धेरै लामो समय देखि रहि आएको छ र बैंक सुरक्षा नीतिहरु र बैंकिङ्ग प्रक्रियाहरु संग चिरपरिचित पनि रहेको छ । मंत्रालयले हाल नेपाल भारत क्षेत्रीय व्यापार तथा यातायात परियोजना (NIRTTP) कार्यान्वयन गरिराखेको छ । यसका साथै अन्य दातृ निकायहरु द्वारा अनुदान प्राप्त आयोजनाहरु पनि कार्यान्वयन गरि राखेको छ । मन्त्रालय संग व्यापार सम्बन्धी

आयोजनाहरु र ESMPs कार्यान्वयन सहित अन्य पूर्वाधारहरुको लागि ESMP कार्यान्वयनमा राम्रो अनुभव संगाली स्वीकार्य कार्य सम्पादन गरेको पाईएको छ ।

यस ESMF मा आठ वटा अध्याय छन् ।

अध्याय १ मा आयोजना, यसका आवयवहरु तथा नेपाल सरकारसंगको रणनैतिक सम्बन्धको बारेमा चर्चा छ ।

अध्याय २ मा वातावरणीय तथा सामाजिक मुल्याङ्कन अध्ययन तथा बिभिन्न उप-आयोजनाहरुको स्क्रीनिङ्ग र यसलाई परियोजना चक्रमा समाविश्ट गर्ने सम्बन्धी कार्यविधीको बारेमा उल्लेख छ ।

अध्याय ३ मा नेपाल सरकारको विद्यमान नीति नियम र निर्देशीकाहरु तथा विश्व बैकको वातावरणीय तथा सामाजिक सुरक्षण सम्बन्धी मापदण्डहरु तथा आयोजना कार्यान्वयन गर्न तिनीहरुको उपयोगीता बारेमा चर्चा छ ।

अध्याय ४ मा बी.बी.आई.एन आयोजना स्थलको विद्यमान वातावरणीय तथा सामाजिक अवस्थाको बारेमा जानकारी छ ।

अध्याय ५ मा सडक आयोजना निर्माणको कारण पर्न सक्ने सम्भावित वातावरणीय तथा सामाजिक प्रभाव तथा जोखिमको आंकलनको बारेमा उल्लेख छ ।

अध्याय ६ मा वातावरणीय तथा सामाजिक ब्यवस्थापन रुपरेखा तथा वातावरणीय तथा सामाजिक प्रभाव मुल्याङ्कन र असर कम गर्नका लागि न्यूनीकरणका तहहरु (हटाउने, घटाउने, न्यूनीकरण गर्ने तथा क्षतिपूर्ति दिने) अवलम्बन गर्ने बारेमा उल्लेख छ र सय खण्डमा सडक विभागमा यस अगाडी प्रयोगमा ल्याईएको सडक आयोजनाका राम्रा सिकाई तथा पाठहरुलाई सामाजिक प्रभाव मुल्याङ्कन र असर कम गर्नका लागि उपयोग गर्ने बारेमा उल्लेख छ ।

अध्याय ७ मा वातावरणीय तथा सामाजिक प्रभाव मुल्याङ्कनको दौरान सरोकारवालाहरुके सहभागिता, छलफल तथा सर्वसाधरणलाई आयोजना बारे सूचनाको सहज पहुँच बारे चर्चा छ जुन बी.बी.आई.एन-१ आयोजना अन्तर्गत सरोकारवालाहरुको सहभागिता योजनामा आधारित छ ।

अध्याय ८ मा वातावरणीय तथा सामाजिक ब्यवस्थापन रुपरेखाको कार्यान्वयनको लागि संगठनात्मक रुपरेखा तथा सडक विभाग र उद्योग, बाणिज्य तथा आपूर्ती मन्त्रालयको क्षमता अभिबृद्धि कार्यक्रम बारे चर्चा छ ।

आयोजनाले सडक विभाग र उद्योग, बाणिज्य तथा आपूर्ती मंत्रालयका कर्मचारीहरुको क्षमता अभिबृद्धि लगायत यस ESMF लाई कार्यान्वयन गर्न पर्याप्त श्रोतहरु पनि बिनियोजन गर्नेछ ।

1 Background and Rationale for an Environmental and Social Management Framework

1.1 Introduction

The efficient movement of goods and people within and across the borders of Nepal is key to the country's economic growth and development. This goal is hampered by challenges in the cost-efficiency and resilience of trade and transport infrastructure. The upgrading of the Butwal – Kohalpur – Gaddachauki section of the East-West (E-W) Highway and relevant trading facilities under a large investment Program is thus considered to address these challenges. This project would be the first phase of this investment Program along the western part of the E-W highway corridor that would allow the Government to achieve its development goals in terms of regional trade and sustainable economic growth. There is scope under the Program for more ambitious/innovative improvements via safe and resilient road upgrading, structural (bridges) works and trading facilities upgradation to accommodate demand and enhance efficiency; digitization and automation of trade border processes; enhancing institutional capacity, and transport and trade-specific sector reforms. This project would, in particular, as discussed with MOPIT and the Ministry of Forest and Environment (MOFE), develop and initiate the implementation of a green and resilient highway concept and strategy, integrating transportation functionality and ecological sustainability. This strategy will explore opportunities to improve infrastructure development planning processes and policies at the landscape/corridor level by:

- Promoting a more sustainable approach when developing a transport and trade project, as per the Green, Resilient and Inclusive Development (GRID) principles.
- Better managing negative environmental impacts from unplanned transport development on the ecosystem/forest.
- Developing new skills in the country/creating 'green' jobs.

Road and bridge construction and maintenance as well as trading facilities upgradation cause various environmental and social impacts, both positive and adverse ones. In a country like Nepal, which has fragile geology, widespread poverty, rich natural biodiversity, road and bridge construction, and maintenance can extend significant adverse impacts on the local environment and social landscape.

A common weakness in Nepal road and other infrastructure programs is inadequate integration of environmental and social recommendations into project plans, designs and bills of quantity. The ESMF proposes mechanisms, in line with the current legal and policy framework, to make this effective. For the proposed Butwal – Gorusinghe section, an Environmental and Social Impact Assessment (ESIA) was conducted between August 2021 and January 2022 following a detailed feasibility study, and this document will be publicly disclosed prior to the appraisal of the project. For Gorusinghe – Chanauta Road, a green resilient urban bridge and land port facilities, the feasibility studies are yet to be carried out, and the locations are yet to be finalized. This Environmental and Social Management Framework (ESMF) has been prepared to guide the screening, assessment and management of environmental and social risks and impacts of subprojects whose designs and specific locations cannot be identified at appraisal.

1.2 Project Description

The Government of Nepal is preparing the BBIN MPA Regional Transport and Trade Facilitation Program – Phase 1 (BBIN 1) for World Bank financing. The project has the following components:

Component 1: Digital Systems for Trade. This component will support the adoption and Implementation of Digital and Automated Systems for the improvement of Nepal's cross-border clearances. The new systems will provide Nepal with an efficient cross-border data-sharing tool, reduced touch points and human interface, enhanced transparency and faster border clearance times. They will also contribute to a greener infrastructure development, including decreased GHG emissions, by reducing the use of materials, truck idling, and travel of government officials and traders. Specifically, it will support: (a) Development of an electronic Automated Border Management System, including electronic cargo tracking system (ABMS) to provide the GoN with a multi-agency electronic platform for enhanced administrative and operational processes of all Inland Container Depots in Nepal, (b) Development of a Business Intelligence and Data Analytics Package to (i) improve statistical monitoring of revenue and trade facilitation performance, (ii) reporting of trade data and (iii) to develop a risk engine to carry out risk analysis, risk-based valuation and risk-based selectivity for Post-Clearance Audit. (c) Development of a web-based supply MIS for automation of registration processes and permits.

The civil works under this component are expected to be small-scale and mainly include necessary foundation and land development for installation of the digital systems. The locations of related facilities are yet to be defined.

Component 2: Green and Resilient Transport and Trade Infrastructure will support the development of appropriate transport infrastructure along Nepal's primary domestic and international trade corridor connecting Nepal with the other BBIN countries, i.e., the East West Highway (EWH). Specifically, it will finance This component will support (a) Upgrading of Butwal-Gorusinghe-Chanauta section of the East-West Highway from 2 to 4 lanes, (b) Construction of a green resilient urban bridge (including detailed design/urban design and construction), (c) Support for development and implementation of Green Resilient Highway Concept and Strategy, integrating transportation functionality and ecological sustainability, and may support .

The main objective of the project and in particular this component, is to provide more cost-efficient and resilient trade and transport. The Butwal – Gorusinghe – Chanauta section will be designed accordingly.

Butwal - Gorusinghe is a 50 km road section of the East-West Highway located in the Terai region of Lumbini province. The road will be widened from 2 lanes to 4 lanes with safe and climate resilient design features. The feasibility study for this road section is completed. An Environmental and Social Impact Assessment (ESIA) and a Resettlement Action Plan (RAP) are being prepared for this section.

Gorusinghe- Chanauta is a 20 km-long road section, connected to the above Butwal – Gorusinghe road section. This road will also be upgraded from 2 lanes to 4 lanes. The feasibility study for this road section is yet to be carried out.

A four-lane green resilient urban bridge will be constructed on a river that the East-West Highway crosses. The urban bridge has the dual objective of addressing broader systemic issues, such as encroachment and vulnerability of bridges while promoting multiple benefits in their vicinities from road safety and resilience to improved land use, urban livability, local economic development, and environmental protection. The location of the green resilient urban bridge will be decided based on the ongoing feasibility studies of an existing 2-lane bridge. The bridge will integrate sensitive design and appropriate engineering with urban regeneration elements for the rescue of its riverfront area through improved land use, increased pedestrian and vehicle safety as well as green open spaces and leisure areas, and diminished air and noise pollution. River training works, upgrading of the approach roads and compensation for relocation around the bridge is also included under this sub-component.

A location map showing the Butwal to Chanauta section in Nepal is given in Figure 1.1.

The proposed activities related to the Green Resilient Highway Concept and Strategy (Component 2c) will support the development and approval of an integrated strategy, concept and action plan that balances equitable transportation functionality and ecological sustainability at the landscape level. The concept, strategy and action plan will be developed based on an in-depth risk assessment of the entire East West Highway corridor and its adjacent area beyond the right of way. The strategy and action plan will provide a road map for the implementation of demonstrative incremental interventions beyond measures financed under the ESMP, for later scaling up at country and regional levels, such as (i) providing wildlife with adequate crossing points and maintaining habitat connectivity to reduce road kills using Nepal's newly developed wildlife friendly guide for linear infrastructure; (ii) restoring watersheds for reduced erosion, enhancing drainage, river bank protection and flood control; (iii) identification of lands for incremental afforestation interventions with support of provincial ministries (e.g., using silvicultural principles, natural and artificial regeneration, and through forest awareness raising and planning); (iv) investing on wildfire management through forest fire detection and monitoring systems (e.g., use of Moderate Resolution Imaging Spectroradiometer (MODIS) data to detect, locate, characterize, and monitor forest fires); and improving slope stabilization through bioengineering and Nature-based Solutions (NbS) principles. Other considerations include the installation of fencing, speed breakers, display boards, NbS noise barriers along the corridor, and creation of a roadkill recording system, integrated land use mapping system, and riverbed scour protection.

Component 3: Institutional and Policy Strengthening for Transport and Trade. This component will provide support in streamlining for regional trade and cross-border movement of goods through (a) Bangladesh-India-Nepal Motor Vehicle Agreement implementation of priority actions, (b) Customs reform, (c) Private sector support initiatives, (d) Capacity Stengthening, and (d) Project preparation studies.

Component 4: Contingency Emergency Response will support unforeseen emergency needs. In case of a major natural or human made disaster, GoN may request the Bank to re-allocate project funds to this component to support its quick response and reconstruction. GoN may request the Bank to re-allocate project funds to this component to support its quick response and reconstruction. Disbursements under CERC are contingent to three conditions: (i) GoN has determined that an eligible crisis or emergency has occurred and the Bank has agreed and notified the government; (ii) the Ministry of Finance has prepared and adopted the Contingent Emergency Response (CER) Implementation Plan that is agreed with the Bank; and (iii) GoN, through the Project Implementing Unit, has prepared, adopted, and disclosed safeguards instruments, as per the Bank's guidelines, for the eligibility of the CER Implementation Plan's activities.

Implementation Arrangements: The Project Coordination Units (PCU) at DCID, DoR and MoICS, that are implementing the ongoing SRCTIP, will be retained and strengthened to oversee implementation of this project, and a new PCU will be established in MoFE. Component 1 will exclusively be implemented by MoICS' PCU. Sub-components 2(a) and 2(b) will be exclusively implemented by DCID's PCU. Sub-component 2(c) will be jointly implemented by MoFE and DCID's PCU. Sub-component 3(a) will be implemented by DCID's PCU. Sub-component 3(b) will be implemented by MoICS' PCU. Sub-component 3(c) will be implemented by DCID's PCU. Sub-component 3(d) will be jointly implemented

by the PCUs in DCID, MoICS and MoFE. Sub-component 3(e) will be jointly implemented by MoICS and DCID's PCU.

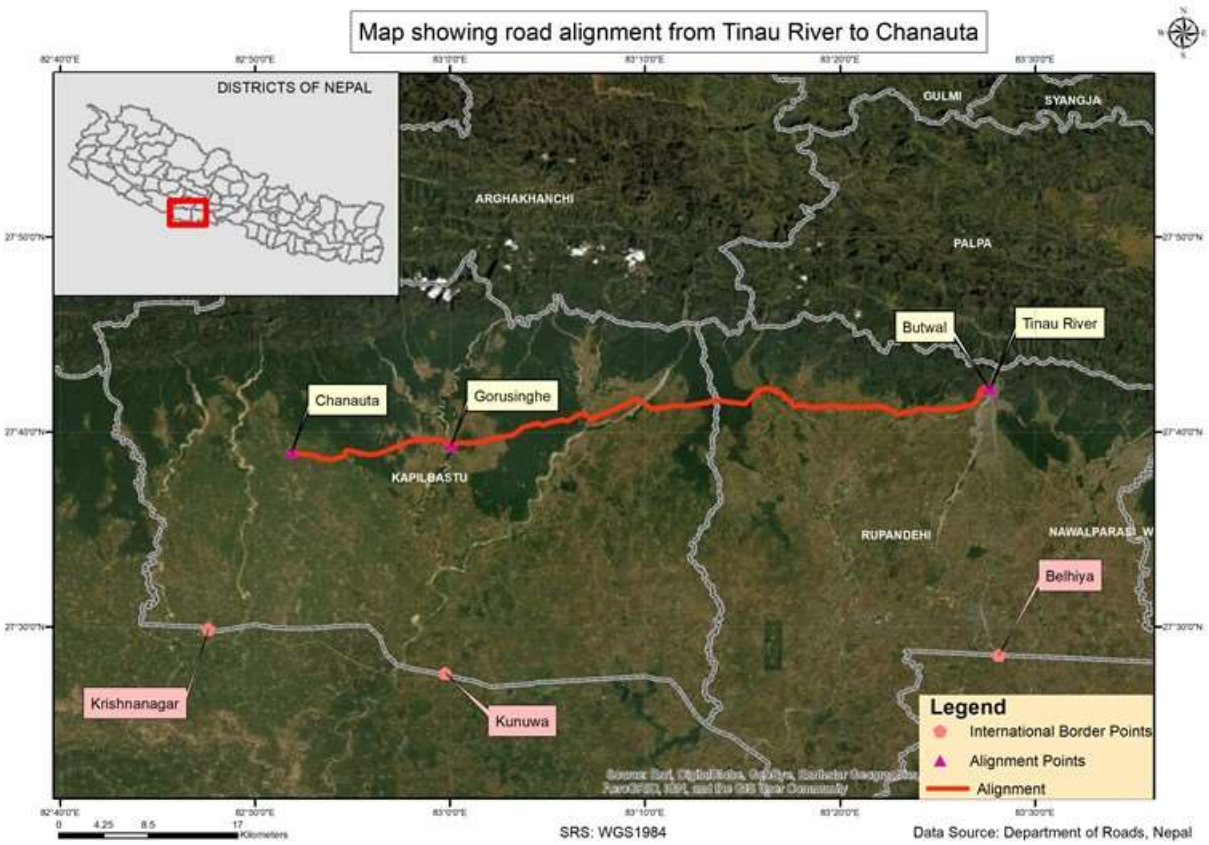

Figure 1.1: Location of Butwal – Gorusinghe- Chanauta Road Section in Nepal

1.3 Rationale and Approach for the Environmental and Social Management Framework

This Environmental and Social Management Framework report (ESMF) is prepared by the Department of Roads (DoR), with the support of MOICS and MOFE, to guide the screening and preparation of the ESIAs for Gorusinghe-Chanauta Road section, green resilient urban bridge, green resilient highway works and other minor works that will be identified during the project preparation. The ESIA for the Butwal and Gorusinghe Road has been prepared and disclosed prior to the appraisal of BBIN1.

1.3.1 Key Objectives of the ESMF

The ESMF intends to set out the principles, rules and procedures to guide the screening, assessment, management and monitoring of environmental and social risks and impacts expected from the BBIN subprojects, including East-West Highway Gorusinghe – Chanauta Road, a green resilient urban bridge construction, and green resilient highway works, such as wildlife crossings and afforestation, while, devising the opportunities to enhance the benefits. The framework integrates into a step-wise approach the most important environmental and social considerations into all stages of project preparation, implementation, monitoring and operation and is applicable to all future sub-projects funded under the BBIN1. The key objectives to be addressed in the ESMF are:

- Review GoN's existing policies, regulations, operational guidelines and institutional arrangements to address and mitigate environmental and social impacts of national roads.
- Assess the compatibility of the core principles of GoN policies with policies of the World Bank, identify gaps, and present recommendations for addressing the gaps.
- Describe the tools and procedural steps to assess the environmental and social issues for all project-related activities, and describe stepwise the corresponding management requirements in the entire project cycle.
- Prepare a screening and consultation framework for environmental and social assessment of the proposed sub-projects; this framework shall include all parties involved, particularly focusing on service providers to ensure that the E&S measures prescribed in the ESMPs are duly followed and enforced.
- Assist the Project Coordination Units (PCUs) in the preparation of IEEs, EIAs and ESIAs to be used as standard operational assessment and management models for future sub-projects becoming selected under the BBIN1.
- Prepare an exemplary matrix of mitigation measures to manage the identified impacts.
- Identify practical, feasible, credible and cost-effective measures to offset or to reduce adverse environmental and social impacts to an acceptable level, and ways to enhance positive impacts. As applicable, also address secondary, induced and cumulative impacts that may be associated with the forthcoming road and bridge construction and maintenance activities.
- Make specific reference to the public consultation process and the consultation framework, describing adequate participatory mechanisms, particularly with respect to local employment, gender issues, empowerment and local control instruments.
- Assess the institutional capacities of the DOR, MOICS and MoFE on E&S Management and recommend measures to strengthen their capacity.

1.3.2 ESMF Study Methodology

The methodology followed in preparing the present ESMF consists of the following steps:

- Review of the Project details and meeting/discussions with various stakeholders
- Reconnaissance field visits and initial scoping and screening to determine the key environmental and social parameters and aspects that are likely to be impacted by the Project activities
- Review of environmental and social issues from other ongoing projects in Nepal of similar nature, including World Bank-funded road projects
- Review of the policy and regulatory requirements
- Collection and analysis of baseline environmental and social data, with the help of secondary literature review and field data collection
- Consultations with the stakeholders, including affected communities and developing the consultation process
- Compile the present ESMF document.

1.4 Structure of the ESMF Document

This Environmental and Social Management Framework Report, following this introductory section, contains further Chapters:

- Chapter 1 is missing

- Chapter 2: Proposed Methodological Framework for BBIN-related Environmental Assessment Studies: contains details of the necessary activities carried out during various stages of the project planning, study, design and implementation. This chapter contains stepwise details on carrying out an environmental and social assessment for the subprojects, including the implementation of ESMP.
- Chapter 3: Legal Framework: Policies, Regulations and Guidelines: Review of the Legal Framework: Policies, Regulations and Guidelines of the Government of Nepal, and the World Bank Environmental and Social Framework (ESF) that bear relevance to the forthcoming BBIN project.
- Chapter 4: Baseline Environment. This section describes the baseline environmental and social features in the BBIN 1 project area.
- Chapter 5: Identification of Potential Environmental and Social Impacts in BBIN1 Subprojects: Describes in specific detail the various impacts that may occur due to the implementation of the envisaged subprojects.
- Chapter 6: Environmental and Social Management Framework: presents the measures employing mitigation hierarchy (avoid, minimize, mitigate and compensate) to manage environmental and social risks and impacts.
- Chapter 7: Stakeholder Consultation Framework: presents the specific public consultation framework that needs to be applied while carrying out the respective ESIAs for the corresponding sub-projects.
- Chapter 8: Institutional Arrangement for ESMF Implementation: contains an assessment of the institutional arrangements for the implementation of the ESMF in the BBIN 1 subprojects and measures to strengthen the capacity of these organizations.

2 Methodological Framework for Environmental and Social Assessment

This chapter describes the step-by-step process to be followed in carrying out the environmental and social assessment studies for proposed subprojects, from the screening stage to the completion stage. Procedures for preparing the Resettlement Action Plan (RAP) and Indigenous Peoples Development Plan (IPDP) are detailed in RPF and IPPF, respectively.

2.1 The sequence of Proposed Activities

The sequence of various activities to be followed during the environmental and social assessment of the proposed subprojects, from screening to the preparation of ESIAs and their implementation, are summarized in **Table 2.1**. This process explains both WB and GoN requirements and is consistent with the preparation of IEE and EIA detailed in GoN's Public Works Directives 2002. A detailed description of these activities is described in the subsequent sections. The Project Coordination Units (PCUs) under the Development Cooperation Implementation Division (DCID) of the DOR MOICS and MOFE will be responsible for implementing these activities. Within DCID, one Environmental Specialist, one Social Specialist, one Gender Specialist and one OHS specialist are already on board. Under this project, further capacity strengthening will be carried out (this is further explained in Chapter 8).

Table 2.1: Sequence of Proposed Activities for E&S Framework

Step	Activity	Description of the Activity	Timing/Status	Responsibility
1	Screening (Annex 1)	Screening of the proposed subprojects to assess the requirement of Environmental and social management instruments to be prepared (IEE or EIA for the government and ESIA/RAP/IPDP for the World Bank) for the subprojects.	After identification of the proposed subproject	PCUs will conduct a screening exercise (**Annex 1**) whenever the new projects are identified. *The screening report will be approved by the World Bank.*
2	E&S Studies – *preparation of ESIA/RAP for the World Bank and EIA or IEE for the MoFE*	Primary baseline environmental data of the project influence area (covering physical, chemical, biological and socioeconomic environment) will be collected Prepare Scoping Report and ToRs for subprojects that require EIAs (for the government) Census surveys of the affected households Assessment of impacts and their significance, and development of mitigation measures Preparation of ESIAs/RAPs/IPDPs for the World Bank, and IEE or EIA for the government	During Feasibility and Engineering Design Studies	PCUs with the support of E&S Consultants and GESU

Step	Activity	Description of the Activity	Timing/Status	Responsibility
3	Consultations and Disclosure	Consultations with the stakeholders (including affected communities) prior to E&S studies and after completion of draft ESIA/IEE/EIA and RAP. Disclosure of the ESIA and RAP (including translated summaries) on DOR and MOICS websites	During E&S studies After completion of draft ESIA and RAP	PCUs with the support of ESIA Consultants
4	Submission of E&S documents for World Bank and Government Clearance	Submission of ESIA and RAP to the World Bank Submission of IEEs for the MOPIT/MOICS approval Submission of EIAs for the MOFE Approval	After Completion of ESIA/ESMP – Prior to construction	PCUs with support from GESU
5	Environmental and social specifications for Bidding Documents	Preparation of environmental and social specifications for bidding documents, including preparation of BOQs and inclusion of ESMP in the bidding documents.	Prior to bidding	E&S Staff of PCUs will review and approve the bidding documents.
6	Implementation of ESMP	Contractors will develop site-specific construction-ESMPs and OHS Plans and will implement them Regular monitoring and reporting of compliance by the Construction supervision consultants and E&S staff of the PCUs.	During Construction	E&S staff of all PCUs will review and approve the C-ESMPs and OHS Plans. ESHS Staff of Contractor will implement the plans. E&S staff of PCUs will supervise the implementation of these plans
7	Compliance Monitoring and Reporting	Preparation of regular monitoring reports on the performance of ESMP implementation of the subprojects	During Construction	Monthly by Contractors and Quarterly by PCUs
8	Post Construction Auditing	Post-construction audits of the projects whose EIAs were approved by MOFE.	Two years after completion of construction	MOFE

2.2 Step 1: Screening

For subprojects that are yet to be identified, a screening exercise will be carried out once they are identified through a reconnaissance site visit. The purpose of this visit will be to initiate the environmental and social assessment of the project, to assess the baseline conditions of the area, to identify the key environmental resources and social features of the area, to identify any environmental and or social sensitivity of the area, and to determine the presence of any environmental and or social hotspots in the area. A checklist (a separate checklist for roads, bridges, land ports and forest related

activities are given in **Annex 1**) will be filled by PCUs for subprojects based upon the findings and observations of the reconnaissance visit. The outcome of the screening exercise is whether the proposed subprojects would need detailed ESIAs or ESMPs for the World Bank clearance and Environmental Impact Assessments (EIAs) or Initial Environmental Examinations (IEEs) for the government clearance.

For the World Bank requirements, the categorization of the subprojects and identification of relevant E&S instruments to be developed will be based on the E&S risk-categorization of the subprojects (e.g. high, substantial, moderate and low). On the other hand, the categorization of subprojects is in accordance with the government requirements (Schedule 1, 2 & 3 of Rule-3 of Environmental Protection Regulations 2020) and will be based on the type and size/threshold of the subprojects. For example, road projects less than 50 km length require IEE and road projects more than 50 km length require EIA. For the development of land ports, IEE is required if the proposed area for development is larger than 5 ha. The subprojects will develop two separate documents, one for the World Bank and one for the government. The key differences between World Bank ESF and national regulations in carrying out the environmental assessments are further elaborated in Chapter 3.

The screening reports will be shared with the World Bank. Tentative categorization of the subprojects and required E&S documentation are given in **Table 2.2**. However, it will be confirmed after the completion of the screening exercise.

Table 2.2: Potential Categories of Subprojects and E&S Requirements

	Potential Subprojects	**Potential E&S Risk Classification**	**Required E&S Documentation for the World Bank** **(to be confirmed after screening)**	**Required E&S Documentation for the government**
1	Upgrading of Butwal-Gorusinghe section of East-West Highway from 2 to 4 lanes (50 km-long highway)	Substantial	ESIA and RAP have been prepared for this subproject	IEE will be prepared for the Government
2	Upgrading of Gorusinghe-Chanauta section of East-West Highway from 2 to 4 lanes (about 20 km)	Moderate to substantial	ESIA and RAP for the World Bank	IEE for the Government
3	Construction of a green resilient urban bridge	Moderate to Substantial	ESIA and RAP for the World Bank	IEE for the Government
4	Forest related activities	Moderate to substantial	ESIA and RAP for the World Bank	IEE for the Government

The Project will exclude the following activities

- The activities that are screened as 'high' risk based on the E&S Screening exercise carried out through Annexes 1.1 to 1.4.
- Forest developments within any national parks and protected areas that damage any critical aquatic and terrestrial habitat areas

- Forest activities that involve land acquisition, involuntary resettlement, logging and use of banned pesticides

2.3 Activities that require obtaining FPIC from IPs.Step 2: E&S Studies

2.3.1 Baseline Data Collection

Project influence area for each subproject will be identified, covering areas likely to be directly or indirectly affected by construction and operation and associated facilities; areas that will be subjected to impacts from unplanned but predictable developments caused by the subproject, and areas that will be subjected to cumulative impacts that result from the subproject in conjunction with the other activities in its area of influence.

Baseline environmental data of the project influence area (covering physical, chemical, biological, and socioeconomic environment) will be collected from secondary literature and primary data collection/survey. Primary data collection will be carried out for assessment of wildlife habitats, forests and other ecological conditions in the project influence area, ambient air and noise quality, and surface water and groundwater quality. Primary surveys will also be carried out to establish the baseline socioeconomic conditions of the communities in the Project area.

2.3.2 Scoping Report and ToR for EIA

This step is required for government clearance for the subprojects that require EIAs. A scoping report, based on the above baseline studies and a ToR for the proposed EIA study, will need to be submitted to the Ministry of Forests and Environment (MOFE).

The scoping exercise will be based on a rapid site reconnaissance survey conducted by professional E&S practitioners. Scoping exercise for EIA/ESIA involves the presentation of more detailed background data and a comprehensive Public Consultation and notification process that should also include a workshop to be held at that stage. Following the Scoping, the project will submit the Terms of Reference for the EIA to MoFE. The results of the scoping provide an opportunity for project Proponents, Consultants, relevant authorities and interested and affected parties to exchange information and express their views and concerns regarding a proposal before an EIA/ESIA is undertaken. The scoping will focus on feasible and cost-effective alternatives for the proposed subprojects and identify means to ensure that the resulting EIA/ESIA is useful to decision-makers and addresses the concerns of interested and affected parties, as well as facilitate an efficient EIA/ESIA process that saves time and resources while reducing the risk of costly delays.

Based on the information disseminated and the response of stakeholders, the proponent will prepare a Scoping Document that presents, in an overview manner, the major issues of public concern, evaluate the significance of issues on the basis of available information, establish priorities for environmental and Social assessment, develop a strategy for addressing priority issues, and prepare a plan for public involvement, and prepare Scoping Document. A table of content of such Scoping Document for a typical road project EIA is given in Annex 2. Note that the format is prescribed by EPR 1997. Documents deviating from this standard format are likely to be rejected by the reviewing agencies

2.3.3 Impact Assessment

Based on the initial assessment, potential impacts and risks of the proposed projects have been identified and presented in **Chapter 5**.

Detailed characterization and assessment of these impacts will be carried out in the respective subproject-specific ESIA and IEE/EIA. In addition, the impacts of the proposed subprojects on the environmental and social components will be identified through consultation with experts and the local community. The impacts will be analyzed and graded qualitatively in order to identify the major impacts. Potential impacts will be predicted using the professional judgment of the multi-disciplinary team members based on baseline information collected and any modelling studies if required. The impact assessment will also consider both cumulative and induced impacts of the subprojects.

2.3.4 Environmental and Social Management Plan

An Environmental and Social Management Plan (ESMP) documents the findings of all potential risks and impacts identified during the environmental impact assessment study and is provisioned for complying with the country's legal requirements and the Standards. The purpose of the ESMP is to ensure that social and environmental impacts, risks and liabilities identified during the ESIA process are effectively managed during the entire project lifecycle, including pre-construction, construction, operation and closure of the proposed project, duly quantifying the mitigation measures against each impact and incorporating in the Bill of Quantities (BoQ) supporting with the E&S specifications. It also consists of institutional arrangements, identifying the roles and responsibilities of institutions and involved (contractual) parties to carry out the ESMP management activities and measures and define the location of verification of the prescribed measures to be taken during implementation and operation to eliminate adverse environmental impacts, offset them, or reduce them to acceptable levels. A sample mitigation plan, as a guideline, is prepared and presented in **Table 2.3** to address the impacts during construction and operation stages. Based on these guidelines, a detailed ESMP will be prepared as part of the subproject ESIA and IEE/EIA.

Table 2.3: Sample Mitigation Plan

Impacts and Risk	Mitigation Measures	Responsible Agency for Implementation	Responsible Agency for Supervision
Preconstruction Stage			
Erosion or mass wasting resulted from site preparation, Landscape aesthetic, Slope Destabilization and Soil Erosion	• Implementation of Bioengineering and retaining structures and slope protection works and weep holes to maintain sub-surface drainages etc. • Planning the works and not undertaking it during the rainy season. • Develop a spoil disposal management plan and stockpiling plan to minimize the impact during construction and rehabilitate landscape after construction as per above mentioned plan. • Construction of check dams, silt traps, gabions on existing natural drainages.	PCUs and Construction Supervision Consultants (CSCs)	DOR, MOICS and MOFE
Forest fragmentation/degradation due to tree felling	• Compensatory plantation (1:10 as per GoN's requirement) for each felled tree; selection of native trees, establishment of nurseries etc.	PCUs, CSCs and DFO	DOR, MOICS and MOFE
Increased mortality of wildlife and prevention of movement/migration	• Minimization of project footprint in the wildlife habitat • Plan the wildlife crossing based on environmental impact assessment	PCUs and CSCs	DOR, MOICS and MOFE
Loss of private land and structures	• Prepare and implement a Resettlement Action Plan (RAP) in accordance with national legislation and World Bank ESS 5	PCUs and CSCs	DOR, MOICS and MOFE
Project Affected vulnerable HHs	• Prepare and implement Social Management Plans, e.g. community development plans as part of ESMPs	PCUs and CSCs	DOR, MOICS and MOFE

Impacts and Risk	Mitigation Measures	Responsible Agency for Implementation	Responsible Agency for Supervision
	• Undertake relocation, rehabilitation and livelihood restoration measures as part of RAPs. • Provide livelihood restoration training and additional support to such project affected vulnerable HHs, including the women of project affected HHs as part of RAPs.		
IP communities in project area	• Prepare and implement an IPDP in accordance with ESS 7 and IPPF.	PCUs and CSCs	DOR,MOICS and MOFE
Loss of Community /Public Infrastructures	• Relocation, rehabilitation and restoration according to the RAP. • Relocation of electric poles, water supply pipes, irrigation canals etc.	PCUs and CSCs	DOR,MOICS and MOFE
Construction Stage			
Greenhouse Gas (GHG) Emission reduction	• Require use of fuel efficient machinery and equipment in the bidding documents and contractors contract. • Arboriculture along the alignment for carbon sequestration • Compensatory plantation (1:10 as per GoN's requirement)	Contractors	PCUs and CSCs
Air, Noise and vibration impact	• Develop an Air and Noise Quality Management Plan to minimize vehicle emissions, manage fugitive dust, noise and vibration, especially in proximity of community places. • Barricade of construction area • Dust masks available to labour workers, sprinkling of water along the dusty road during road excavation on a regular basis as per the requirement. • Manage and avoid direct disposal of effluent from batching plant.	Contractors	PCUs and CSCs
Solid waste management	• Develop a Solid Waste Management Plan to manage solid wastes during road construction and operations. Ensure appropriate disposal sites for muck and rock cuttings as well as proper management of solid and hazardous waste.	Contractors	PCUs and CSCs
Impact due to Quarrying of construction materials	• Only licensed quarries will be used by the contractors. • Quarrying will be carried out on dry river beds and during low flow (non-monsoon) season • All contractors will be required to submit their Construction Materials Sourcing Plans to the PCU, CSC and the World Bank for prior approval before carrying out material extraction. No material extraction will be done by any of the Contractors until the Materials Sourcing Plan is approved by the PCU, CSC and the World Bank. • The PCU and CSC will regularly monitor material extraction to ensure proper implementation of the Materials Sourcing Plans. • Implementation of compensatory plantation program in coordination with the District Forest Office, respective Rural Municipalities/Municipalities and Community Forest Users Groups.	Contractors	PCUs and CSCs

Impacts and Risk	Mitigation Measures	Responsible Agency for Implementation	Responsible Agency for Supervision
Disturbance and poaching of wildlife	• Instructions and orientation to workers; • Enforcement and control of Anti-poaching code of conduct and regulations; • Awareness campaigns; Planning of rural development	Contractors	PCUs and CSCs
Working conditions & Worker accommodations of Construction Workforce	• Compliance with GoN's labour law, rules & regulation and WB ESS 2 • Implementation of Labour Management Procedure (LMP). • Establish GRM for workers. • Provide workers transportation to and from the project sites. • Implement "Zero harm" policy at the project sites. • Adopt safety measures for workers like shinning jackets (aprons), boots, gloves, helmets etc.	Contractors	PCUs and CSCs
Child and Forced Labour	• Provision in the contract document, prohibiting child labour in compliance with the GoN's Act related to Children (2075), • Labour Management Procedure (LMP) • Information dissemination on avoidance of child and forced labour	Contractors	PCUs and CSCs
Potential hazards caused by bitumen and other toxic chemicals	• Develop a Hazardous Materials Management Plan to manage hazardous material use, storage, transport, and disposal. • Handling chemicals properly. Storage of chemicals 100 meters away from any water sources.	Contractors	PCUs and CSCs
Pollution of water resources	• Develop a Water Quality Management Plan. • Proper drainage structures, construction of Soak pit or retention lagoon before discharging wastewater into the main water body, management of garbage and debris. • Awareness to local communities and construction workers	Contractors	PCUs and CSCs
Community Health & Safety	• Community awareness and sensitization with emphasis to women and young girls. • Promote health seeking behaviors. • Identify areas along the access road prone to landslides and provide appropriate engineering controls. • Adopt Workers' Code of Conduct to interact with local communities. • Adopt a GRM to document and resolve project-related complaints. • Strengthening and collaboration with the local health facility and onsite primary health care facility or surveillances • Waste management plan. • Construction of road crossings and other road infrastructures on the principle of universal access.	Contractors	PCUs and CSCs
Construction-induced impacts to nearby structures	• Baseline survey of the structures by the contractors before the construction started • Create awareness on accessing project level GRM • If damage complaints are received, CSC will investigate and measure the damage. CSC will verify	Contractors	PCUs and CSCs

Impacts and Risk	Mitigation Measures	Responsible Agency for Implementation	Responsible Agency for Supervision
	the implementation of measures implemented by the contractors • Contractors will implement the measures proposed by the CSC		
Occupational Health and Safety	• Include a provision in the contract requiring H&S Plan, Operational guidelines, appropriate staffing, and reporting requirements • Enhance capacity of workers and stakeholders, including local health institutions. • Training of managers and responsible personnel • Emergency Management Plan • Incident/Accident Reporting Mechanism to be established and operationalized • Communicable disease outbreak notification and management plan • OHS monitoring, inspection and performance audit plan.	Contractors	PCUs and CSCs
Impact on tangible and intangible heritage	• Assessment of ESS-8 during field studies confirmed that no tangible/ intangible archeologically important heritage will be impacted. In case of chance finding, the procedure will be followed. • Establishment of chance find procedure as part of ESMP	Contractors	PCUs, Dept. of Archaeology
Operation Phase			
Cumulative Impacts	• Coordinated planning of regional & local development and land use • Implementation 0f Afforestation/ecological restoration programmes • Long term ecological monitoring and survey • Coordinated and collaborative development projects • Cooperation and information dissemination among interested stakeholders about climate change • Stakeholder engagement in accordance with SEP • Implementation of wildlife-friendly roads across DoR portfolio	PCUs with the support of local government and divisional forests	DOR, MOFE
Traffic Safety During Operation	• Road safety audits were conducted along the projects road during the feasibility stage and during the detailed design stage and detailed design of project road improvements integrates the findings and recommendations of the road safety audits undertaken in multiple stages. • Road safety measures will also be undertaken post completion works. • Speed control and regulations (especially in populated areas, near schools and other public places). • Road crossing infrastructures incorporating the principle of universal access. • Establishment of traffic signals, GPS tracking and surveillance cameras for speed control for vehicles plying the highway. • Vehicle maintenance and inspection. • Installation of “No Horn” signages • Establishment of Sick Bays for vehicles	DCID-DoR, Local Youth clubs, mother groups, Traffic Police	DOR

Impacts and Risk	Mitigation Measures	Responsible Agency for Implementation	Responsible Agency for Supervision
	• Training of first-aid services in the case of an accident. • Road safety awareness trainings to general public. • Capacity enhancement to traffic police, adjoining local community and road users.		
Exclusion of vulnerable and disadvantaged groups from benefits	• Public awareness, work with local municipalities and governments, facilitating access to benefits • Mitigation measures prescribed in Indigenous People's Development Plan (IPDP) and ESMP • Enagment with the stakeholders and communities, and disclosure activities in accordance with SEP	DCID-DoR and port operators	DOR, MOICS amd MOFE
Noise pollution: The increased number of heavy vehicles plying on the Highway and the increased commercial and industrial activities	• Implementation of No Horn Zones, particularly in settlement areas • Installation of Signages • Monitoring noise level maintained at national standard • Arboriculture along the RoW as noise absorbers	DCID-DoR, port operators, Traffic Police	DOR and MOICS
SEA and SH	• Community sensitization and awareness raisisng. • Socioeconomic development of women. • Orientation to labour force on SEA/SH issues. • Code and conduct to guide the workers on proper interactions with communities. • Orientation of Supervision Consultant and Contractors on SEA/SH • Mapping of GBV service providers for prevention and response. • Develop and implement a SEA/SH Action Plan. • Establishing a SEA/SH sensitive GRM.	DCID-DoR, port operators, Local Youth clubs, mother groups, Police, Chief District Officers	DOR and MOICS

Note: The above table is adapted from ESIA of World Bank funded Strategic Road Connectivity and Trade Improvement Project (SRCTIP) - Improvement of Naghdhunga-Naubise-Mugling (NNM) Road

2.3.5 Environmental Monitoring

An environmental monitoring plan will also be prepared in the ESMP to monitor the effectiveness of the mitigation measures and compliance with the environmental standards. A sample environmental monitoring plan is given in **Table 2.4**.

Table 2.4: Sample Monitoring Plan

E&S components	Monitoring parameters	Monitoring Agency	Timeline
Physical Environment			
Air quality	Ambient air quality: TSP and PM_{10}	PCUs/CSCs	Baseline information during preconstruction stage and during construction stage once every month
Water quality	Turbidity, Conductivity, pH and Colour will be conducted at the site with the help of portable kits, effluents from construction camps /sites/ waste from batching plants etc.	PCUs/CSCs	Baseline information during preconstruction stage of nearby water bodies and during construction stage once every month
Noise	Noise level at regular interval: assessment and interpretation for L_{max}, L_{min}, L_{eq}, L_5, L_{10}, L_{50}, L_{90} and L_{95} parameters.	PCUs/CSCs	Baseline information during preconstruction stage and

E&S components	Monitoring parameters	Monitoring Agency	Timeline
			during construction stage once every month
Spoil/Muck/ disposal	Disposal of Spoil/Muck at designated sites	PCUs/CSCs	Daily during the construction stage
Stockpiling of construction Materials	Stockpiling of construction materials at designated sites Covering of Stockpiles with tarpaulin sheets	PCUs/CSCs	Daily during the construction stage
Slope stability	Presence of landslides, gully formations due to runoff	PCUs/CSCs	Daily during the construction stage
Operation of Borrow pits/ Quarry sites/ Stone crushing plants	Quantity of extracted material, restoration of borrow pit areas, Grievance Redressal of the locals	PCUs/CSCs	Daily during the construction stage
Extraction of river bed materials	Distance of extraction sites from the river banks (5-10 m) Depth of the ditch for excavation (1m)	PCUs/CSCs	Daily during the construction stage
Obstruction of drainage	Roadside drainage discharge, water impounding area during rain, waterlogging	PCUs/CSCs	Daily during the construction stage
Hazardous wastes, bitumen/asphalt	List of chemicals, storage, and handling practice. Records of accident/ spillage of chemicals, surface and groundwater contamination	PCUs/CSCs	Daily during the construction stage
Biological Environment			
Number of felled trees	Statistics of removed and planted trees, nurseries and plantations	PCUs/CSCs, Divisional Forest Office (DFO)	During the time of tree felling on a daily basis
Compensatory Plantation	Compliance with compensatory plantation plan	PCUs/CSCs, Divisional Forest Office (DFO)	Plantation time during monsoon (before and after carrying out the plantation)
Wildlife	Identification of flora and fauna with ecological importance identified in the project area, road kill	PCUs/CSCs	Daily during the construction stage
Fire-hazard	Project management checklists, site monitoring, fire-extinguishers in labour camps	PCUs/CSCs	Daily during the construction stage
Social Environment			
Community Health and safety	Nuisance to adjoining communities from the construction related works, grievances due to annoyance from the construction related works.	PCUs/CSCs	Daily during the construction stage
Establishment of camps	Compliance with Camp management plan of Contractor	PCUs/CSCs	Daily during the construction stage
Property/land acquisition/compensation and rehabilitation	Implementation of compensation and rehabilitation measures provided by the RAP, including compliance with construction-induced impact procedures	PCUs/CSCs	During the preconstruction and construction stage
Indigenous Peoples	Compliance with IPDP	PCUs/CSCs	Daily during the construction stage
Safety of workers	Accident Group Insurance of Workers, provision of personal protective equipment/ Use of ear muffs and other	PCUs/CSCs	Daily during the construction stage

E&S components	Monitoring parameters	Monitoring Agency	Timeline
	personal protective equipment by the workers		
Road safety	Traffic Signals, no horn signs, road signals and markings, speed control and GPS-tracking	PCUs/CSCs	Daily during the construction stage
Grievance Redressal	Management of Grievance Redress Mechanism	PCUs/CSCs	During the construction stage
Traffic Management	Compliance with Traffic Management Plan	PCUs/CSCs, Traffic Police, Respective Chief District Officers	Daily during the construction stage
Gender-based violence and human trafficking	Compliance with SEA/SH action plan, adhererance to labor CoCs, SEA/SH related grivences reveived by the GRM	PCUs/CSCs	Daily during the construction stage
Stakeholder engagement	Compliance with SEP	PCUs/CSCs	During the preconstruction and construction stage

Note: The above table is adapted from ESIA of World Bank funded Strategic Road Connectivity and Trade Improvement Project (SRCTIP) - Improvement of Naghdhunga-Naubise-Mugling (NNM) Road

2.4 Step 3: Stakeholder Consultations and Information Disclosure

Stakeholder consultation will be carried out to help identify opportunities and risks, improve subproject design and implementation, and increase subproject ownership and sustainability. Stakeholder consultations will be carried out at two stages. The first-stage stakeholder consultations will be carried out during the scoping stage and preparation of the environmental and social instruments to obtain stakeholder feedback and address their concerns. The second stage consultations will be carried out after the preparation of the draft ESIA/EIA to share the outcome of the ESIA study and to obtain and incorporate public feedback in the draft ESIA/EIA report.

The Proponent (DoR/MOICS) shall inform the local governments at the village, ward, municipal, and district level, non-governmental organizations, potential project-affected households, local communities and other important stakeholders about the proposed project and its impacts through a 15-day notice to be published in a national daily newspaper and notified at Village Development Committee (VDC)/Municipality, District Cooperation Committee school, hospital/health post. Comments and suggestions received through such notice need to be included in the IEE/EIA report.

The ESIA/EIA/IEE and RAP of each subproject will be disclosed on the DOR/MOICS website and on the World Bank website. The Executive summary of the ESIAs, EIAs, SEP, and RAPs will be translated into Nepali and will be disclosed on the DOR/MOIC website.

2.5 Step 4: Submission of E&S Instruments for World Bank and Government Clearance

For government clearance and approval, IEE or EIA documents will be prepared by PCUs with support from GESU consistent with the standard formats (see Annex 2) provided in Schedule 5 of EPR 1997. For IEEs prepared for DOR subprojects, the Ministry of Physical Infrastructure and Transport (MoPIT) is the Concerned Agency as per EPR and is authorized to review and approve the IEE Report. For trade facilitation subprojects, the Ministry of Industry, Commerce and Supplies (MOICS) is authorized to review and approve the IEE Report. The MoPIT/MOICS has the mandate to approve/reject within 21 days of submission. In case the IEE recommends further EIA/ESIA study to be undertaken, the proponent has to carry out the EIA, which comes under the jurisdiction of MoFE. The approval process

for EIA reports is six weeks. For the green resilient highway works, MOFE will develop and approve the IEE or EIAs.

For World Bank clearance and approval, an ESIA will be prepared using the template provided in Annex 2 before initiating any construction works. In addition, as required, RAPs and IPDPs will also be prepared for the subprojects consistent with the guidelines provided in RPF and IPPF.

2.6 Step 5: Environmental and Social Requirements in Bidding Documents

PCUs (and their Engineering Consultants) will include the following Environmental, Social, Health and Safety (ESHS) Conditions in the bidding documents to ensure all the mitigation measures proposed in the ESMPs are effectively implemented:

- Past performance of the Contractor on ESHS aspects including sexual exploitation and abuse and gender-based violence;
- ESHS Staff with the Contractor;
- ESHS Performance Security;
- Mitigation measures to address construction impacts (which will be prepared based on Table 2.3);
- Payments for implementation of ESHS measures;
- Code of conduct of Contractor's Personnel;
- Management Strategies and Implementation Plans (MSIP) to manage the ESHS Risks.

Each of the above conditions is elaborated in **Table 2.5**.

Table 2.5: ESHS Conditions in the Bidding Documents

Condition	The rationale for the inclusion of this Condition in the Contract	Specifications to be included in the Bidding Documents	Responsibility	
			Bidders	PCU
1. Past performance of the Contractor on ESHS is one of the eligibility criteria for the shortlisting process	The Contractor's past performance on compliance with ESHS is an indicator of the Contractor's commitment and capability for implementation of the ESMP	The Bidder shall "declare any civil work contracts that have been suspended or terminated and/or performance security called by an employer for reasons related to the non-compliance of any environmental, or social (including sexual exploitation and abuse (SEA) and gender-based violence (GBV) or health or safety requirements or safeguard in the past five years".	Bidder to make the Declaration	PCUs use this information to seek further information or clarifications in carrying out their due diligence
2. Contractor shall propose adequate ESHS Specialists in his team (Environmental Specialist, OHS specialist, Social specialist, site supervisors)	The Contractor's staff should include adequate ESHS specialists who are responsible for the implementation of all mitigation measures on ESHS risks and compliance with ESMP	The Bidder shall propose an Environmental, Social, Health and Safety (ESHS) Specialist as the Contractor's Key Personnel at the Site. The Bidder shall provide details of the proposed ESHS specialist, including academic qualifications and work experience. The ESHS Specialist should have a minimum bachelor's	The bidder to submit the CV of the proposed ESHS Specialist	PCUs will review and approve

Condition	The rationale for the inclusion of this Condition in the Contract	Specifications to be included in the Bidding Documents	Responsibility	
			Bidders	PCU
		degree in engineering or a master's degree in sciences related to environmental management. The Specialist should have 5 years of experience working on monitoring and managing ESHS risks related to infrastructure projects.		
3. Contractor shall submit ESHS Performance Security for compliance with ESHS obligations	The Contractor should have a financial implication if he could not comply with ESHS requirements. Hence performance security will be collected from the Contractor	The Bidder shall submit the ESHS Performance Security in the form of a "demand guarantee" in the amount of three percent (1-3%) of the Contract Amount.	The bidder will submit a Performance Security	
4. Implement Mitigation Measures to Address Construction-Related Impacts given in ESMP	The mitigation measures to address potential ESHS risks and impacts should be included in the bidding documents. The Contractor shall be made responsible for the implementation of the mitigation measures through the necessary conditions in the contract.	PCUs will ensure the ESMP in the General Specifications of the Bidding Document, and the reference to this document will be provided in the Conditions of the Contract as follows: • The Contractor shall implement the mitigation and monitoring measures given in the ESMP to address ESHS risks associated with the construction works. The Consultant shall refer to the ESIA of the Project, which is available on the PCMU website, for further guidance. • The Contractor shall comply with the World Bank Group's General Environmental Health and Safety Guidelines, and applicable sector specific guidelines		PCUs will include this condition in the bidding document
5. Payments for implementation of ESHS Mitigation and Monitoring Measures	BOQs on ESHS implementation are included in the Bidding Documents	A lumpsum budget will be allotted for the preparation and implementation of C-ESMP (including OHS plans), environmental monitoring, etc.	Bidder will quote for the ESHS Management	
6. Code of Conduct for Contractor's Personnel	All workers hired by the Contractor should sign a code of conduct to ensure compliance with	The Bidder shall submit the Code of Conduct that will apply to the Contractor's employees and subcontractors. The Code of Conduct will state that the	Bidder shall submit code of Conduct with the bid documents	

Condition	The rationale for the inclusion of this Condition in the Contract	Specifications to be included in the Bidding Documents	Responsibility	
			Bidders	PCU
	ESHS obligations of the Contract	workers will comply with the following ESHS requirements: • Wearing of Personal Protective Equipment (PPE's) in the workplace at all times • Non-discrimination in dealing with the local community by race, ethnicity, gender, religion, disability, sexual orientation, gender identity, social, or health status • Respectful attitude while interacting with the local community • Prohibit sexual harassment particularly towards women and children • Prohibit violence, including sexual and/ or gender-based violence • Respecting the reasonable work instructions • Protection and Proposer use of the property The suitability of the Code of Conduct can be assessed and discussed as part of the Bid/Proposal evaluation and negotiations The successful bidder is required to implement the agreed code of conduct upon contract award		
7. Contractor's Management Strategies and Implementation Plans (MSIP) to manage the ESHS Risk	The Contractor proposal should include his understanding of the ESHS requirements of the project and the proposed strategies to manage the ESHS risks	The Bidder shall submit Management Strategies and Implementation Plans (MSIP) to manage the following key ESHS risks: • Strategy for the protection of workers and community from the construction-related hazards inside the terminal • Borrow area management and restoration plan • Construction Material Sourcing Plan • Pollution prevention (wastewater, air and noise	The bidder will submit MSIP along with the Bid Documents	

Condition	The rationale for the inclusion of this Condition in the Contract	Specifications to be included in the Bidding Documents	Responsibility	
			Bidders	PCU
		emissions) and management • A waste management plan for proper collection and disposal of waste • Traffic management plan to ensure the safety of local communities from construction traffic • Hazardous material management plan safe storage and handling • Strategy to address labor influx impacts on the local communities • Gender-based violence and sexual exploitation and abuse prevention and response action plan • Emergency response plan and early warning system The Contractor shall be subsequently required to submit (before mobilization) the Contractor's Environment and Social Management Plan (C-ESMP) by the above strategies and Condition 4 of this Table.		

2.7 Step 6: Implementation of ESMPs of Subprojects

The steps to be followed during the construction stage of subprojects for effective implementation of ESMP are described in this section.

2.7.1 Contractor's Construction Environmental Action Plan and Occupational Health and Safety Plan

As a requirement under the bidding documents, the Contractors will need to submit a Construction Environmental and Social Management Plan (C-ESMP) and Occupational Health and Safety Plan (OHS Plan) prior to their mobilization for PCU approval. The C-ESMP will consist of the following site-specific management plans that will be prepared in compliance with the requirements of the bidding documents, ESMP and World Bank EHS guidelines:

- Borrow area management plan
- Waste management plan
- Wastewater discharges management plan
- Air and noise emissions management plan
- Hazardous material management and spill control plan
- Water supply and sanitation management at the worksites and workers' accommodations

- Management of labor influx and facilities for the out station workers
- Labor recruitment procedures and labor management
- Traffic management plan
- Biodiversity action plan, if required
- Training plan for ESHS risks including HIV/AIDS, sexual exploitation and abuse/sexual harrasment, and gender-based violence
- Emergency Response Plan for the project
- Grievance Redress Mechanism
- Demobilization plan after completion of works

In addition, the Contractor will need to submit a Job Safety/Hazard Analysis at the beginning of construction works at each new site addressing the measures associated with various hazards at the work sites. These reports will be reviewed and approved by the Construction Supervision Consultants of PCUs after ensuring the mitigation measures proposed in the analysis are in place at the work sites.

2.8 Step 7: Compliance Monitoring and Reporting

The overall responsibility for ESMP implementation will rest with the PCUs. However, at the construction areas, the environmental and social staff of the Contractor are responsible for implementing the ESMP, while the environmental and social specialists of the Construction Supervision Consultant and PCUs will be responsible for the monitoring of the EMSPs throughout the Project implementation.

Compliance monitoring comprises of on-site inspection of the construction activities to verify that measures identified in the ESMP and that are included in the clauses for contractors are being implemented. This type of monitoring is similar to the normal technical supervision tasks ensuring that the Contractor is achieving the required standards and quality of work.

The following reports will be prepared on the implementation of ESMP:

- Monthly environmental and social monitoring reports by the Contractor on the status of implementation of environmental, social, health and safety aspects, and
- Quarterly environmental and social monitoring reports by the PCUs on the status of implementation of environmental, social, health and safety aspects

The topics to be covered in these reports are summarized below:

- Environmental incidents or non-compliance with contract requirements
- Health and safety incidents, accidents, injuries and all fealties that require treatments
- Inspection of Workers accommodation; Workers and community grievances
- Training conducted and their content;
- Environmental and social issues encountered and how they were mitigated and
- Compliance status on ESMP requirements

Regular training programs will be conducted throughout the project implementation on the EHS issues associated with the construction activities (further discussed in **Chapter 8**).

2.9 Step 8: Post-Construction Auditing (for EIA Subprojects Approved by MOFE)

Praxis and legal provision in Nepal require that Environmental Auditing should be carried out for all EIA approved projects two years after the project comes into operation. Information from baseline data and data on monitoring should be utilized for carrying out the Environmental Auditing. The

responsible agency for carrying out the Environmental Audit is the MoFE. The environmental auditing should gather information on the following areas:

- The condition of natural/social/economic resources prior to the project implementation and after project construction is completed;
- Whether impacts forecasted by EIA occurred and, if so, the extent of these impacts;
- Whether or not the mitigation measures implemented are effective to control adverse impacts or enhance beneficial impacts;
- Whether or not all landscape degraded due to project implementation have been restored to their original/better conditions;
- Long-lasting and residual environmental, social and economic impacts resulting from the work forces at the time of construction/ maintenance;
- The overall effect on the local economy of project implementation;
- Have land acquisition compensation and resettlement been achieved according to RAP principle, and are there any resettlement related outstanding disputes?

3 Legal, Regulatory and Administrative Framework

This chapter provides an overview of the GON legislation and the World Bank ESF that are relevant to the environmental and social assessment of the BBIN 1 Project.

3.1 Relevant Acts, Regulations and Guidelines

3.1.1 Constitution of Nepal

The constitution of Nepal, 2072 (2015) is the fundamental law of Nepal. Environmental and Social sustainability is covered explicitly in the Constitution of Nepal, 2015. Article 30 under Right to clean environment provides inter alia that every person has a right to a clean and healthy environment claiming that (1) Every citizen shall have the right to live in a clean and healthy environment; (2) The victim shall have the right to obtain compensation, in accordance with law, for any injury caused from environmental pollution or degradation; and (3) This Article shall not be deemed to prevent the making of necessary legal provisions for a proper balance between the environment and development, in development works of the nation.

Article 25 guaranteed right relating to property (2) The State shall not, except for public interest, requisition, acquire, or otherwise create any encumbrance on, property of a person. (3) The basis of compensation to be provided and procedures to be followed in the requisition by the State of property of any person for public interest in accordance with clause (2) shall be as provided for in the Act.

Article 34 of the Constitution of Nepal claims that (1) Every laborer shall have the right to fair labor practice. Explanation: For the purposes of this Article, "laborer" means a laborer or worker who does physical or mental work for an employer in consideration for remuneration; (2) Every laborer shall have the right to appropriate remuneration, facilities and contributory social security, and (3) Every laborer shall have the right to form and join trade unions and to engage in collective bargaining, in accordance with law.

3.1.2 Local Government Operation Act, 2017

The Act, 2074 (2017) requires the ward to help for protection of environment through plantation over the baren land, cliff and mountains. It has mentioned the functions, rights, and duties of Rural Municipalities (RMs), Municipalities and District Coordination Committee (DCC). The RMs is required to protect the environment, nature and natural resources. The act empowers RMs/MC/DCC to levy taxes on utilization of natural resources. Apparently, natural resources include mineral resources and thus, RMs have absolute authority over natural resources. Thus, this act empowers the local bodies for the conservation of soil, forest, and other natural resources and implements environmental conservation activities.

3.1.3 Nepal Environmental Policy (NEP), 2018(2076 BS)

Environment Policy, 2076 aims to manage natural resources efficiently and sustainably, to balance development efforts and environmental conservation to achieve sustainable development, to safeguard national heritage, to mitigate the adverse environmental impacts of development projects and human actions and to integrate concerns for the environment with development plans through appropriate institutions. It has emphasized the coordination and collaboration among three level governments, civil society, community, private sector and individuals to protect the environment. It

has also aimed to control pollution, solid waste management and promote greenery so that every citizen's right to live and clean environment will be secured.

3.2 Environmental and Natural Resources Protection

3.2.1 The Environment Protection Act, 2019 (EPA)

The act highlights that any development project, before its implementation has to pass through environmental assessment, which will be either BES, IEE or EIA depending upon the location, type and size of the projects.

The Act has included three tiers of provisions (Section 3.2.a) on conducting 'environmental study as brief environmental study (BES), IEE and EIA. The Act also provisions for carrying out (Section 9) Strategic Environmental Analysis (SEA), for the prescribed policy, programme or project. Section 4 of the Act has provisioned alternative analysis to be recommended based on with basis and reason and in the meantime, implementation of adverse impacts mitigation to be included by referring short, medium and long term plan.

The Act has provisioned to punish (Section 35) with a fine up to NRs. 5 laks-BES, 35 (1)-a, 10 laks IEE, 35(1)-b and 50 laks EIA 35(1)-c for the implementation of any proposal without approval of the BES, IEE and EIA reports or any act contrary to these approved reports.

The Act obliges the proponent to undertake IEE and EIA of proposal, plans or projects which may cause changes in existing environmental conditions and authorizes the MoFE to clear all EIA and line ministries for IEE study.

3.2.2 The Environment Protection Rule, 1997 (amendments, 2017) (EPR)

With respect to the forthcoming needs of IEE, EIA and SIA for the BBIN sub-projects, this regulatory provision bears the principal provisions for any project proponent involved in this program. EPR contains the elaborative provisions on the process to be followed during the preparation and approval of projects requiring EIA and IEE, including scoping document, terms of reference, information dissemination, public consultation and hearing, and environmental monitoring and auditing. EPR calls for the public consultation prior to the preparation of scoping document and Terms of Reference and public hearing prior to the approval of EIA Report.

The environmental laws stipulate the requirements and procedures for the approval process of the Environmental Assessment. Section 3 to 7 of the EPA, 2019 and Rule- 3 to 11 of the EPR, 1997 contain such provisions, Rule 12 of the EPR, 1997 (amendments) requires the proponent to comply with the matters mentioned in the report and other conditions, if any, prescribed by the approving agency or concerned agency, while Rule 13 and 14 are related to environmental monitoring and environmental auditing.

The environmental legislation empowers concerning Ministry to monitor the environmental activities including mitigation measures and the then MoPE (now MoFE) for environmental auditing. For IEE, the concerning Ministry, which is Ministry of Physical Infrastructure and Transport in case of the proposed Project, is authorized to approve the Final IEE Report. The EPR also lists the environmental screening through depicting the types of development activities requiring IEE or EIA Level Study. It also gives an outline of content of Terms of Reference document, IEE and EIA Report.

The preparation of Environmental Management Plan (EMP) is determined as a key part of the EIA report. The proponent is required to implement the mitigation measures, while the environmental monitoring works should be performed by the concerned agency (ministries), and auditing by the Ministry of Forest and Environment (the then MoFE in accordance with the provisions of the EPR, 1997.

The environmental law has made the public consultation a pre-requisite to all the prescribed projects to provide different stakeholders with an opportunity to raise their concerns right from the Project Scoping stage to the approval of the EIA Report. Provision of intense public participation and consultation has been made mandatory for EIA through Public consultation during Scoping and Public Hearing after Draft Report Preparation. Such participation of the related stakeholders takes place during the entire period of preparation of the EIA report. Section 18 of the EPA, 1996(now EPA, 2019) empowers the prescribed authority to close down such act immediately and impose fine up to one hundred thousand rupees in case any person implements a proposal requiring environmental assessment without any approval or carries any act in contrary to the approved proposal.

3.2.3 Soil and Watershed Conservation Act, 1982

In order to properly manage the watersheds of Nepal, the Soil and Watershed Conservation act, 1982 was enacted. Section 3 of the Act empowers the government to declare any area as a protected watershed area.

The Act outlines the essential parameters necessary for proper watershed management (including rivers and lakes).

3.2.4 Forest Act, 2019

Forest Act considers forests as “resources oriented” rather than “use oriented”. The act empowers the government to provide the parts of the forest areas to implement projects. Section 10 of the Act has provisioned that GoN can implement land use plan in any specific geographical section of the forest and Section 12 is restricted to make resettlement and rehabilitation arrangement within forest areas. Section 42 has made three provisions for using of forest areas: (i) the project should be of national priority sub-Section (1), (ii) there is no alternative other than to use the forest area sub-Section(1/2), and (iii) the project should not have significant impact on environment sub-Section (1). Moreover, it requires decision makers to take account of all forest values including environmental services and biodiversity not just the production of timber and other commodities.

Section 49 of the Act prohibits reclaiming lands, setting fires, grazing, removing or damaging forest products, felling trees or plants, wild animals hunting and extracting boulders, sand and soil from the National forest without prior approval.

3.2.5 Forest Rule, 1995

The Forest Rules 1995 (amendment, 1999) further elaborate legal measures for the conservation of forests and wildlife. Based on forest legislation, thirteen plant species are included in the level protection list. Of them, GoN has banned the felling, transportation and export of *Champ (Michelia champacta), Khayer (Acacia catechu)* and *Sal (Shorea robusta)*. The Rule also stipulates that the entire expenses for cutting and transporting the forest products in a forest area to be used by the approved project shall be borne by the proponents of the project.

3.2.6 The Aquatic Animal Protection Act, 1961

This Act indicates an early recognition of the value of wetlands and aquatic animals, Section 3 renders punishable to any party introducing poisonous, noxious or explosive materials into a water source, or destroying any dam, bridge or water system with the intent of catching or killing aquatic life. Under Section 4 of the Act, Government is empowered to prohibit the catching, killing and harming of certain kinds of aquatic animals by notification in Nepal Gazette.

3.2.7 National Parks and Wildlife Conservation Act, 1973 and Rules

The National Parks and Wildlife Conservation Act, 1973 addresses for conservation of ecologically valuable areas and indigenous wildlife. The Act prohibits any movement of a person without written permission within the parks and the reserves (Article 4). The Act further prohibits wildlife hunting, construction of houses and huts, damage to plants and animals etc., within the reserve, without the written permission of the authorized person (Article 5). The Act has also listed 26 species of mammals, 9 species of birds and 3 species of reptiles as protected wildlife (Sch.1).

3.2.8 The Buffer Zone Management Regulation, 1996

The Buffer Zone Management Regulation, 1996 has mandatory requirement to have permission of Warden to carry out the following activities within a buffer zone area:

- Occupying any land without legal ownership or cutting trees, clear forest or cultivating forestland
- Any activity damaging forest resources or setting fire in the forest
- Excavating stone, earth, sand or mine or removing minerals, earth or other such materials
- Using any harmful poison or explosive substances into the river, stream or source of water flowing in the buffer zone, and
- Hunting illegally and any act damaging to the wildlife.
- This regulation is applicable for the new road construction between Nagma and Gamgadhi, which will lead through the buffer zone of Rara Lake National Park.

3.2.9 International Legal Provisions with Likely Relevance for Road and Bridge Projects

Nepal is a signatory to many international conventions, which deal with the protection of the environment and have to some extent also bearing on road project designing. For example, the Convention on Biological Diversity was signed by Nepal at Rio de Janeiro on June 12, 1992. The convention provides a broad framework on the need for carrying out EIA to minimize adverse impacts of the projects and programs on biodiversity. Article 14 of this convention provides the provision of impact assessment and minimization of adverse impacts. In a broader sense, it calls upon the signatory parties to introduce appropriate procedures for EIA and ensure public participation, exchanges information on adverse effects on biodiversity of other states, notify immediately possibly affected other states in case of danger or damage to biodiversity and initiate action to prevent or minimize such damages.

Other legal obligations related to the following international conventions and agreements:

- The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, 1989
- The Vienna Convention for Protection of Ozone Layer, 1985
- UN Framework Convention on Climate Change, 1992
- The Agreement on the Network of Aquaculture Centres in Asia and the Pacific, 1988

- The Plant Protection Agreement for South East Asia and the Pacific (as amended), 1956,
- The Convention on International Trade in Endangered Species of Wild Fauna and Flora, (CITES), 1973
- The Ramsar Convention (Convention on Wetlands of International Importance Especially as Water Fowl Habitat), 1971
- The Convention for Protection of the World Cultural and Natural Heritage, 1972
- The UN Convention to Combat Desertification, 1994

3.3 Road Construction and Land Acquisition

3.3.1 Public Road Act (2031 BS)

The Public Road Act is the governing legislation for the construction and operation of roads in Nepal. The Act prohibits the construction of permanent structures (buildings) at a defined distance from the rural road, i.e., the road agency has the authority over everything within the right of way. The act makes provision for cases where road projects temporarily require land and/or other properties during construction, rehabilitation and maintenance. A Compensation Determination Committee (CDC) determines compensation in case of loss of assets, business or production. Provisions are also detailed for compensation for the extraction of construction materials. Article 19 of the Act mandates the requirement of permission from the Department of Roads to carry out activities within the limits of the road boundaries. As per Article 29, local government offices have to give notice to the DoR prior to the start of activities in the limits of the public roads.

The Act empowers DoR to acquire any land on a temporary basis (for storage facilities, construction camps, etc.) during road construction and upgrading. The temporary acquisition of land containing any buildings (e.g. houses, sheds, temples and schools) is avoided wherever possible. The Act also empowers DoR to "lift earth, stone or sand from any adjoining land" during construction and upgrading works.

The Act does not provide for the leasing of land. However, DoR is required to pay compensation for any damages caused to buildings, crops and trees, where the farming activity of the landowner is interrupted, and where the landowner has to incur expenses to restore the land after its return. Compensation is determined between DoR and the titleholder or through mediation involving officials from the relevant VDC and District.

The GoN may prohibit, through a notification in the Nepal Rajapatra (Government Gazette), the construction of any permanent structure (other than walls) within 6 m of the road formation edge.

3.3.2 Land Acquisition, Resettlement and Rehabilitation Policy, 2014

Land Acquisition, Resettlement and Rehabilitation Policy, 2014 was finalized in the year 2014(2071 BS) highlights compensation in 12.1 to 5 and about the risk factors in compensation from 17.1 to 4

3.3.3 Land Acquisition Act, 1977

Land Acquisition Act, 1977 (2034 BS), with an amendment in 2018 (2075 BS), guides the compulsory acquisition of land in the country. The Land Acquisition Act 1977 and the Land Acquisition Rules 1969 (2026 BS) are the two main legal instruments that specify procedural matters of land acquisition and compensation. Government can acquire land at any place in any quantity by giving compensation pursuant to the Act for the land acquired for any public purposes or for the operation of any development project initiated by government institutions (Section 2 and 3). The powers given under

these sections are very broad as the government is empowered to acquire any land in the name of public works. The Constitution of Nepal, 2015 (2072 BS) Article 25 (3) provides for compensation to be paid to the individual if the state takes land for development purposes and procedures shall be as prescribed by the Act.

With respect to the resettlement policy framework, the following legal provisions outlined in the Land Acquisition Act are relevant:

- The acquisition and compensation of privately-owned assets are undertaken according to a formal procedure, consisting of (a) initial procedures, (b) a preliminary investigation process, (c) acquisition notification, (d) compensation notification, and (e) appeal procedures.
- Compensation Determination Committees are established (at district level) to ascertain compensation rates for land and other assets.
- Compensation must be paid (a) for damages caused as a result of investigations during the preliminary investigation process, and (b) for land and assets permanently acquired by the project (including, standing crops, trees and houses).
- Compensation must take depreciation for salvage materials into account.
- Compensation must be in cash (lump sum), although titleholders who have lost all of their landholdings may be given replacement land, if available.
- Compensation will be made to the person who has the right to claim for the compensation; to be entitled to compensation for land, a person must submit an official land registration certificate at the time of compensation.
- Titleholders are required to submit compensation claims or complaints within a specified period after the land acquisition notice had been issued by the Local Authority (Chief District Officer). Compensation for land is paid after determination of rates and verification of the list of entitled applicants by the CFC.
- Two separate rates of compensation can be paid i) to titleholders who lose all their land, and ii) to titleholders who lose only some part of their land.
- In determining the compensation amount, the committee has to consider relevant periodic guidelines of GoN and the loss suffered by persons due to acquisition of land, shift of residence or place of business to another place.
- If the land has to be acquired the CFC has to consider the following in determining the compensation amount: price of the land prevailing at the time of notification of land acquisition, price of standing crops and structure, and damage incurred by persons being compelled to shift their residence or place of business due to land acquisition.
- If the land owner will not be in contact of the district administration office or concerned project office to claim the compensation amount, then the chief district officer will publish public notice to receive the amount within 3 month. If the concerned land owner will not be in contact within 3 month then that amount will be automatically deposited in the compensation reserve fund of Government of Nepal.

3.3.4 Land Acquisition Guidelines 1989

Two sets of guidelines related to land acquisition are significant for DoR Sector Wide use. They are the Land Acquisition Guidelines of 1989 and guidelines pursuant to section 16 and 17 of the Land Acquisition Act 1977 (2034 BS). These guidelines specify two categories of affected families, Project Affected Families (PAF) and Seriously Project Affected Family (SPAF). A PAF consists of the members of a household including elderly dependents and minor children (under 18 years) residing under one roof and operating as a single economic unit, who are adversely affected by the project. SPAF is

defined as a family who looses over 25% of its total land holdings or whose land is reduced to an uneconomic holding (less than 5.0 katha) or who is being displaced.

Under these guidelines, the concerned officials, with the assistance of the project team, are to carry out assessments of project affected families to identify their standard of living and types of assets. Valuation of land and asset lost were to be based on comparative market values of similar assets in the vicinity. The guidelines also included arrangements for rehabilitation of project-affected families. For PAF's, the compensation package includes cash for assets acquired or damaged by the project and a rehabilitation grant (assistance allowance) to cover any suffering and hardship. For SPAF's, the compensation additionally includes employment for one family member and provision of skill training.

The Guidelines specify the establishment of an Acquisition and Rehabilitation Committee (also known as Compensation Fixation Committee, "CFC") consisting of the concerned Chief District Officer (Chair), Land Revenue Officer, representative of the District Panchayat (now DCC) and the Project Manager and others as deemed necessary. The Committee is responsible for acquiring land and paying compensation. In 1993, the second set of guidelines reduced the Acquisition and Rehabilitation Committee to a four-member Compensation Fixation and Rehabilitation Management Committee by dropping the Land Revenue Officer and other governmental appointees. The functions and powers of the committee were clarified, as were methods of payment and means of ensuring fair valuation of land quality.

3.3.5 Land Reform Act 1964 (2021 BS)

The provisions of the Land Reform Act 1964 pertaining to the maximum permitted size of individual landholdings also apply to land acquisition, since a landowner may not be compensated for more land than he is entitled to under the Land Acquisition regulations.

The Land Reform Act additionally specifies the compensation entitlements of registered tenants on land sold by the owner or acquired for development purposes. The Act amended most recently in 2001 (2058 BS) has established a rule that when the state acquires land under tenancy, the tenant and the landlord will each be entitled to 50 percent of the total compensation amount.

3.3.6 Land Revenue Act 1977 (2034 BS)

Land acquisition for the project involves change of ownership of land. Article 8 of this act states that registration, change in ownership, termination of ownership right, and maintenance of land records are done by Local Land Revenue office. Similarly article 16 affirms, if land revenue is not paid by the concerned owner for long period of time, the revenue can be collected through auction of the parcel of land for which revenue has been due. In any case, the details of land acquisition and ownership transfer involved during acquisition and payment of compensation are directly or indirectly guided by this act.

3.3.7 Labor Act, 2017 (2074 BS)

The Act has been passed for provisions for the rights, interest, facilities and safety of workers and employees working in various sectors. Section 11 (3) of the Labor Act provides for the employment contract and the matters to be covered under the employment contract in further Act requires the employment contract to include (a) remuneration, (b) benefits, and (c) terms of the employments of the Employee and such other matters as prescribed.

Section 64 (1) states that the main employer must obtain the employees from licensed labor supplier. If outsourced employees are not from the licensed labor supplier, They are deemed to be employees

of the main employer. The employer should ensure the employees are provided minimum remuneration and facilities as per this act., This act also states about, arrangement of occupational health and safety measures to the labors. According to the Act no person may be engaged in work without providing an employment agreement to the employees. A written employment agreement is not -required for casual employees. However, the written agreement is required for longer period employment. The employment agreement should specify the remuneration and other facilities of concerned employees and the terms and conditions of service. The employment agreement may provide for benefits to be provided to managerial level employee in lieu of any overtime hours he/she is required to work.

Section 53 provides terminal benefits to labor with 8.33% of basic remuneration every month as a rate of gratuity and shall be deposited in Social Security Fund by employer.

Section 54 of the act ensures medical insurance of at least one hundred thousand rupees (Rs. 100,000) per year for every worker. Similarly, section 55 provisioned for coverage of accident insurance with at least seven hundred thousand rupees (Rs. 700,000) for every worker. An employee can be suspended for the period he/she is imprisoned or for up to three months during the investigation for misconduct for which the service can be terminated.

3.3.8 Child-Related Act 1993 (2048 BS) and Child Labour Act 2001 (2056 BS)

The Child-Related Act 1993 and the Child Labour (abolition and regulation) Act, 2001 are the major acts related to child labour in Nepal. The Article 2 (Ka) of these acts refers “Child” to the children below 16 years of age. The Child Labour (Abolition and Regulation) Act is the most recent and revolutionary decision to overcome the child labour problem in Nepal. Article 3 clause1 of the act states that any child below the age of 14 years prohibited for labour employment. However, clause 2 states that it is prohibited to engage children below 16 years in works in risk-prone sectors such as public transportation and construction related works. In other words, any employment of children below the age of 16 is to be excluded from becoming contracted in any of the BBIN sub-project's construction works. Children between 14 and 16 years of age may become engaged in other light and low-risk jobs such as roadside planting and drainage clearing.

3.4 GoN Policies Supporting Vulnerable Communities (IPs)

In all regions where roads are to be newly built or upgraded under the BBIN 1 Project there is high incidence of poverty and vulnerable groups. Accordingly, all Project Designs shall give sufficient consideration, based on current policies and good practices, to develop strategies while addressing uplift of livelihoods of these groups. Nepal does not have a standalone policy on Indigenous Peoples, However in the Tenth Plan significant emphasis has been placed on delivering basic services to the disadvantaged and indigenous people, Dalits , women, disabled and other vulnerable groups including the Adhibasi/Janajati indigenous people.

3.5 World Bank Environmental and Social Framework and EHS Guidelines

The Environmental and Social Framework (ESF) became effective on October 1, 2018 and applies to all Investment Policy Financing (IPF) projects initiated after this date. It makes important advances in areas such as labor, non-discrimination, climate change mitigation and adaptation, biodiversity, community health and safety, and stakeholder engagement including expanding the role of public participation and grievance mechanisms. The ESF enhances the World Bank’s commitment to sustainable development through ten Environmental and Social Standards (ESS) that are designed to support Borrowers’ environmental and social (E&S) risk management. The ESF uses a risk-based

approach that applies increased oversight and resources to complex projects and promotes increased responsiveness to changes in project circumstances through adaptive risk management and stakeholder engagement. The ESF enables Borrowers to better manage project risks as well as improve environmental and social performance, consistent with good international practices. It has provided scope for Borrowers to be innovative and has helped prompt dialogue on specific E&S risks relevant to their own national development agendas. The relevancy of 10 ESSs to BBIN 1 and Action taken for compliance is given in **Table 3.1**. A gap analysis between the ESSs and the government regulations are summarized in **Table 3.2** along with the proposed gap filling measures.

Table 3.1: World Bank ESSs and Relevance to BBIN

Environmental and Social Standards	Relevance for BBIN	Action Taken for compliance
ESS1: Assessment and Management of E&S Risks and Impacts	Yes	ESIA, ESCP, C-ESMPetc.
ESS2: Labor and Working Conditions	Yes	ESCP, ESMP, LMP, OHSP, etc.
ESS3: Resource Efficiency & Pollution Prevention and Management	Yes	ESIA, ESCP, ESMP, etc.
ESS4: Community Health and Safety	Yes	ESIA, ESCP, ESMP, OHSP, etc.
ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Yes	RPF, RAP, ESCP etc.
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Yes	ESIA, BMP, Critical Habitat Assessment (CHA), ESCP etc.
ESS 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Yes	IPPF, IPDP, ESCP, etc.
ESS8: Cultural Heritage	Yes	ESCP, ESMP, Chance Find Procedures, etc.
ESS9: Financial Intermediaries	N/A	
ESS10: Stakeholder Engagement and Information Disclosure	Yes	ESCP, SEP etc.

Table 3.2: Gap Analysis between WB Environmental and Social Standards and GoN requirements

World Bank ESS requirements		Nepal's policy framework and requirements	Gaps between ESSs and GoN & legal and policy requirements	Gap-Bridging Measures
ESS	**Requirements**			
ESS 1: Assessment and management of Environmental and Social Risks and Impacts	ESS 1 requires the Borrower will assess, manage and monitor the environmental and social risks and impacts of the project throughout the project life cycle so as to meet the requirements of the ESSs in a manner and within a timeframe acceptable to the Bank. The Borrower will: (a) Conduct an environmental and social assessment of the proposed project, including stakeholder engagement; (b) Undertake stakeholder engagement and disclose appropriate information in accordance with ESS10; (c) Develop an ESCP, and implement all measures and Actions set out in the legal agreement including the ESCP; and (d) Conduct monitoring and reporting on the environmental and social performance.	Environment Protection Act (EPA), 2019; Environment Protection Regulation (EPR), 2020; and; National Environmental Impact Assessment Guidelines, 1993 are legal instruments for the requirements of Environmental and Social Assessment of any development projects.	The Schedules are based on activity type, threshold/size, as well as location. The potential risks associated with the project are omitted in GoN policy. No provision for associate project projects/activities; large projects can be split into smaller projects to avoid full ESIA study. The EA requirement in Nepal is primarily based on project's size, location and financial threshold; irrespective of the level of potential risks. It gives total freedom to proponent to design and implement EA on their own (for example all documents including Scoping, ToR, EIA reports are prepared by proponent and approved by concerned government offices. Experiences have shown that not all projects need for EA is justified based on size, location, thresholds. Scope of EIA may not cover all WB ESS.	• Detailed E&S Screening (by inlcuding associated projects) shall be carried out as per ESMF followed by detailed ESIA/ESMP to bridge the gap between WB and GoN requirements. However, for government clerance, separate IEE or EIA will be prepared as per the the standard • The ESMP to be prepared shall be made integral part of bidding document so that the Contractor (as for provision of services) shall adhere to the provisions prescribed in the ESMP during execution of the project.

World Bank ESS requirements		Nepal's policy framework and requirements	Gaps between ESSs and GoN & legal and policy requirements	Gap-Bridging Measures
ESS	Requirements			
			EPA/EPR does not allow use of other types/forms of assessments. Does not emphasize hierarchy of measures in ES risk management planning	
ESS 2: Labour and Working Conditions	There are numbers of requirements of ESS2 under the following heading: • Working conditions and management of worker relationships; • Protecting the work force; • Grievance mechanism; • Occupational Health and Safety • Contracted workers; • Community workers; and; • Primary supply workers	Labor Act (2017) and Labor Rules 2018; and; Child Labor Act (2001) are legal instruments.	Current OHS legislation is not adequate (No separate legislation on OHS). Current OHS mandate is provided only in Chapter 12 of the Labor Act) Lack of industry-specific standards (DoLOS has so far issued only one directive: OHS Directive for Brick Workers)	• Labour Management Procedures (LMPs) is under draft stage and it will be implemented in the project implementation • Sub-project specific OHS plans will be developed by the contractors
ESS 3: Resource Efficiency and Pollution Prevention and Management	The Borrower shall consider ambient conditions and apply technically and financially feasible resource efficiency and pollution prevention.	EPA (2019), EPR (2020), National Ambient Air Quality Standards (2003), Nepal Vehicle Mass Emission Standard (2012), National Ambient Sound Quality Standard (2012), Standard on Emission of Smoke in Air by New and Existing Diesel Generator (2012), National Water Quality Standard (2008),	Lack of suitable enforcement mechanisms for legislation on resource use efficiency in projects	• Resource efficiency and pollution prevention in any project activity will be capatured in ESIA/ESMP preparation. • WBG EHS guidelines or/ National standards (depending on which one is stricter) related to environmental protection and resource efficiency will be complied with by the project.

World Bank ESS requirements		Nepal's policy framework and requirements	Gaps between ESSs and GoN & legal and policy requirements	Gap-Bridging Measures
ESS	**Requirements**			
		Tolerance Limits for Industrial Effluents to be discharged into Inland Surface Waters (2003), The Solid Waste Management Act (2011), Solid Waste Management Rule (2013), Water Resources Act (1992), Water Resources Rules (1993), Drinking Water Regulation (1998), Drinking Water Quality Standards		
ESS 4: Community Health and Safety	There are numbers of requirements of ESS4 under the following headings: • Community health and safety and • Security personnel	The EPA identifies the direct and indirect human health impact as one of the components in assessing the effect of development projects. EPA Section 7: Nobody shall create pollution in such a manner as to cause significant adverse impacts on the environment or likely to be hazardous to public life and people's health.	• There is limited coverage as scope of ESIAs do not necessarily include community safety issues. • Public health legislation does not specifically impose requirements for development and infrastructure projects.	• ESIA/ESMPs developed under the project will address all community health and safety issues that arise during execution and operation of the project. .
ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	There are number of requirements of ESS 5 under following headings: • General (Eligibility classification; Project design; Compensation and benefits for affected persons; Community engagement; Grievance mechanism; Planning and implementation);	Land Acquisition Act (1977) Guthi Corporation Act (1976) Land Acquisition Guidelines (1989) Land Reform Act (1964) Clause 3 of the Land Acquisition Act states that any asset that is required for public purposes shall be acquired by providing compensation.	• Does not require preparation of RAP • Does not allow for PAP consultation in the compensation options • Does not allow non-cash compensation options such as land-for-land and replacement homes, only "arrangements for rehabilitation" and "priority in employment".	• The project shall be required to prepare vulnerability assessment and mitigation plan for the affected people that have impacts on their livelihood after losing the land. • A Resettlement Framework is being prepared to provide guidance for any resettlement activities.

World Bank ESS requirements		Nepal's policy framework and requirements	Gaps between ESSs and GoN & legal and policy requirements	Gap-Bridging Measures
ESS	**Requirements**			
	• Displacement (Physical displacement; Economic displacement); • Collaboration with other responsible agencies or subnational jurisdictions; and; • Technical and financial assistance.	Compensation Fixation Committee shall establish the Compensation rates. Guthi Corporation Act, 2033 (1976). Section 42 of this Act states that Guthi land (religious trust land) acquired for the purpose of the development shall be replaced with other land, than compensated in cash Compensation shall be provided for loss of crop damaged and income source.	• Valuation of lost assets considers depreciation and hence not at replacement cost • Does not make mention of compensating non-titleholders (tenants, long-term land users, encroachers and squatters).	• The project shall assist those who have impacts on their livelihoods due to land acquisition by the project including tenants. • The lost assets need to be fully replaced and affected livelihoods restored. • Pragmatic livelihood assistance program shall be designed by the project. • The project shall develop alternative forms of compensation or assistance for adversely affected non-title holders, encroachers and squatters.
ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	There are number of requirements of ESS 6 under the following headings: • General (Assessment of risks and impacts following a precautionary approach • Conservation of biodiversity and habitats; • Habitats are classified as the Modified habitat; Natural habitat; and Critical habitat • No Net Loss is achieved to mitigate the loss of natural habitats, where critical habitats are impacted, Net Gain will be demonstrated for	Aquatic Animal Protection Act (1961), National Park and Wildlife Conservation Act (1973), National Park and Wildlife Conservation Regulations (1974), Soil and Watershed Conservation Act (1982), Himalayan National Park Regulation (1979), National Trust for Nature Conservation Act (1983), Forest Act (2019), Conservation Area Management Rules (1996), Buffer Zone Management Rules (1996), Plant Protection Act (2007)	• Natural habitats are not specifically required to be assessed in the EIA • Does not specifically require Biodiversity Management Plan even where biodiversity impact is found significant in the EIA	• All the provisions of relevant laws will be complied with by the project. • A separate Biodiversity Management Plan needs to be developed for project activities that have potential impacts on biodiversity and critical/natural habitats.

World Bank ESS requirements		Nepal's policy framework and requirements	Gaps between ESSs and GoN & legal and policy requirements	Gap-Bridging Measures
ESS	**Requirements**			
	the biodiversity values for which critical habitat is designated. • Legally protected and internationally recognized areas of high biodiversity value; • Invasive alien species • Sustainable management of living natural resources and primary suppliers			
ESS 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	There are numbers of requirements of ESS 7 under the following headings: • General (Projects designed solely to benefit indigenous peoples/Sub-Saharan African historically underserved traditional local communities; Projects where indigenous peoples/Sub-Saharan African historically underserved traditional local communities are not the sole beneficiaries; Avoidance of adverse impacts; Mitigation and development benefits; Meaningful consultation tailored to indigenous peoples/Sub-Saharan African historically underserved traditional local communities;	National Foundation for the Development of Indigenous Nationalities Act (2002), Local Self-Governance Act (1999), ILO Convention 169 (2007) The GoN encourages to include and consider IPLC's concerns in each development and infrastructure programs and formulate a plan or mechanism to incorporate income generation program targeted to IPLC.	• The GoN encourages development programs to incorporate income generation schemes for IPs. • The provision of FPIC and broad community support in relation to IPs is absent. Nonetheless, the GoN has ratified ILO 169 and the United Nations Declaration of Rights of Indigenous People (UNDRIP). • The GoN is in the process of preparing National Action Plan to implement these international commitments.	• An Indigenous People Developmen Framework (IPDF) is being prepared to provide guidance to mitigate any impacts on IPs. • The project shall seek to maximize the ability of Adivasi/ Janajati to benefit from the project by: a. creating an environment for social inclusion; b. enabling their participation in policy discussions and decision making; c. promoting their culture, language and knowledge through different project activities.

World Bank ESS requirements		Nepal's policy framework and requirements	Gaps between ESSs and GoN & legal and policy requirements	Gap-Bridging Measures
ESS	**Requirements**			
	• Circumstances requiring free, prior and informed consent, FPIC (Impacts on lands and natural resources subject to traditional ownership or under customary use or occupation; Relocation of indigenous peoples/ Sub-Saharan African historically underserved traditional local communities from lands and natural resources subject to traditional ownership or under customary use or occupation; Cultural heritage); Grievance mechanism; and; Indigenous peoples/Sub-Saharan African historically underserved traditional local communities and broader development planning.			
ESS 8: Cultural Heritage	There are numbers of requirements of ESS 8 under the following headings: • General • Stakeholder consultation and identification of cultural heritage (Confidentiality; Stakeholders' access); • Legally protected cultural heritage areas;	• The EPA (2019) and EPR (2020) provision that physical and cultural resources shall not be disturbed or damaged without the prior approval of concerned authority. • Ancient Monument Act (1956) have provisions on cultural heritage	• Does not include intangible cultural heritage • Does not provide for the development of Cultural Heritage Plan • Does not provide for the application of globally recognized practices in the study, documentation and protection of cultural heritage	• The ESMF has incorporated "Chance Finds" provisions and requirements • ESMPs to be developed under the project will aim to address any issues of cultural heritage that may be affected by the execution and operation of the project. • During the drafting stage of this ESMF, not all cultural heritage is identified and documented. However, through a collaborative

World Bank ESS requirements		Nepal's policy framework and requirements	Gaps between ESSs and GoN & legal and policy requirements	Gap-Bridging Measures
ESS	**Requirements**			
	• Provisions for specific types of cultural heritage (Archaeological sites and material; Built heritage; Natural features with cultural significance; Movable cultural heritage); and; • Commercial use of cultural heritage		• Does not provide for adoption of chance find procedures	approach community will be consulted in identifying cultural heritage sites with local significance/importance and documented and follow CHP-CFP.
ESS 10: Stakeholder Engagement and Information Disclosure	There are numbers of requirements of ESS 10 under the following headings: • Engagement during project preparation (Stakeholder identification and analysis; Stakeholder Engagement Plan; Information disclosure; Meaningful consultation); • Engagement during project implementation and external reporting; \Grievance mechanism; and; • Organizational capacity and commitment	• Prevailing national polices including EPA 2019 and EPR 2020 has envisaged the stakeholder engagement at different stage of the project design and implementation. Stakeholder consultation, disclosure and grievance hearing system are provisioned.	• Does not require stakeholder analysis and preparation of stakeholder engagement plan • Does not provide for continuous stakeholder engagement/consultations beyond EIA process during construction and operation phase	• The project has prepared a Stakeholder Engagement Plan (SEP) to ensure that stakeholder engagement activities are effective and meaningful consultation is carried out including guideline for establishing a comprehensive GRM with clear, safe and accessible procedures to identify and respond to grievances, including SEA/SH, cases.

3.5.1 WBG General Environmental Health and Safety Guidelines, 2007

The WBG General EHS Guidelines 2007 guides users on common EHS issues potentially applicable to all industry sectors. This guideline provides an approach to the management of significant sources of emissions, including specific guidance for assessment and monitoring of impacts. The EHS guidelines also provide guidance on prevention and control of community health and safety impacts that may occur during new project development, at the end of the project life-cycle, or due to expansion or modification of existing project facilities. The guideline highlights general approach to the management of EHS issues at the facility or project level. The guideline entails the inclusion of EHS considerations into corporate and facility-level business processes in an organized, hierarchical approach highlighting the identification of EHS project hazards and associated risks. Further, the risk management strategies will incorporate engineering and management controls to reduce or minimize the possibility and magnitude of undesired consequences when impact avoidance is not feasible.

3.5.1.1 Environmental Health, and Safety Guidelines for Toll Roads, 2007

The EHS Guidelines for Toll Roads include information relevant to construction, operation and maintenance of large, sealed road projects including associated bridges and overpasses. The guideline highlights the environmental issues specific to construction and operation of roads including the habitat alteration and fragmentation, storm-water, waste, noise, air emissions, and wastewater. The guidelines also highlight occupational and community health and safety and performance indicator monitoring of environment and occupational health and safety. The issues associated with the construction and operation of roads primarily include physical hazards, chemical hazards, and noise.

3.5.1.2 Workers' accommodation: processes and standards. A guidance note by IFC and the EBRD, 2009

Due to the lack of universally applicable international conventions on workers' accommodation standards, there are some international standards/guidance on food safety, water sanitation, and waste management. Appropriate standards for the construction and operation of worker housing falls within the performance requirements on labour issues expected of clients. The Standard comprises planning and assessing the requirements for workers' accommodation in accordance with international, national, and local regulatory framework. The guideline also provides the principles and standards applicable to the construction of workers' accommodation, including the transport systems provided, the general living facilities, rooms/ dormitories facilities, sanitary and cooking facilities, food safety, medical and equal wage leisure/social facilities. Finally, the document consists checklist in order to access general regulatory framework of established accommodation, to assess the need for and impact of workers' accommodation on communities, standards provided for workers' accommodation, managing worker accommodation, etc.

4 Baseline Environment

An overview of the existing baseline information for the project area obtained from the secondary literature review is presented in this chapter. Detailed baseline environment of the Project area (covering biophysical and socio-economic environment) will be collected and presented in the subproject ESIAs/ESMPs.

4.1 Influence Area

The influence area of the Butwal-Gorusinghe-Chanauta comprises about a 2km wide corridor along 70 km-long East-West Express Highway. It covers all areas that are likely to be directly (within the 50 m right of way where all upgrading works will take place, and 150 m on either side of the road where temporary facilities could be established) or indirectly (within one km on either side of the road where the indirect biological impacts could occur) affected by the proposed construction and operational activities.

4.2 Physical Environment

4.2.1 Physiography

The project areas are located in the Terai region of southern Nepal. The Terai is about a 25-km wide region lowland region in southern Nepal that lies south of the outer foothills of the Mahabharat Range (Himalayas), the Chure Range (Sivalik Hills), and north of the Indo-Gangetic Plain. This lowland belt is characterized by tall grasslands, scrub savannah, sal forests and clay-rich swamps. The elevation in the Terai region ranges from 95 to 150 m.

4.2.2 Climate

tropical and sub-tropical climate with humid and hot characteristics. In general, the rainy season starts in June and ends in September. About 80% of the rainfall occurs in this season. The Northwest wind brings dry and cold wind bearing little moisture and accounts for the remaining 20% of the annual rainfall in the dry season. The average minimum temperature of Kapilbastu is 18.79^{0}C and the maximum temperature is 30.93^{0}C. The average minimum temperature of Rupandehi is 19.04^{0}C and the average maximum temperature is 31.08^{0}C. The average annual rainfall in Rupandehi and Kapilbastu District is 2501mm, 1622 mm, respectively. There is high rainfall in the month of July and gradually decreases from August to October.

4.2.3 Hydrology

The major rivers in the project area are Tinau, Banganga and Khila kola, with widths ranging from 100 m to 200m. All rivers in the project area are characterized by large floods with heavy suspended loads from June to September during the monsoon. The sediment deposits in the rivers are very huge, and they are being widely extracted for construction activities. Most of the rivers in the project area are perennial. However, some rivers have low flows during the dry period. Some small rivers and streams that originated from Siwalik Hills are prone to flash floods during the monsoon but have no flow the rest of the time. The groundwater sources are also abundant and occur at a shallow level. Groundwater is the main source of drinking water supply and irrigation. In the study area, the aquifers are mainly recharged by rainwater infiltration perennial streams like Tinau River, Badganga River and their seasonal tributaries

4.2.4 Geology

The Terai region is formed by thick alluvial deposits, and the surface soils are dominated by silt and clay. Nepal is located in one of the most active seismic zones of the earth as it lies in the collision zone between the Indian Plate and the Eurasian Plate. The Indian Plate is continuously moving at a rate of approximately 20mm per year and pushing the Eurasian Plate resulting in devastating earthquakes in this region time and again. In the last century alone, Nepal experienced some catastrophic damages due to the earthquakes of 1934, 1980, 1988, and 2015.

4.2.5 Surface Water, Air, and Noise Quality

The surface water quality is generally good, with no sources of pollution around the project area. The water quality studies carried out along the Butwal – Gorusinghe indicated that water quality complies with the national standards. The traffic along the East-West Highway is the major source of air and noise pollution. The particulate matter and total suspended matter in the air quality and noise quality generally exceed the national standards near the highway and comply with the national standards in the rural areas. Air and noise quality was measured during the ESIA study of Butwal-Gorusinghe. The particulate matter concentrations ($PM_{2.5}$) in the area vary from 30 to 150 $\mu g/m^3$ (the national standard is 40 $\mu g/m^3$). The average daytime noise levels range from 30 to 100 dBA (the national standard is 70 dBA).

4.3 Biological Environment

The East-West Highway is largely located in the Terai Arc Landscape (TAL). The TAL extends for over 900 km from the Bagmati River, Nepal in the east to the Yamuna River in Uttaranchal, India in the west, with an area of 51,002 km² (approx. 16% of Nepal). The TAL was created to better protect species such as tigers, rhino and elephants that cannot be effectively conserved within protected areas alone but require a landscape-scale approach. The TAL exists as a transboundary landscape that extends into India. The TAL features in Nepal's National Biodiversity and Strategic Action Plan (NBSAP).

The TAL harbours globally important biodiversity and conserves several of Asia's large mammals, birds, reptiles, and freshwater fishes; sustain environmental flows in important rivers; and provides ecosystem services that support the socio-economic well-being of people and development in the Terai and Churia region of Nepal. The scale of the landscape also allows for ecosystem-based climate change adaptation strategies. Key species for conservation in the TAL are tiger, greater one-horned Rhinoceros, swamp deer, Asian elephant, blackbuck, Gangetic dolphin, gharial, great hornbill, sarus crane, Bengal florican, lesser adjutant stork and several vulture species. The TAL is also densely populated. According to the 2011 census, there were more than 7.5 million people in the TAL. The average annual population growth rate is 2.1%.

The Butwal - Chanuata road section covered under this ESMF is located centrally within the TAL (Figure 4.1) that is within a densely populated part of the TAL. The Butwal - Chanuata road does not overlap with any protected areas or wildlife corridors and does not fragment any significant natural habitats identified within the TAL.

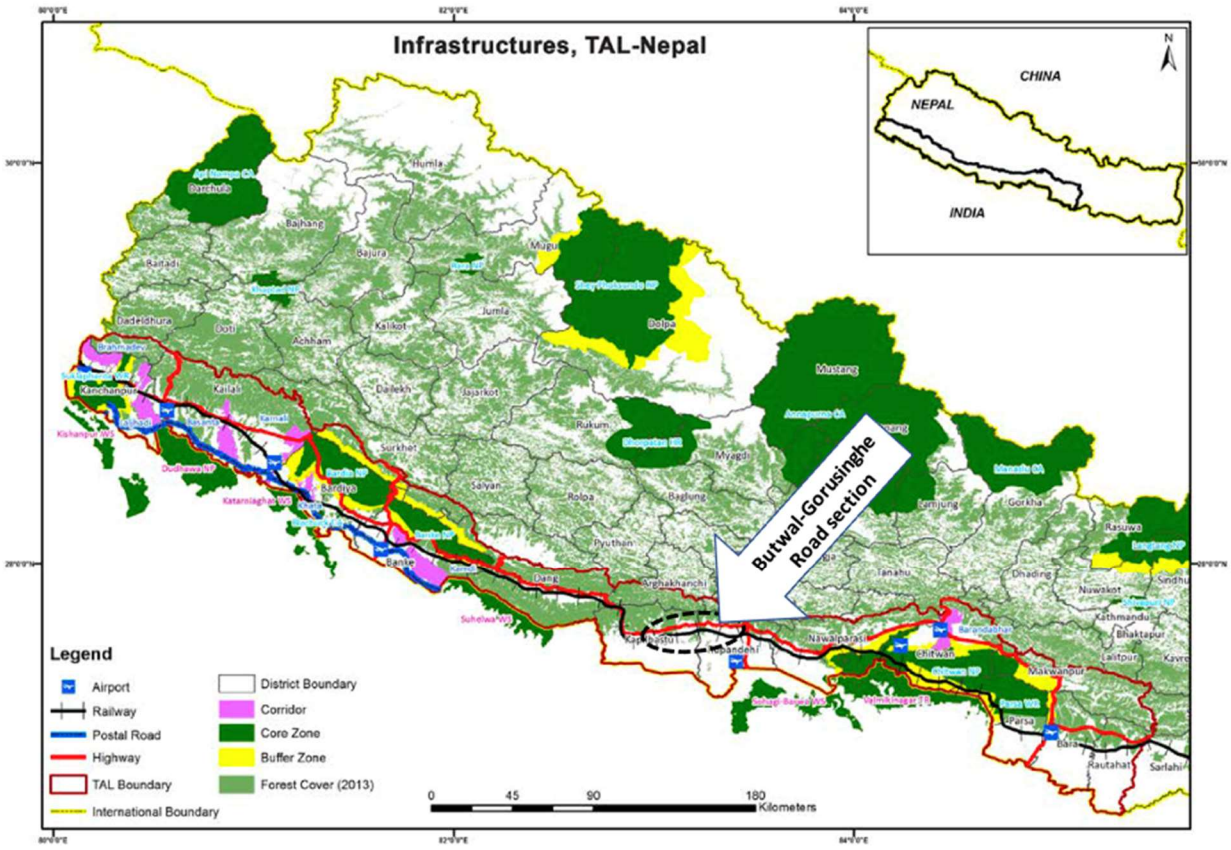

Figure 4.1: *Location of the Project within the Terai Arc Landscape*

An ecological screening exercise is carried out to identify the key biodiversity areas and protected areas around the project sites using an Integrated Biodiversity Assessment Tool (IBAT) developed by the International Union o for Conservation of Nature (IUCN) and its partners. The project areas are not located in any national or international protected areas.

The natural flora in the project area mostly consists of the forests, which play a vital role in the economy of the area as a source of supply of timber and fuelwood and forage. These forests are managed by the communities or communities with the support of the Government. The forests are commercially logged, and the revenues are shared between the community and the Government. About 80 species of trees are reported from these forests. Shorea robusta (Sal) and Pterocarpus marsupium (Indian kino) are the protected species as per the Government of Nepal, banned for felling, transportation and export, and Shorea robusta is the least concern, and Pterocarpus marsupium is near-threatened species as per IUCN.

The forest area has been fragmented due to the human encroachment, road, and power line in the project area leading to habitat fragmentation. Thus, no sufficient habitat for large mammals near the road was found. The movement of mammals might have been hindered by the heavy traffic and human disturbances along the road. Some common species as found in the survey and as reported by locals include mongoose, jungle cat, common leopard, golden jackal, rhesus monkey, terai gray languor, Indian porcupine, wild boar etc. Major threats to the wildlife in the site include poaching, illegal hunting, human disturbances, and habitat fragmentation.

4.4 Socio-Economic and Cultural Profile

Demography

According to the 2011 census, the population of Kapilbastu and Rupendehi districts are is 255,237, with an average household size of 5.69. Population distribution between males and females is 47.08 and 52.89 percent, respectively. The average literacy rate of males is 70 percent, whereas female literacy is 55 percent.

The population is generally multi-ethnic. Brahmin, Chetri, Janjati, Muslim and Madhesi are major groups in the project municipalities. About 41% of the population is Janjatis, and 21% is Dalit. Among the Janjatis, major caste are Magar, Gurung, Newar, Kumal and Tharu. The majority population, i.e. 81%, is Hindu, followed by Buddhist (9%) and around 4.4% are Islam, and 1.4% are Christian.

Occupations

In the Terai region, about 64% population is directly engaged in agriculture farming, and among them, very few are doing commercial framing rather than subsistence farming. Major occupations of the project area are agriculture, livestock and small-scale business and cottage industry. A good number of people is found engaged in Government and private employment especially hotel, lodge and other industry. Rupandehi and Kapilbastu are also potential tourist destinations due to the birthplace of Lord Gautam Buddha; therefore, a large number of Hotels and lodges and other businesses are being operated in the area, which creates employment opportunities.

Social Infrastructure

The project areas have access to social infrastructures such as drinking water supply, schools and hospitals. About 95 percent of the population has access to drinking water, and 70 percent of the population has access to improved sanitation facilities. Above 90 percent of the population has access to electricity.

Gender Roles

Nepal has most incidences of GBV cases, with mostly women as victims. Out of the 15 most GBV prevalent countries in the world, Nepal ranks 4th in domestic violence and violence by a partner. The current status of gender inequality and gender-based violence in Nepal reveals the serious need to mainstream gender sensitivity and GBV risk mitigation measures at all organization levels and all phases of project cycle. In Nepal, GBV is prevalent due to unequal gender relations and discrimination towards women in both the public and private spheres. It has direct implications on the reproductive health status of women and the physical, emotional, and mental health of their children

The overall situation of women in Nepal is far behind when compared with their male counterparts. They are still discriminated against and exploited by their own family members. With son preference, social stigma and other prevailing biases still prevail; women's mobility, public participation, exposure and orientation are moderated by patriarchal parameters. Participation of rural women is more in household daily drudgeries such as fodder collection, cooking, childcare etc. Thus, they are deprived of making substantial decisions and other avenues of upward mobility.

Rupandehi district has a relatively higher literacy rate as compared to Kapilbastu. Hence, women in Rupandehi have more exposure, opportunities and outlets in different walks of life such as economic generation, participation in public forums, and making their voices heard. This part is lagging somewhat behind in the case of Kapilbastu women. Moreover, some underlying social ills like

witchcraft have also retarded many of them, and such bad practices are institutionally sustained to keep women away from the path of progress and enhancement. Dalit women bear the brunt of double burdens: untouchability and patriarchy. In both districts, the untouchability issue is significantly more in rural areas than in urban areas. Being poorer and landless, Dalits are highly marginalized. Lack of education, job opportunity, economic condition, and health facilities are contributing factors for their lower status than other ethnic groups.

A growing trend of out-migration by the youth for jobs abroad has rendered both positive and negative outcomes. Many households' economic condition has been somewhat better, thus enabling them to afford children's education, better healthcare, sanitation and career choice. On the other hand, access to constant resources has led to conflict and disharmony and even divorce.

5 Identification of Potential Environmental and Social Impacts and Risks of Subprojects

5.1 Overview of Impacts

Based on the consultations and field surveys conducted, it appears that the BBIN sub-project's proposed under the current program, including bridge and highway up gradation program will have varying environmental and social impacts. The significant impacts will arise from the land acquisition and resettlement, cutting of forest vegetation, and risk of pollution from the construction activities. For road subprojects, the upgrading and widening will be carried out within the existing right of way of Butwal-Gorusinghe-Chanauta section. The impacts associated with the green-resilient highway development are mostly related to afforestation and wildlife management activities with positive externalities and limited adverse impacts in landscape improvements. With prudent management options incorporated in the planning, it is believed that most of these impacts can adequately be mitigated. The ESMF makes provision that all roads considered under this program will have an ESIA, Environmental & Social Management Plan, including a Resettlement Action Plan, and Indigenous Peoples Development Plan, as required.

5.2 Positive Impacts

Road Projects are generally intended to improve the economic and social welfare of people. The development efforts of the BBIN 1 will have multi-fold beneficial impacts. The majority of the communities receiving new and/or improved roads believe that improved accessibility resulting from the project will improve their standard of living give access to nearby markets and resources, education and health facilities. Unanimously the consulted communities are willing to support the road upgradation works.

The immediate beneficial impacts from road development become apparent in the construction phase. Depending on the demographic and socio-economic setting in each location, there will be various employment opportunities for the local population.

During the operation stage, improved road access will bring in most if not all localities, an improvement on overall economic and social stability. Increased road capacity and improved pavements are expected to reduce travel times and lower the costs of vehicle use. At the same time, good and reliable road links will increase access to markets, jobs, education, and health services and reduce transport costs for both freight and passengers. In the long term, the road will provide safe and fast transport of goods and services from rural areas to urban centers and vice versa. This will bring about an increase in productivity in the neighbourhoods rural areas along the road alignment and eventually improve the overall socio-economic condition of people living in or nearby road corridors. At a more detailed level, the single benefit aspects are discussed hereunder and expected to be detailed in the specific assessments in the forthcoming BBIN sub-projects.

The construction of roads will lead to an appreciation of land values around the project facilities, which directly contributes to the increased property value of the households. The value of land increases sharply as soon as the road link is developed, ensuring reliable transportation. Road also contributes to the rapid commercialization of agriculture which is also a major factor in raising the land value as a result of which many villagers are in a position to initiate modern farming and diversify their production. Local farm families, in particular, are benefited due to the increased value of the land after the construction of road and this will have significant ramifications in addressing the poverty of many poor families living along the road corridor.

The improved and rehabilitated road facilitates smooth vehicle movement, thereby reducing amounts of unburn carbon, oxides of sulphur and nitrogen.

The overall vehicle operating cost will be reduced, and thereby transportation costs will be decreased. The journey will be comfortable, and travel time will be saved. Similarly, the wear and tear of the vehicles will be less; and fuel consumption of the vehicles will also be less, resulting into saving in the foreign currency for the import of these commodities.

The improvement of trade systems will contribute to positive economic growth both locally in the project area and at the regional level between Nepal and India by removing barriers to trade and transportation created due to the poor condition of hard and soft infrastructure. The main beneficiaries from the Project will be traders and businesses in Nepal and India who will benefit from the reduced time and cost of exporting and importing goods. Consumers will also benefit from lower prices on imported goods.

The proposed activities under the green resilient corridor concept will address some existing environmental and social issues of the East-West Highway through an integrated landscape improvement approach. The proposed strategic studies, forest mapping, afforestation and wildlife management activities will slow down the pace of deforestation, rehabilitate degraded patches of forest (direct and induced deforestation, fires, forest degradation), improve wildlife (by reducing roadkill, habitat fragmentation, poaching and inhibited movement), climate and disaster (urban floods, water scarcity, extreme heat) and social exclusion risks (opportunistic planning and development, community health and safety and impact on public assets and utilities). The environmental and social risks associated with the implementation of investments are limited and minimal.

5.3 Adverse Impacts

5.3.1 Impacts on the Physical Environment and Land

5.3.1.1 Change in Land Use and Loss of Productive Soil

Changes of land use due to the construction of roads are mainly conversion of agricultural land, forest land, grazing land, public spaces and other forms of land use into built-up area that may result in numerous social and ecological consequences.

In this context, major impacts include reduction of fertile and cultivated land, leading to loss of crops, loss of productive area, increase in food deficiency, increase in malnutrition, loss of habitat of wildlife etc. In addition, change of land use due to road construction also results into the relocation of private houses and properties, losses of public places, grazing land and social conflicts.

5.3.1.2 Quarrying of Construction Materials

The construction of roads, particularly the structures such as retaining walls, culverts, bridges, road surface works etc., require a large quantity of boulders, gravels, sand, and other types of construction materials. Good road building materials are hard to find. Poor quality of the material will often lead to premature failures of the road pavement. As a result, it is normally necessary to extract materials from wherever a good enough source is available, mostly locally. Such materials are normally mined in nearby locations on local streams and places near the road alignment with a view to saving the transportation cost.

Uncontrolled quarrying by contractors from non-approved sources is a damaging activity that must be controlled.

5.3.1.3 Stone Crushing Plants

Stone crushing plants are temporary work sites, occurring during the construction and rehabilitation of roads. They are normally established in quarries and river beds from where the stones are derived. In addition, stones are often broken for rural roads by hands in these locations by labour force. The operation of crushing plants and stone breaking by labour causes inconvenience to nearby settlements in terms of air and noise pollution. Siltation and pollution of surface water resulting from uncontrolled runoff from storage piles and damage to the local crops and surface water are also potential impacts. Excessive noise and dust from the plant will create disturbance to nearby settlements, school, health posts etc. The crushing plant site is also a high-risk area for accidents and injuries. Also, there will be a continuous flow of heavy vehicles for carrying the materials to construction sites. If their path is along school and busy market area, there will always be potential risk of serious accidents.

5.3.1.4 Stockpiling of Materials and Disposal of Spoil Material

Construction materials are usually stockpiled for a relatively short period without covering. It is often done on river beds or river banks, forest area, open spaces, and cultivated land. This situation may lead to environmental degradation in terms of air pollution, land pollution, pollution of surface water and permanent changes of land use if not rehabilitated after the completion of construction works. Standing crop or future cultivation on land is disrupted. If not appropriately stockpiled with a drainage facility, rain water can carry the sediment into water bodies affecting their quality as well as aquatic life.

Surplus construction material, cut material, drainage cleaning debris, and landslide mass (spoil) can cause significant environmental hazards, mainly on the adjacent hydrology and habitats, if they are side-tipped downhill without appropriate spoil management. This impact occurs both during construction and maintenance operations. Among the common negative consequences are overloaded unstable areas causing slope instability and slides, smothering and removal of trees, vegetation and topsoil, causes or promote erosion, kill vegetation, destruction of private property, crops and irrigation systems at foothills, disrupt natural drainages and surface water sources, and pollute water.

5.3.1.5 Air Pollution

Air pollution due to vehicle emission (particulate matter, nitrogen oxides, hydrocarbons, carbon monoxide, sulfur dioxide, lead, aldehydes) and dust raised by plying of construction vehicles and operation of machinery, crushing plant etc. may cause a nuisance to roadside walkers and nearby residents. Dust layer accumulates on the leaves of roadside vegetation, limiting their growth and assimilation capacities, and affecting the roadside settlements. Many of the air polluting agents are known to cause respiratory and eye disease to people exposed for a longer duration. Roadside tea shops and cafeterias usually keep food in the open, over which dust layer naturally settles. This is directly consumed by people. Although the evidence of concrete health hazards is often not known, it is definitely not hygienic, and may cause stomach ailments. Dust may considerably affect school going children, school and health posts besides the road. Low quality of fuel, age and poor quality of vehicles, lead from petrol engines are the other causes of pollution. Also, driver's behaviour may dramatically contribute to or diminish local air pollution: Engines produce higher emissions while decelerating, accelerating, and climbing grades, so any road features which encourage these actions also encourage higher emissions.

During the operation phase, the improved road would attract more vehicles. As the result of the increased traffic, more air pollutants, including GHGs can be emitted, while the improved road capacity would contribute to the reduction of pollutant emission through smother traffic flow.

5.3.1.6 Noise Pollution

Road construction and maintenance generally require the use of heavy machinery and crusher plants. Noise associated with road development has four main sources: (i) vehicles (engines, transmission, exhaust and suspension); (ii) friction between tire of vehicles and road surface; (iii) driver behaviour (excessive honking, loud music, shouting at each other, causing the tire to squeal by sudden breaking or acceleration); and (v) construction and maintenance activity. Although the construction activities are intermittent and localized, they nevertheless contribute to significant amounts of sustained noise during equipment operation. Chronic noise exposure can be a source of nuisance, creating communication problems and leading to elevated stress levels as well as associated behavioural and health effects. It can cause auditory fatigue, temporary and permanent lessening of hearing ability, sleep disorders, and can contribute to learning problems in children.

Noise may prevent many animal species from approaching or crossing road corridors because they are afraid. As a result, road corridor becomes a barrier to regular wildlife migration routes effectively rendering roadside habitat areas inaccessible to some species. Such disturbance reduces the success of these species and contributes to ecological alteration. Livestock and wildlife may experience breeding problems and other forms of behavioural disturbances.

The vibration induced by the resonance of traffic noise can have a detrimental effect on structures standing near the road. This is of particular concern in the case of cultural heritage sites.

5.3.1.7 Hazards caused by Combustible and Toxic Materials

Contractors may store fuel, oil and lubricants, diesel and petrol, bitumen, solvents and other toxic chemicals for use in construction work. Inappropriate storage of such materials or accidents of tankers may cause spillage or leakage, pollute surface and groundwater, contaminate soil, cause fire and explosion hazards and nuisance to human health.

Combustible materials mostly comprise fuels and lubricants, bitumen, and jute netting. The most common risk involved is bitumen distributors catching fire. Cement is a widely used material but can cause minor chemical burns and skin problems to the users. Protective clothing is rarely provided or used. In hot weather, it may be uncomfortable, and therefore its use is difficult to enforce.

5.3.1.8 Potential impacts caused by Bitumen

The use of bitumen is one of the most hazardous materials used for road construction and maintenance activities. Bitumen storage is a frequent environmental problem that can only be met by special precautionary measures. Bitumen drums often get damaged during transit, leading to a leakage in storage places which often are not or not adequately cleaned up afterwards: Negative examples are plenty in Nepal, e. g. former storage area of Kurintar, where pools of split bitumen can still be found in cattle grazing areas, many years after the rehabilitation of the road was completed.

During application, workers are often (for various but unacceptable reasons) not adequately protected. Bitumen is applied at a high temperature, leading to a considerable risk of burns. However, it is most often applied in hot weather, making protective clothing uncomfortable and enforcement of its use difficult.

A problem frequently associated with the layering of bitumen in Nepal is the exploitation of local forest timber as firewood for heating bitumen. The release of bitumen into the environment through runoff into surface water is another environmental hazard, with secondary effects discussed in the above section.

5.3.1.9 Change in River Regime

Construction of road bridges may lead to modification of flood plain and river beds and affect the landscape and aquatic ecology. This will cause changes in the river regime (morphology, longitudinal profile and hydrological character) basically due to guide bunds, flood protection works, construction of piers etc. The effect of this is depended on the size and location of a bridge as well as the nature of the river. The extraction of sand and gravel from the river during bridge construction is another reason for such changes. The extraction of sand and gravel could continue even after the completion of the bridge construction.

5.4 Generation of Waste

The construction works generate large quantities of excess materials from construction sites (concrete, discarded material, etc.) and wastes from workers camps and construction yards, including other debris. In addition, small quantities of hazardous waste will also be generated mainly from the vehicle maintenance activities (liquid fuels; lubricants, hydraulic oils; chemicals, such as anti-freeze; contaminated soil; spillage control materials used to absorb oil and chemical spillages; machine/engine filter cartridges; oily rags, spent filters, contaminated soil, etc.). It is imperative that such waste is responsibly disposed of to avoid adverse environmental and human health impacts. The amount of wastes generated during the routine maintenance stages of the roads and bridges is low. During the operations of the land ports, waste can be generated from the land port facilities, including warehouses and offices.

5.4.1 Impacts on Biological Resources

5.4.1.1 Clearing of Forest

Some sections of the Butwal-Gorusinghe-Chanauta road pass through the forests, including two community/government collaboratively managed forests. The proposed road widening, from 2 lanes to 4 lanes, will require clearance of these forests. For the Butwal-Gorusinghe road widening, around 9,386 trees will be felled from community forests, collaborative forest, the government-managed forest and public land/settlement area. Out of 9,386 trees, 5,517 are trees, 1,691 are pole size and 2,255 are saplings. From forests 7,109 number and from the public land total 2,277 number will be felled. 2,136 Shorea robusta(Sal) tree will be felled from all types of forests during road upgrading, which is the highest number in terms of species lost. Sal is one of the most important sources of hardwood timber in Nepal.

5.4.1.2 Habitat Fragmentation and Barrier to Wildlife Movement Corridor

The forest area has been fragmented due to the human encroachment, road, and power line in the project area leading to habitat fragmentation. Thus no sufficient habitat for large mammals near the road was found. The movement of mammals might have been hindered by the heavy traffic and human disturbances along the road. Some common species as found in the survey and as reported by locals include mongoose, jungle cat, common leopard, golden jackal, rhesus monkey, terai gray

languor, Indian porcupine, wild boar etc. Major threats to the wildlife in the site include poaching, illegal hunting, human disturbances, and habitat fragmentation.

5.4.1.3 Spread of Invasive Alien Species

Invasive alien species (IAS) present a significant risk to biodiversity and are easily spread by linear projects unintentionally or intentionally through a lack of awareness of the risks. Measures are therefore required to not intentionally introduce any new alien species (not currently established in the country) unless this is carried out in accordance with the existing regulatory framework for such introduction. Species with a high risk of invasive behavior must not be introduced regardless of whether such introductions are permitted. Measures will be implemented to avoid the potential for accidental or unintended introductions, including the transportation of substrates and vectors (such as soil and weed-infested machinery) that may harbour IAS. Where IAS are already established in the region of the project, efforts are required to reduce spreading them into areas in which they have not already become established.

5.4.1.4 Illegal Wildlife Trade

The project is located within an area that supports exceptionally rich biodiversity, which includes many threatened species. One of the primary reasons for species to be threatened is an ongoing illegal trade in wildlife and natural resources. Road projects have the potential to exacerbate such threats as they increase access to natural areas, and facilitate hunting and collection pressure on sought-after species. Species groups of greatest concern include medicinal and health products, turtles, raptors, pangolins, orchids, illegal timber and others). The influx of labor can be a major source of poaching. Construction workers are often mobile, well-resourced, and coming from far away, often with little incentive to conserve local resources. Demand for timber for construction work can be a driver of deforestation, and traceability of such timber can be difficult.

5.4.1.5 Soil Erosion and Sedimentation from Afforestation Activities

Soil erosion may occur during the land development for the afforestation and forest restoration activities. Forest management activities, such as tending and harvesting activities (in the community forests), may cause soil erosion and thereby sedimentation into the streams and wetlands. Increased organic matter entering surface waters in the form of leaf litter and logging debris leads to a decrease in water quality and perhaps eutrophication. These impacts can be mitigated by the reestablishment of forest cover as soon as possible after clearing, use of fast-growing, intermediate tree crops or mulching of exposed soils, no clearing on steep, unstable slopes or highly erosive soils, replanting as soon as possible after the cut, limitation of harvesting to dry season or season of low rainfall and establish buffer zones along streams.

Impacts on Socio-Economic Environment

5.4.1.6 Loss of Productive Land

The most immediate effect of road development on soil is the elimination of the productive capacity of the soil covered by roads. The best sites for road development (flat and stable) are also ideal for agriculture. The narrow and linear character of the road makes the impact of lost land seem minimal, but when the width of RoW is multiplied by its length, total area of land removed from production becomes much more significant. It impacts on local economy, food sufficiency of the area and has socio-economic implications, leakage of oil and lubricants and other chemicals on cultivable soil and communal water resources. Soil productivity can also be reduced significantly as a result of

compaction with heavy machinery during construction leakage of oil and lubricants and other chemicals on soil etc.

5.4.1.7 Land and Property Acquisition, Compensation, Resettlement and Rehabilitation

Road development often requires the procurement of privately owned land. This land has to be acquired by the government from its current owners. While it is sometimes possible to negotiate a price for the voluntary sale of a property, governments often have to use eminent domain to acquire properties for public projects. By its nature, expropriation may cause economic losses and social and psychological disruption for the affected individuals and their families.

An increase in commercial activities like general shops, lodges, hotels, liquor shops, as a consequence of opening new road links, may lead to the increase (or in some cases decrease) in land values (adjoining and others). Operation of roads may bring about changes in the agricultural practices, productivity, crop-variety, etc. and land-uses (increase in built-up areas, decrease in agricultural areas, forest areas, etc.), farmers' livelihood and may also encourage tourism. The induced changes are not necessarily limited to the immediate vicinity of the road route. Both positive and negative social and environmental consequences are possible from such changes. After construction of road and better access, a situation may develop in which the value of land in a particular area is increased, leading to higher rental value, a turnover in occupancy, and a replacement of lower income tenants and residents by those who can afford the higher rents (often migrants and/or outsiders). This process, known as gentrification, is mainly a distributional issue, recognizing that a road development project can harm the weaker segments of the community while favouring the wealthier ones.

The government's right to expropriate carries with it a responsibility to ensure that those affected do not bear an unfair share of the costs of a project which will bring benefits to others. In the simplest terms, this responsibility should be to ensure that the standard of living of all affected persons is restored to the level enjoyed before the commencement of the road project. Depending on how well the resettlement is planned, it may go a long way in compensating for the loss and disruption, or it may exacerbate the suffering. More details on resettlement, compensation and eligibility are presented in the RPF. In cases where local settlements are affected in road upgrading projects, the specific IEEs/EIAs under the forthcoming BBIN Program make due reference on how to solve locally the problems of relocating and compensating private structures and business (particularly in locations where the upgrading works happen in rural market areas).

The economic impacts of expropriation may include the loss of houses or businesses or the loss of business income, either temporary or permanent. The social and psychological impacts and associated costs are more complex, and they are often much more devastating. Business people may find their established clientele cut off from their shops or experience changes in business practices they neither anticipate nor like. These kinds of social and economic changes often find personal expression in a variety of physical or psychological disorders.

The existence of new establishments of squatters on the right-of-way poses particular challenges for road and land-use managers. There are many reasons why the poor, the homeless, those pursuing informal economic activities, and small-scale farmers encroach upon the publicly owned right-of-way and, in many cases, the existing road surface. More often than not, road projects tend to displace these persons whose very presence signifies their need for special attention. Legally, projects often recognize only formal registered titles. The result is commonly impacting the road structure and impedes proper maintenance operations. Among the most frequent encroachment observable in rural settings of Nepal are:

- Selling of goods, whether from individual kiosks or more expansive markets;

- Small businesses such as cafes and vehicle repair shops;
- Uncontrolled stops by buses, taxis, and informal public transport;
- Unregulated parking, often related associated with business activities;
- Production of bricks on the road surface; and
- Growing of crops and drying of farm produce within the road reserve.

Various forms of informal or unregistered title, including usufruct rights (permanent or temporary use), seasonal use rights, rights of access to commons, and others, adds to the complex nature of resolving land-use conflicts. However, lack of legal tenure of land or assets should not be regarded as a criterion for withholding financial compensation or assistance in relocation. Instead, it is important to distinguish those who were living in the project area prior to project approval from those who have invaded the area simply to benefit from the relocation.

The new road generally stimulates ribbon settlement along the alignment, often resulting in incremental adverse environmental and socio-economic problems if not properly managed. Some of the undesirable activities of people living or moving near roads are over-grazing of terrains otherwise needed for embankment stabilization, unauthorized and inappropriate collection of firewood/fodder/mowing from road reserve and vicinity, cultivation without terracing in the immediate vicinity of the road, cultivation to the very edge of terraces or cut slopes, uncontrolled quarrying of stone and clay from the road cut slopes, poor construction and maintenance of irrigation canals causing water to seep into road slopes and slash and burn cultivation in road vicinity.

It is strongly emphasized to control and restrict ribbon development after new or upgraded road projects come into operation. Good land-use planning must be developed to reverse the direction of such undesired development. In specific, markets areas need to be planned for further expansion to avoid increased congestions, accident risks and impediments for large transport vehicles and delivery of goods. As applicable, road bypass solutions need to be considered as principal mitigation and future planning measure.

5.4.1.8 Disruption of Community Structure and Livelihood

Rural communities owe much of their vitality to economic and social interactions. Ironically, while roads are central to continuing interaction, new or widening of roads can cause disruption to local interactions, which outweigh benefits. Thus, both new road and significant widening have the potential to split a community. Neighbourhoods can be disrupted and, in the worst instances, broken up completely by large construction projects. People who meet on a daily basis and who constantly do each other small but important favours may be left deprived when separated by physical barriers or long travel distances. The split effect of roads crossing through settlements poses specific risks when school children have to cross that road repetitively during school days.

The Introduction of faster traffic, access controls, and median barriers generally cut traditional lines communication. Alternative routes for local movements provided after new construction can sometimes be substantially longer, directly affecting businesses, pedestrians, and users of non-motorized transport. The burden of accommodating changes is generally greater for the poor. In rural areas, the normal links between villagers and their farmlands may be cut by a new road or increased traffic.

On the negative side, communities may fear a loss of business from the diversion of traffic, and some community activities may “migrate” to the new route, potentially changing existing land use patterns and possibly undermining the objective of greater control of access on the new route. By-passes, like

other road projects, can also cause changes in vehicle flow on the secondary network, possibly creating nuisances if traffic should increase at some locations.

5.4.1.9 Conflicts in or with nearby Host Communities

While most resettlement planning concentrates on those people who need to be resettled, the community or communities that receive and absorb the resettlers must also be taken into consideration. In regions where arable land is scarce, or whether other basic resources such as fuel wood and water are in short supply, the impacts on the host community from the influx of a new group of ''users" can be severe and highly controversial, leading at times to frictions and even physical clashes.

The host areas' ability to sustain a resettled population without serious resource depletion should also be assessed. Important factors to consider include:

- Availability of clean water (in all seasons)
- Amount of productivity of agricultural land
- Utilities
- Health services
- Education facilities
- Sewage disposal and water delivery systems
- Road network

Great care must be taken to avoid resettling people in areas where they will be viewed as trespassers talking up resources in short supply, or in areas that are totally foreign to them. In the former case, the resettlement can become a major source of tension within the community and may end up being the basis for enduring conflict. In the latter case, people who are resettled in unfamiliar environments may have considerable difficulty adjusting, e.g., having to learn new agricultural methods to apply on different soils. Resettlement may drive these people into long-lasting poverty or destituteness.

5.4.1.10 Impacts on Vulnerable Indigenous People and Dalits

Indigenous people and Dalits are commonly among the poorest segments of a population, especially in the remote areas of Nepal. Dalits have the lowest status in all senses, i.e., lacking land resources, livestock, education, sufficient income, access to all services and facilities (including cultural and religious). In many rural areas, it is the tradition that Dalits depend on Adhibasi/Janajatis (indigenous people) and so-called higher castes for livelihood, whereas the indigenous groups depend partly on higher castes for supporting their livelihoods. Indigenous people engage in economic activities that range from shifting agriculture in or near forests to wage labour or even small-scale market-oriented activities.

The cultural, social, political and economic integrity that characterizes indigenous peoples renders their lives vulnerable to disruptions from outside. Whether a road is being planned to cross an area inhabited by indigenous peoples or to open up that same area, it will have a marked effect on their lives. A ‘Cultural Shock Effect’ is not uncommon when isolated communities are exposed relatively rapidly to increased communication with the outside world.

The general principle that should be followed throughout the BBIN Program is to apply to the maximum extent a strategy that specifically adopts good opportunities for vulnerable groups and women. The sub-projects shall therefore explore processes to engage local (experienced) NGOs/CBOs who will mobilize local groups to become engaged as unskilled labourers in the planned work construction activities. The NGOs/CBOs will coordinate the contracting process and ensure that the

Contractors will pay fair, timely and gender-equal salaries to the same category of works. The NGOs/CBOs may also explore possibilities to arrange for funds where part of the salaries will be added. These funds then may be used for establishing cooperatives for developing other income-generating options, and avoid that newly gained incomes will not be lost.

The foreseen construction works must also take into due account that the new access situation to formerly remote and backward regions will invariably affect social cohesion, produce physiological effects on the individual. Road planners, working closely with indigenous community representatives and sociologists, must attempt to enable indigenous people to adapt at a pace and in ways that they can manage and control, and explore all means to avoid social tensions and conflicts between outside staff (mainly technicians, suppliers) and local people.

Impacts on indigenous people from poorly planned road projects can be:

- Loss of Traditional Sense of Identity: For many traditional groups, the land is an inextricable part of themselves, their lifestyle, and their livelihood. Flora and fauna are typically considered beings that are an integral part of their cosmos. Thus, the very definition of self is bound up with the land, and its flora and fauna, in a manner often alien to outsiders. Roads can too easily disrupt this sense of identity and may lead to an ecological imbalance when the local population loses responsibility for their proper environment.
- Loss of Livelihoods and Violation of Traditionally-exercised Land Rights: New and improved roads bring increased contact with outside people, who either occupy the land for farming or exploit other resources such as minerals, forests, or wildlife. The increased competition for existing resources can put the indigenous people at a disadvantage, especially when the settlers introduce ecologically inappropriate and unsustainable production systems. Often indigenous people have no recognized land ownership, and they are not compensated for the land that is taken from them. Rather than fight for their rights in an alien national legal system, they may withdraw from the new population centres, thus increasing the population pressures on another, already traditionally occupied land. In extreme cases, physical conflicts can break out between settlers and the host communities when the latter try to reclaim their heritage and traditional rights.
- Health and Social Problems: The new arrivals of migrants, as well as the road construction crews, often bring with them serious health and social problems, including endemic diseases, sexually transmitted diseases, violence, crime, alcohol abuse and other conflicts that destabilize traditional lifestyles and can take a heavy toll among relatively isolated indigenous people.

5.4.1.11 Damages of Community Infrastructures

Experience has shown that road construction activities often disrupt community infrastructures such as irrigation canals, drinking water supply systems, electric poles, telephone lines, water ponds, schools, foot trails and cattle trails. Disruption is caused by siltation or burial of irrigation canals, exposure and damage to water supply pipes. Such situations may lead to inconvenience for rural populations in terms of carrying out their routine lifestyle due to disruption of facilities. This can potentially cause social conflicts and will affect the smooth progress of works.

5.4.1.12 Occupational and Community Health and Safety Risks

Occupational Health and Safety (OHS) of workers is an important issue during construction. The OHS concern arises from the operation of stone crushing, bitumen use, operation of earth moving equipment, use of blasting materials, and all other construction activities. Accidents may occur during the construction and operation of roads causing injuries or loss of property and life. Some common

reasons for accidents in rural road works include unsafe excavation, the collapse of trenches, injuries from unsafe tools/equipment, lack of protective clothing, debris falling from hill slopes, inappropriate disposal of construction and campsite wastes, electric failures, etc. OHS can only be maintained by stringent awareness training through the contractor and by providing adequate medical arrangements ready in case of emergency, including provisions for fatal accidents and invalidity. Similarly, OHS issue also covers the quality of living space, facility of clean drinking water, sanitary practices with toilets and solid waste management system etc., within the labour camps. The dust raised by construction activities and blown by air may pose health risks to the workers and inhabitants near the road alignment. Construction practice should employ dust control practices/measures, and construction activities should be scheduled, taking this into account.

Vector Diseases are another common problem associated with the sudden influx of work personnel. Gathering and contacting local people may lead to the transmission of infectious/communicable diseases. Disease transmission is facilitated by the migration of people, particularly among migrant labourers. If proper sanitary conditions are not maintained in the camps, it may create a pool of waters and a pile of waste which will attract vermin and vector diseases. Such vectors and new diseases may spread to local population, who are not immune to such diseases. Stagnant water bodies created due to road construction such as borrow-pits and quarries may become breeding sites for disease vectors. This may contribute to an increase in the number and type of disease vectors and incidence of water-related infectious diseases. Increased movements of people (from or to outside) may introduce new diseases to the area (particularly, communicable diseases like Tuberculosis, cholera)

Communicable and sexually-transmitted diseases, especially COVI-19 and HIV/AIDS, are of particular concern in border regions with India. The spread of these communicable diseases is one of the prime concerns associated with large construction camps. Effective countermeasures and the highest level of attention are mandatory in road development projects planned in areas with highly affected HIV prevalence. Moreover, the sub-project will take necessary measures to contain the risks posed by the COVID-19, which includes adopting COVID-19 related protocols issued by the government of Nepal, the WHO and the WB and making both workers and members of local community aware of the protocols and other required precautionary measures. Effective measures are frequent awareness campaigns, involving both the labour forces and the local communities, and regular health check-ups among both to detect and control transmission of such diseases. Such activities are to be carried out by both specifically engaged NGOs in conjunction with the contractors who must be obliged for such actions in specific contract clauses.

Competition for local water supply and water contamination are other potential sources of conflicts between the work forces and local communities. Extraction of a large amount of domestic use waters and surface or groundwater contamination often occurs when an influx of people associated with the road project overloads the local sanitation infrastructure, and encourages the spread of water-borne diseases. Accidents involving spillage of fuel and chemicals may pollute water sources and contaminate the water supply.

Cultural and social conflicts may arise when outside workers get in contact with locals of different cultural backgrounds. Often conflicts may be associated with increased consumption and availability and consumption of alcohol and drugs. Adequate efforts should be made to maintain social harmony and co-operation among the workers and local residents. Other social issues during construction are payment to the workers/labours (in time and adequately); protection, improvement and integration of approach trails and tracks, *chautaras*, etc. to the road as special features; road-side new income generation activities (tea-stalls, *dal-bhat* shops, PCO/telephone booth, milk booth etc.); traditional activities (cultivation, porter goods).

Construction activities in project areas would raise expectations for jobs and induce labor influx with concerns for traffic safety, spread of communicable diseases, incidents of sexual exploitation abuse and sexual harassment (SEA/SH) especially of women and girls in the communities. ESMPd will include comprehensive mitigation measures and protocols for managing SEA/SH issues. In addition to implementing the ESMP, the contractors are required to adopt workers' code of conduct to mitigate SEA/SH risk. The PCUs will incorporate relevant provisions in contractor bidding documents including a Code of Conduct for the workers, set up a SEA/SH compliant Grievance Mechansim and raise awareness on SEA/SH among the beneficiaries.

5.4.1.13 Road Safety Impacts

Road safety issues naturally increase when the upgraded/new roads go into operation. Inherently, roads bear accident risks that may cause adverse effects to the individuals afflicted and may lead to a variety of direct and indirect environmental damages. Traffic accidents because of negligent crossing or walking, undefined crossing sites, narrow roads, low-quality shoulder surface, poor visibility, careless driving at high speed, rushing in the roadway, lack of non-motorized lanes, inadequate traffic signs, inappropriate road standards and designs, and by natural disasters.

There are many features of a road and its associated structures which influence the risk or the severity of a road. Pertaining parameters include:

- pavement and shoulder condition, roughness and surface grip;
- presence of roadside poles, trees, ditches, steep slopes, and barriers;
- signage, markings, intersection layout;
- roadside access, parking, and bus stop arrangements;
- provision of pedestrians, cyclists and other non-motorized road users.
- traffic control and enforcement of traffic rules
- drivers behaviour and license system
- public safety awareness and educational standards
- vehicle maintenance
- road maintenance;

5.4.1.14 Impact on Cultural and Historical Assets

Cultural heritage is a form of expression of human values which serves to record past achievements and discoveries. Cultural heritage includes tangible and intangible heritage, recognized and valued at local, regional, national or and/or global level. Cultural heritage includes sites, structures, and remains of archaeological, historical, religious, cultural, and aesthetic value. It is important to identify and assess the impact of works on cultural heritage sites and practices, paying attention to adverse impacts on aesthetic, historical, scientific, and social value, in addition to its amenity value. The process of identifying and assessing impacts on cultural heritage will be conducted collaboratively with local communities, including *Guthis* of such sites and assets.

Cultural and historic sites may be threatened by road construction and associated works such as excavation, filling, quarrying and spoil disposal, and unregulated/increased access to cultural heritage sites. Such activities can destroy heritage sites or alter their characteristics. Aesthetic impacts on cultural monuments and archaeological sites can occur. Construction of roads can open up access to heritage sites and facilitate encroachment of culturally and historically important areas (temples, shrines, *dharamsala, sattal/pat*i, religious sites, *mela, jatra*, caves, graveyards, forts, palaces). On the other hand, the increased accessibility may attract visitors to these areas, which encourages better use, care and conservation of the same.

5.4.1.15 Impact on Landscape Aesthetics

The adverse aesthetic impact can commonly result from poor design, faulty identification of likely impacts during the process of EA, and lack of commitment from responsible agencies and stakeholders. Badly designed road structures and affiliated structures. Landscape sores relate particularly to ill-designed or monitored activities resulting from borrow pit and quarrying operations, from landslides that could have been avoided, and from indiscriminate dumping of spoil material. Deteriorating aquatic systems are equally sources of reduced landscape values, especially when signs and secondary effects of pollutants become evident.

A road can be visually attractive or unsightly depending on its physical layout within the surrounding landscape and how far the attention is given to detailed designs, roadside planting and maintenance. In contrast, road design may lack aesthetical considerations when a landscape is distorted by repellent cuts, repulsive borrow pits, unused quarries, and landslides, all leading to depreciation and loss of scenic values of the site. Road-induced activities may lead to the generation and mismanagement of wastes (solid and liquid) in the roadsides and create scars on the landscape.

6 Environmental and Social Impact Management Measures

6.1 Introduction

This Chapter presents a set of technical aspects to guide planners and contractors to cope with typical environmental and social impacts as they are likely to occur in the forthcoming BBIN 1 Project. The Chapter is organized to provide the framework for the planners and practitioners of the EAs while considering typical mitigation measures as they occur in the chronological sequence of proposed projects in BBIN1.

The following sections will provide guidance on addressing the impacts from the proposed project activities. The mitigation measures basically follow a commonsense approach that aims to viable, practical, and cost-effective solutions, which in turn would supplement its environmental and social sustainability. As such, four approaches are pursued: preventive measures, seeking alternatives, undertaking corrective measures, and arranging for compensation where particular impacts are unavoidable.

6.2 Phase-wise Mitigation Measures for Environmental and Social Risk and Impacts

6.2.1 During Design Stage

The mitigation measures adopted during the design or pre-construction phase will aim to address and mitigate expected environmental and social impacts of the proposed investments, are preventive in nature with two basic objectives: (1) avoiding costly mitigation and (2) awareness among the stakeholders for environment protection while rehabilitating and operating infrastructure services.

6.2.1.1 Detailed Survey and Design

At this stage, the consultants shall conduct a census survey and assess the potential impacts and losses on properties and lands, and establish the baseline data for compensation. The detailed survey and design shall include all possible preventive measures to avoid or minimize slope instability, disruption of water systems, minimize disturbance to settlements, minimize forest loss, and affect cultural assets and the aesthetic value of the landscape.

The design shall adopt an environmentally and ecologically friendly approach to minimize the impacts during the execution of rehabilitation works as far as practical. Bio-engineering can be used for slope stabilization in an environment-friendly manner and plan for using local resources and manpower. For wildlife conservation, the hot spots for road kills and the areas where wildlife movement and migration and potential human-wildlife conflict should be considered are identified, and the necessary design solutions such as wildlife crossing, fencing and/or afforestation/landscape restoration should be introduced.

6.2.1.2 Inclusion of ESMP requirements in BOQ

To become effective and verifiable, all provisions mentioned in the ESMP shall be reflected in the Bill of Quantity (BOQ) explicitly while issuing Tender Document for the Contractors. The contractors must clearly quote these activities in BOQ rate and provide beforehand any comments in case of opposing these clauses.

6.3 During Construction Stage

6.3.1 Benefit Augmentation Measures

Increased Income and Employment Opportunities

The road and bridge construction and rehabilitation work will use large numbers of man-days of unskilled local labourers. This will increase the individual living standard of the selected beneficiaries and enhance the local economy. The coordination for local employment arrangements will be facilitated through local authorities as applicable. Supplementary activities and programs might be considered that will equally be facilitated through contracted NGOs, e.g. access to micro-finance, cooperatives, cottage industries and diversification of crop and non-farm products.

Enhancement of Technical Skills

During the road upgrading works, the local labourers will be given training in the road, soft engineering structures construction/ maintenance and bio-engineering works. This can help them to find a job as skilled workers in future projects as an alternative occupation in addition to agriculture.

Enhancement of the Local Economy

During construction/rehabilitation works, there will be a large number of people and construction/ maintenance crew working in the area. Consequently, there will be a great demand for consumable goods and local products such as vegetables, poultry and dairy products, cereals, and fish. Small food shops and tea stalls will be in demand. The proposed enhancement measure is to facilitate the process where local people may be willing to obtain micro-credits to start some enterprises.

6.3.1 Mitigation of Impacts on Physical Environment

6.3.1.1 Addressing Changes in Land-use and Loss of Land

In cases where impacts to the adjoining land are unavoidable, appropriate mitigation measures shall aim at minimizing the impacts and increasing the productivity from the remaining land

- Applying specific/additional protective measures that the remaining land will not have any detrimental effects (caused due to road rehabilitation works)
- Improving agricultural extension service
- Improving/widening forestry extension services to increase productivity and NTFP diversification in Community Forests
- Choose good sites for compensatory plantation in response to the vegetation cleared due to construction/ rehabilitation works.

6.3.1.2 Coping with Slope Failure and Erosion

Good practices and prevention measures to cope with erosion and associated problems are :

- Mass Balancing techniques to be applied so as to avoid the production of excess spoil material and reduce the need for borrow pits
- Choose the best work period to limit risks of erosion- avoid the rainy season
- Design and development of retaining wall or slope stabilization measures
- Avoiding the creation of cut spots and embankments which are of an angle greater than the natural angle of repose for the local soil type,
- Protecting trees and vegetation in the road alignment vicinity and re-vegetation of cut slopes as soon as possible.

- Replanting disturbed areas during the rainy season to recover the area.
- Drainage improvement to control location, volume and speed of water flow in water courses in the vicinity of exposed soils and slopes.

Bio-engineering methods, such as afforestation, should be employed to the maximum extent possible to protect slopes and maintain ecological balance. Replanting cleared areas and slopes is the most effective action to be taken in reducing erosion and stability problems. It should be undertaken as early as possible in the construction/ maintenance process as soon as the soil becomes stabilized and before erosion becomes too advanced. The benefits of such bio-engineering solutions are:

- Catch and retain material moving over the surface;
- Armour the surface against erosion and abrasion by intercepting raindrops (leaves);
- Reinforce the soil profile by increasing its shear resistance (roots);
- Drain the soil profile by drawing water out through the roots and releasing it to the air by transpiration; and
- Facilitate infiltration of water through the soil profile, thereby reducing the proportion of water flowing over the soil surface (roots).

In many cases, vegetation alone may not be enough to prevent erosive damage to slopes, and various engineering measures may be needed to complement or replace it. The use of slope retaining techniques may be necessary when slopes are unstable because they are too high and steep; climatic conditions are such that establishment of vegetation is slow or impossible; there is a risk of internal erosion or localized rupture because of drainage difficulties. Well-established engineering measures for slope protection include the following:

- Intercepting ditches at the tops and bottoms of slopes.
- Gutters and spillways are used to control the flow of water down a slope;
- Terraced or stepped slopes to reduce the steepness of a slope;
- Riprap or rock material embedded in a slope face, sometimes combined with planting;
- Use of retaining structures such as gabion, cribs etc. with battered back against the slope;
- Gravity stonewall or RCC wall.

In addition, there are a variety of mitigation measures at choice, such as jute netting, bamboo terracing, turfing, construction of Hessian-bag walls, dry-stone retaining walls, gabion walls, drainage ditches/works, etc. that may be used for slope protection. Change of road alignment may also become necessary in some instances. Sophisticated techniques like the use of traditional retaining walls should only be adopted in the most difficult cases when there is no other viable solution. Other precautionary measures include undertaking cut and fill activities during the dry season, construction of drains and ditches to avoid damages by water flow and the regular maintenance of the slope protection measures.

Compensatory measures to cope with erosion and associated problems are:

Topsoil (15 to 25 cm top layer) is an important natural resource that needs to be preserved to the extent possible. It takes a long time to form a layer of topsoil and is, therefore, a high priority is accorded to the conservation of the soil during road construction. Topsoil must be carefully stripped separately from the subsoil and collected from the area of excavation and stored at a designated safe place for later use. It should be stored with protective measures, including covering, making bund and drainage around the stockpile etc. It should be reused to reclaim land, form a cover layer on spoil disposal and landscaped areas, reclaimed land, the slope of embankments prior to turfing or replanting or developing as farmland. This way, the productive area lost can be compensated to some

extent. Other measures may include remediation of soils whose productive capacity has been reduced during the construction phase, for example, by using a subsoiler to break up hardpan produced by compaction with heavy equipment.

6.3.1.3 Addressing Destabilisation of Slopes

Due to the complex interaction between water, soil, fragile geology, seismic events and topography, common features, particularly in hilly regions of Nepal, are slope failures, landslides, and mass wasting. These factors can easily be further aggravated by road construction activities such as earth excavation, namely in unstable zones, drainage works, quarrying and spoil disposal. Practical mitigation measures are at hand, such as:

- First, design the road with optimum balance in cut and fill with good positioning of road and good construction supervision.
- Second, do not undertake road construction during peak rainy season.

In mountainous terrain, gradual widening, i.e., construction of narrow track of typically 2 m width in the first year and widening later, provides an opportunity for natural stabilization of the slopes and growth of vegetation during the rainy season. This helps to control slope failure and soil loss in the hills and mountains.

The high geometric standard of highways and feeder roads of DoR/GoN is difficult to achieve in many areas with irregular terrain. Although the main slopes are often massive, there is very often a micro-topography of spurs and re-entrants, which make it difficult to achieve the geometric standard without a considerable amount of slope cutting. Older roads such as the Tribhuvan-Rajpath and the Kathmandu – Trishuli road, built to a lower geometric standard, demonstrate how this can be avoided at the expense of travel speed and comfort.

6.3.1.4 Precaution Measures during Slope Cutting Activities

Slope cutting should be done based on the natural type of material, and a natural slope should be maintained. The general angle of slope cutting in different types of geological characteristics is given below.

- Loose clay and vulnerable geology - 2:1
- Compacted soil with a slope towards the road - 4:1
- Soft rock - 6:1
- Hard rock - 8:1

6.3.1.5 Avoiding Hazards due to Unsafe Spoil Disposal

Construction work implies that extensive excavations will be carried out to prepare for the RoW. Spoil should be well managed with appropriate terracing at appropriate locations. Spoil should be managed to adopt the following principles and methodologies:

- Preventive Measures:
    - Careful selection of the road centre line by adjustment up or down the slope should aim to achieve a balance between cut and fill within a reasonable haulage length. Alignments on ridges are considered to be the best alignment avoiding excessive excavation. Other suitable options include balancing cut and fill for minimizing spoil generation and using phased construction techniques.
- Mitigative Measures:
    - Wherever possible, use surplus spoil to fill eroded gullies and depressed areas.

- If feasible, spoil material may be disposed of in abandoned quarries and borrow pits as means to help restore original contours.
- It is advised to use the excavated materials for reclaiming the degraded land in the near vicinity in consultation with local communities on their preferences.
- Never dispose of spoil on fragile slopes, flood ways, wetlands, farmland, forest areas, natural drainage paths, religious and culturally sensitive sites, wetlands, canals, and other infrastructures.
- Acidic and saline spoil shall not be spread onto agricultural land.
- Never dispose of spoils in areas that will create inconvenience for the local community, or it will deprive their livelihood.
- Spoil material may be discharged to a landfill that is constructed using a series of small spoil benches to prevent slope overloading;
- During disposal, place the spoil in layers of about 15 cm and compact each layer at optimum moisture content,
- After the disposal, the site should be landscaped, provided with proper drainage, planted with vegetation, and provide adequate protection against erosion and scouring.
- Spoil should not be disposed of in rivers, lakes and water bodies;
- Exposed areas should be planted with suitable vegetation at the earliest opportunity following the GESU/DoR Manual on 'Vegetation Structures for Stabilizing Highway Slopes- A Manual for Nepal'.

- Compensatory Measures:
  - Provide adequate compensation to land and property damaged by spoil storage and disposal;
  - Use well-covered spoil to build community facilities like playgrounds or parks by reclaiming land in a public area;
  - Use spoil in local road net and embankment construction works.

6.3.1.6 Avoiding Hazards due to Water Flow Diversion

The road construction & rehabilitation works often imply water flow diversion, with several induced sequential secondary impacts on both the bio-physical and socio-economic environment (e.g. fisheries). Adequate mitigation measures are therefore of paramount importance to ensure the environmental soundness of such projects.

- Preventive Measures:
  - Wherever possible, drainage structures should be designed and constructed to have minimum interference with and impact on the natural drainage patterns in the area;
  - Avoid surface water discharge onto farmlands or risky locations. Always consult local communities regarding the location of drainage outfalls. Provide adequate protection measures like apron and walls at the disposal points to prevent scour and undercutting.
  - Do not divert water away from a natural watercourse unless it is absolutely necessary or otherwise environmentally desirable;
  - Avoid blockage or diversion of natural channels due to construction/ maintenance of road and bridge embankment and disposal of spoils
- Mitigative Measures:

- Provide suitable water management and gully protection works, e.g. check-dam and bank protection, in the affected areas. In the hills and mountains, it is often necessary to extend these measures well outside the right of way, typically up to 500 m.
- Flow speed control: Protect, conserve, and promote ground vegetation, including use of grasses (turfing) or replantation of trees, which absorbs surface run-off, reduces overland water flow speed, and provides protection against erosion. Structures like riprap and other devices in water channels and dispersal structures in main drains reduce water speed and can substantially reduce potential impacts at their discharge points;
- Paving: section of gravel roads prone to erosion and likely to be a source of sediment can be paved to reduce the amount of sediment produced. This is especially relevant near water crossings.

6.3.1.7 Avoiding Hazards originating from Quarry and Borrow Activities

Collection of construction/ maintenance material may have long-term and sometimes irreversible effects, for example road-side borrow pits may pose increased accident risks, or, if left unmanaged, may become filled with garbage and stagnant water, being both an eyesore and source of a breeding ground for mosquitoes and other disease vectors.

- Preventive Measures:
  - Always select sites that will not result in slope instability, erosion, disruption to natural drainage patterns, river bank cutting, destruction to forest/vegetation, damage to farmlands or other social, economic, cultural resources.
  - Borrow sites should be located away from cultivable lands and settlements drinking water intakes;
  - Quarry and borrow pit should be located in the structurally stable area, even if some distance from construction/ maintenance site. In the long run, unsound quarries and borrow pits can promote slides and further aggravate maintenance and traffic flow resulting in higher overall costs.
  - Quarry and borrow pit locations shown in design documents are provided only as a guide. It is the Contractor's responsibility to verify the suitability of all material sources and to obtain the approval of the Engineer. If possible, seek borrow pit locations not immediately adjacent to the road shoulder.
  - The sustainable rate and total amount of extraction from the sites should be assessed.
  - For both quarries and borrow pits, locations should be selected in consultation with local residents and water users and ensure that irrigation intakes, water intakes, bunds and local fishing areas and activities are not adversely affected.
  - Educate local communities not to use abandoned quarries and borrow pits as garbage dump sites, and alert them on the inherent health risks when doing so.
- Mitigative Measures:
  - Extraction of sand and stone from seasonal rivers should be avoided due to the impact on complex flood hydrology, which can result in much more serious storm floods.
  - Extraction of stone and sand should be spread over the longest length possible so that no section of the river bed is excessively disturbed;

- Clearing of trees and other desirable vegetation should be discouraged. Only those trees which are absolutely necessary to operate the sites should be cleared;
- If clearing of trees is needed, then the cost of replanting and maintenance for a 12-month period should be included in the Bill of Quantities. As an alternative, the contract for replanting and maintaining the trees can be awarded to local communities, people, or NGO;
- Stripped material shall be stored so as to not disrupt natural drainage and shall be protected to prevent erosion and migration of soil particles into surface water.
- Temporary ditches and/or settling basins should be dug to collect runoff water and to prevent erosion and contamination of surface water;
- The undesirable ponding of water shall be prevented through temporary drains discharging to natural drainage channels;
- In case ponding takes place at the time of decommissioning the site, insecticide spraying may be considered to combat water-borne disease vectors.
- Extraction locations should not be near bridge and river training structures;
- Location of extraction should be selected where there is little fine material to be carried downstream;
- The site should be restored after completion of construction/ maintenance activities, and left in stable condition without steep slopes;
- If possible, the sites should be filled, the final surface should be graded to provide surface water drainage, stripped material should be spread to stable contours in order to promote percolation and re-growth of natural vegetation, and also planted with vegetation to provide protection against instability, erosion and scouring;
- The restored site should be drained, and no standing water shall remain. Stagnant waters become disease vectors breeding sites and pose a threat to public health;
- The sites must always be closed and restored in a planned and appropriate manner to suit local conditions and in consultation with the concerned owners and/or community. It should be done before spreading equipment is allowed to leave the site;
- Apply proper fencing so nobody can deposit garbage and other waste material in the decommissioned sites.
- Land utilized for river bed extraction and quarry site access roads should also be restored, as applicable;
- Exposed areas should be planted with suitable vegetation at the earliest opportunity, and the contractor shall follow the recommendations specified by the staff of GESU/DoR.

- Compensatory Measures:
  - Provide adequate compensation to the landowner for providing his area for quarry and borrow pit operation;
  - Provide adequate compensation to land and property damaged by the quarry and borrow pit operation;

6.3.1.8 Address Risks associated with Stone Crushing Plants

Crushers commonly cause problems associated with air and noise pollution. Much of such impacts can be controlled by sensible technical solutions (filters, canvas) and proper site selection criteria.

- Preventive Measures:

- The selected site should avoid being in the main wind direction that would carry emissions to nearby human settlements or sensitive ecological habitats.
- Sites for Stone Crushing Plant should be located away from settlement, school, health posts/hospitals;
- Stone Crushing Plant should be located away from drinking water sources and intakes, cultivable land and sensitive ecosystem areas including wildlife habitat;
- The Contractor must submit a plan indicating the exact plant location, construction/ maintenance schedule and an operation plan to obtain approval of the Engineer before locating and operating stone crushing plants.
- The plan should clearly mention in the technical specification the technical preventive measures to control dust, erosion protection, water pollution prevention and safety measures. These measures are compulsory to be adopted by the Contractor;
- The Contractor must exert all efforts to supervise this work site, especially to prevent children from approaching the plant.

- Mitigative Measures:
  - Stone Crushing equipment should be fitted with approved dust control devices and operated in accordance with manufacturer's specifications;
  - Stone Crushing Plant should be operated only during the daytime. If necessary and if requested by locals based on rational reasons, the timing of operation should be planned in consultation with local communities so as not to disturb local schools, health posts, markets, settlement areas etc.
- Compensatory Measures:
  - Compensation for land and crops damaged due to operation of crushing plant should be given by the Contractor to the affected landowners;
  - The site should be cleaned and brought to original condition after closure and dismantling of the crusher.

6.3.1.9 Addressing Issues associated with Stockpiling of Materials

- Preventive Measures:
  - Sites for stockpiling of material should be located away from cultivable lands and settlements, drinking water intakes, public places, near school and health centres;
  - Sites for stockpiling of material should be located away from the forest area, sensitive ecosystem, fragile and landslide-prone slope or terraces etc.
  - The Contractor must submit and obtain approval for a plan on location and mention erosion protection, water pollution prevention and protection from dust nuisance to be adopted by the Contractor;
  - The Contractor must submit and obtain approval for a plan on access to stockpile location, which must bypass school, health centres, market and other community centers to avoid the risk of potential accidents.
- Mitigative Measures:
  - Stockpiling of earth fill shall in most cases not be permitted during the rainy season unless covered by a suitable material;
  - Stripped material should not be stored where natural drainage will be disrupted;
  - Stockpiled material should be protected from erosion prior to the rainy season, including construction of drainage, trenches, and ponds around the heap;
  - As necessary, seal the area, so surface water pollution does not occur;

- Storage of material on private property will be allowed only if written permission is obtained from the owner of the authorized lessee.

- Compensatory Measures:
  - Compensation for land and crops damaged due to stockpiling of materials should be given by the Contractor to the affected landowners;
  - The site should be cleaned and brought to its original condition after closure and removal of the stockpile.

6.3.1.10 Avoiding Water Pollution

- Preventive Measures:
  - Avoid alignments that are susceptible to erosion, such as those crossing steep slopes;
  - Minimize the number of water crossings by the road, wherever possible;
  - Use only "clean" fill materials around watercourses, such as quarried rock containing no fine soil;
  - Leave buffer zones of undisturbed vegetation (width increased in proportion to slope) between road sites and bodies of water;
  - Do not dispose of spoils other hazardous substances near water sources or water bodies; and
  - Do not wash vehicles, or dispose of cement slurry etc. in water bodies;
  - Enforce law and penalties to violators.
- Mitigative Measures:
  - Flow speed control: water speed reduction measures, including the use of grasses (turfing), riprap, and other devices in water channels and dispersal structures in main drains, can substantially reduce potential impacts.
  - Settling basins: settling basins are sometimes used to remove silt, pollutants, and debris from road runoff water before it is discharged to adjacent streams or rivers.
  - Paving: section of gravel roads prone to erosion and likely to be a source of sediment can be paved to reduce the amount of sediment produced. This is especially relevant near water crossings.
  - Infiltration ditches: infiltration ditches can be used to reduce overland flow by encouraging the movement of runoff down through the soil profile. The volume of flow in downstream drainage structures is reduced, the flow of pollutants is localized, and groundwater is recharged.
  - Oxidating macrophytes such as cattails in temperate climates can be used to remove some pollutants naturally from settling basins. Such solutions, however, shall only be pursued if there are proven records that these species will not bloom or present competition to other aquatic organisms (such is the case of water hyacinths which rapidly become an invasive nuisance).
  - Water collection, control and treatment: This is a relatively expensive option for polluted runoff from pavements and slopes, but may be called for in particularly sensitive areas.
- Compensatory Measures:
  - Compensatory measures should be considered if they prove more cost-effective than mitigation or if mitigation proves impossible.
  - Reconstruct the affected water wells ;
  - Drilling wells for local residents who previously relied on surface water for drinking;

- Creating a replacement habitat for wildlife;
- Consider aquaculture development programs to compensate for losses in catch fisheries, and
- Incorporating environmental enhancements in the projects.

6.3.1.11 Avoid Air Pollution

- Preventive Measures:
  - Route alignment of the road away from populated areas. As a general rule, avoiding densely populated sites means fewer potential impacts and reduced need for traffic management measures;
  - Take measures to reduce traffic congestion (e.g., control encroachment on RoW);
  - By-pass can keep traffic out of settlements;
  - Pre-identify the status of air cleanliness or pollution by measuring at selected sites (near proposed alignment) by measuring pre-defined parameters (e.g., CO, hydrocarbons, NOx, dust and particulate matter);
  - ensure proper driver licensing system
  - ensure proper training of drivers
  - Ensure proper maintenance status of vehicles with respect to emissions.
- Mitigative Measures:
  - Selecting road alignments that avoid passing close to housing, school, and work places;
  - Avoid placement of busy intersections near housing, schools and workplaces;
  - All heavy equipment and machinery shall be fitted with air pollution control devices that are operating correctly;
  - Stockpiled sand and soil shall be slightly wetted before loading, particularly in windy conditions;
  - Vehicles transporting sand and soil shall be covered with a tarpaulin;
  - Dirt and gravel roads through residential areas shall either be black-topped or surfaced with bamboo-reinforced concrete;
  - Sprinkle water on sites with ongoing construction activities. On associated gravel or dirt roads thrice a day to protect road users from dust nuisance;
  - Take account of prevailing wind direction when siting roads and road features, including re-fueling stations, near population centres;
  - Avoid steep grades and sharp curves which would promote deceleration, acceleration and shifting wherever possible;
  - Seal high-use dirt roads, where they pass through populated areas, to control dust;
  - Plant tall, leafy, and dense vegetation between roads and human settlements to filter pollutants (see figure below);
- Compensatory Measures:
  - Provision of farmland improvements or more economical space for farmers whose crop options have been restricted, or whole soil has been contaminated due to movement of heavy vehicles during construction/ maintenance;
  - Provide adequate funds to be used in additional cleaning and maintenance of important buildings and monuments;
  - Improvement of local health care facilities which will aid in treatment of pollution-related ailments;

- Promote community development programs that aim at reducing indoor pollution by introduction of more efficient and less smoke-producing cooking techniques.

6.3.1.12 Control of Noise Pollutions

- Preventive Measures:
  - Select route alignment of the road away from populated areas, schools, health posts, temples and other sensitive areas;
  - Take measures to reduce traffic congestion by preventing encroachment;
  - By-pass can keep traffic out of settlements, near school and health centres;
  - Carry out road checks to identify faulty vehicles.
  - The Contractor must use good condition vehicles with appropriate maintenance and have proper silencer;
  - Avoid placement of quarry and borrow pit access, stockpile access, construction sites near settlements residential areas, school and workplaces;
- Mitigative Measures:
  - All heavy equipment and machinery shall be fitted with noise pollution control devices that are operating correctly;
  - Application of bituminous layer produce less noise than concrete surface or open-graded asphalt or avoiding surface dressings in sensitive areas;
  - Avoid steep grades and sharp bends to reduce noise during design and construction;
  - Provide ear mufflers to the construction crew working at high noise exposure areas;
  - Use noise barriers. They are most effective if they break the line of sight between the noise source and the receptors being protected and if they are thick enough to absorb or reflect the noise received. Various materials and barrier façade patterns can be used to obtain maximum reflection, absorption or dispersion of noise without being aesthetically ugly. Noise barriers commonly employed consist of earth mounds or walls of wood, metal, or concrete which form a solid obstacle between the road and roadside communities;
  - Consider erection of noise barriers by planting bushes/hedges in the vicinity of sensitive road sections (e.g., in front of schools and health facilities).
  - Include education of local drivers in the awareness training provided through the projects.

6.3.1.13 Handling Hazardous Materials

- Preventive Measures:
  - Oblige the Contractor to present a plan for explosive, combustible and toxic materials. An appropriate and approved management plan for safe handling and storage of hazardous material must be compulsory and approved by the Resident Engineer.
  - Oblige the Contractor to include in this management plan an emergency plan in case of major accidents associated with improper handling or spill of hazardous materials.
  - The contractor must include fire-fighting training for labourers in his work routine
- Mitigative Measures:
  - Hazardous materials shall not be stored near the surface waters;

- All used lubricants and oil should be collected and recycled or disposed off-site in an appropriate manner by not causing environmental and social degradation;
- Hazardous materials should be stored only on impervious (concrete or plastic sheeting as approved by Engineer) floor with drainage and collection sump so as to retain leaks and spills;
- Apply sealing or binding material in case of major spills of (liquid) hazardous materials;
- Soil contamination can be controlled to some extent by using phyto-remediation by incorporating roadside planting strategies to control soil contamination problems. Some plant species render common road-derived contaminants harmless, while other species accumulate them in their tissue, making cutting plants and removing the debris for proper disposal an effective way to get rid of soil contaminants caused by the operation of the road.
- Immediately inform the MoFE in case of major hazards involving hazardous material and imminent risks for the adjacent natural resources.
- Contaminated runoff from storage areas shall be captured in ditches or ponds with an oil trap at the outlet;
- Contaminated and worn plastic sheeting shall be packed into drums and disposed off-site;
- The use and storage of explosives should be as per GoN regulations;
- The Contractor must install all safety and warning devices before commencing blasting operation;

- Compensatory Measures:
  - In the case where the damage occurred to vegetation, due compensation plantation needs to be carried out, as directed by the local Forestry Officers.
  - In case water resources get polluted, consider due compensation measures and/or payment to those having experienced losses (e.g. farmers, fisherfolk, and livestock cultivators).

6.3.1.14 Avoiding Hazards caused by the use of Bitumen

- Mitigative Measures:
  - The contractors must use bitumen emulsion where feasible;
  - In hilly areas with steep road gradients, cut-back bitumen should be used;
  - Use of fuel wood for heating bitumen shall be discouraged;
  - Where heating is required, bitumen heaters should be used, fueled by either kerosene, diesel or gas;
  - Bitumen should not be applied during strong winds and rainy periods, or if rain is likely;
  - No bituminous materials should be discharged into side drains;
  - Nearby trees, vegetation and private property should be protected (with cloth, plastic sheets, straw) during bitumen spraying work;
  - Bitumen drums should be stored at designated locations and not scattered along the road.
  - Work personnel handling hot bitumen must wear all time protective cloths (appropriate shoes, gloves). Work time with bitumen should be confined to a maximum of 4 consecutive hours/day to prevent respiratory hazards.

6.3.1.15 Management of Waste

- Mitigative Measures:
  - Before commencing the construction activities, the contractor will be required to prepare a Waste Management Plan and submit it to the PCU for their review and approval.
  - Collection and segregation of solid waste into kitchen waste (organics), paper and plastic (recyclable) and garbage (non-recyclable). Three kinds of waste bins (with different colors) with adequate numbers and capacities will be placed at the campsite (kitchen, offices, rooms) for the segregation of the waste at source.
  - Organic waste will be treated through onsite composting
  - Procure the services of waste management contractors for the collection and management of recyclable waste. Recyclable waste will be compressed through bailers to minimize the volume of waste to be stored and transported.
  - Local municipal waste disposal sites will be used for the disposal of garbage. No disposal sites will be established by the contractor
  - Before commencing the construction activities, the contractor will be required to prepare a Waste Management Plan, including hazardous waste management and submit it to the PCU for their review and approval. The plan will cover - manage hazardous material use, storage, transport, and disposal.
  - The contractor will place containers of adequate size and numbers in place for the collection of various types of wastes (metal, rubbers, used fuels, batteries, etc.) from the worksites, and transport these wastes regularly to a centralized facility.
  - The contractor will return the empty containers to the suppliers.
  - Handling chemicals properly. Storage of chemicals 100 meters away from any water sources
  - Develop waste disposal sites for each land port.

6.3.2 Mitigation of Impacts on Biological Environment

6.3.2.1 Addressing effect on aquatic life

Impacts during construction/ maintenance period. The construction and maintenance of Roads and Bridges will be likely to have impacts on local fish resources. The impacts are loss of habitat, reduced water flow, changes in water quality, and possible increases in river sedimentation are the impacts likely to appear/occur on aquatic life. The possible increase in sediment during the dry period may affect spawning areas survival of fertilized eggs and fish. The fry and fingerlings are supposed to be highly affected by the choking of the gill.

Fish Exploitation/Increase Fishing Activity. Fishing activity in the project area may increase throughout the duration of the project construction/ maintenance due to the influx of people. The labour force and their dependents may involve in fishing activities. The Use of dynamites, herbicides and electric rods will have an adverse impact on the local fish population. The use of dynamite, poison and electric rod will not only kill the fry and fingerlings, including adults, but also distract the habitat.

Loss of Micro Organism. Dewatering below the weirs will have serious impacts on micro flora and aquatic invertebrates. Loss of phytoplanktons, zooplanktons and aquatic insects will be lost in this section. The reduced flow would result in lower flow velocities, increased water temperature and shifts in zooplankton, aquatic vegetation and riparian vegetation. There could be a shortage of fish food for present fish.

Fish Entrainment. Some fish species may get entrained in the construction/ maintenance structures especially during the dry season when all the river water will get diverted during the construction/ maintenance period. The loss of fish due to entrainment is site specific. The magnitude of entrainment is expected to be low.

Loss of Livelihood of Fisherman. The water diversion structures in rivers, such as cofferdams, will affect the fisheries resources in the project area and influence the livelihood and income of families living around the project area. The local fisherman will be highly affected by the reduced flow.

- Preventive Measures
  - Avoid unnecessary blasting, cutting, excavation.
  - Construct adequate drainage network
  - Avoid vulnerable slopes for cutting
  - Minimize vegetation clearance
  - Compaction on the dumped material and;
  - Plantation of tree and bioengineering work should be undertaken.
- Mitigation Measures.
  - Aquatic habitat should be maintained healthy.
  - Debris should be disposed of in a safer place, leaving a little impact on aquatic habitats.
  - Spoil material should be disposed of along the bank of the river. It is advised that project should prepare a detailed muck disposal plan throughout construction/ maintenance period. A suitable alternative is the acquisition of land for work force and other units nearby the project site.
  - No disturbances in fish movement during June to October below and above project area.
  - Strict prohibition of fishing activities.
  - Gabion and geotechnical structures to prevent any silt entrance to the river.
  - Riparian release the 10-20% of the flow is proposed to maintain the major aquatic life such as the microflora, invertebrates and minor resident fish species downstream.
  - Water quality protection measures will have to be applied during construction/ maintenance phase. The construction/ maintenance contractor will require developing a waste management plan which details the use, storage and disposal of toxic, solid and sanitary waste and materials. No direct spillage of petrochemical or toxic materials should be allowed into the aquatic ecosystem. Latrines established at the construction/ maintenance camp will be located in areas isolated from surface and groundwater.
  - Habitat Management Program to control the loss of spawning and breeding grounds and productivity of fish foods and to minimize the fish losses should be undertaken.
- Compensatory Measures
  - Training and awareness program is suggested to compensate for the impact on local fisherman and increase the living status of the fishermen
  - Consider aquaculture development programs to compensate for losses in catch fisheries,

6.3.2.2 Addressing river regime issues (morphology, profile, and scope)

The removal of river boulders, temporary diversion of the river for the construction of weir, water pollution and a possible increase in fishing activities are considered the adverse impact of the project during the construction phase. The boulders occupy a large pool area acting as a fish shelter where as pebbles and gravels deposited in the river provide potential spawning habitat. The excess removal of boulders from a particular place will affect the fish habitat, and cause upstream migration and provide an easy place for the exploitation of fishes.

The impacts on the biotic environment are expected to be mostly negative during the construction of Roads and Bridges. Various project activities are likely to cause the loss of marginal riverine vegetation and local fish resources as a result of loss of habitat. The construction phase impacts are associated with sedimentation and water quality changes due to the disposal of effluents. Diversion of water will have a pronounced effect on downstream water quality parameters.

- Preventive Measures
  - Minimize the negative impacts, prior study of available data, detail study of site specific baseline data, study of impact zonation, water quality measures such as dissolve Oxygen, pH, water temperature, Aquatic plants, Invertebrate and food links should be accomplished.
  - Study on site-specific available local resident, midrange and long-distance migrating fish species should be completed to prepare an action plan.
- Mitigation Measures.
  - Control soil run-off into the river, provide drainage facilities and compact fill sites.
  - Provide enough latrines and community toilets with septic tank/soak pits.
  - Do not build toilets too close to the drinking water source, on the riverbanks and over watercourses.
  - Divert the stream away from the quarry sites.
  - Limit extraction to the approved amount.
  - Ensure the release of as much water as possible.
  - Quarrying of boulders and sand from the river should be prohibited for construction uses. This will disturb the whole river morphology, profile, and landscape

6.3.2.3 Clearing of Forest Land and Habitat Damage or Loss

The developmental works near the forest zones may trigger illegal timber extraction if not strictly controlled.

- Preventive Measures:
  - Sensitive natural environment areas should be identified early in the planning process so that alternate routes and designs may be considered. Therefore consult forestry and land-use maps, as well as local/regional development plans;
  - Wherever possible, road developments should be located more than one kilometer away from sensitive areas to avoid severe impacts on flora and fauna;
  - Establishment of barriers to control entrance to forest areas;
  - Strict implementation of environmental work code.
  - Preparation of land-use plan that incorporates environmental and social sensitive locations of at least the environmental corridor and strict adherence to the same can help to preserve the forest and wildlife.

- To protect aquatic resources, provide for designated sites for disposal of oil/grease/chemicals,

- Mitigation Measures:
  - Clear trees only when absolutely necessary. Trees falling in right-of-way but not on formation width need not be cleared, rather consider new plantation of selected (non-exotic) species;
  - Planting on road right of way, adjacent areas, and other public areas in consultation with local people can help to support local flora and fauna. In some cases, compensatory planting in locations away from the road impact zone may provide additional habitats and migration routes for local animals while also guarding against erosion;
  - Compensatory plantation should be done in the ratio of 1:10 for each cleared tree, as per the decision of the Department of Forest.
  - Border plant species need to be chosen for resistance to wind or fire in some areas;
  - Planting should be done wherever possible with native species, which are likely to require little maintenance and may prove beneficial in maintaining ecosystem integrity;
  - In cases where non-native species of plants are deemed essential, careful monitoring should be planned to ensure that they do not compete too successfully with native species and spread uncontrollably.
  - To protect aquatic resources, provide precautionary mechanisms to avoid accidental spills, controlling of open-field defecation by work staff and restrict access and amount to drinking water sources other than agreed with local communities and entitled users.
  - Stream re-channeling should be avoided as much as possible, but where it must be done, efforts should be made to recreate lost channel diversity;
  - Careful attention should be paid to erosion control techniques near watercourses;
  - Culvert crossings should be designed with the needs of migratory aquatic species in mind;
  - Baffles might be installed to slow the flow enough to allow fish and others to swim against the current and culvert bottoms should be set below the level of stream bed;
  - Pre-development streambed gradients should be maintained wherever possible;
  - Destructive fishing technique by the labour-force and technicians, such as use of dynamite, fish poisoning and application of gill and electro-fishing shall be strictly prohibited during project implementation period.
  - Supply meat and fish by contractor to the labour force and construction/ maintenance areas from outside the project area, as possible.
  - To prevent the introduction of invasive species (by work personnel, supply trucks and machinery used), the project should make adequate provisions and control mechanisms. Visual control for invasive species (e.g. pests, rodents, spoiled vegetables) and adequate destroy mechanisms shall be put in place.
- Compensatory Measures:
  - Replacing damaged or lost biotopes with others of equal or similar characteristics and ecological significance as compensation for lost ecosystem and biodiversity.
  - Ecologically valuable biotopes damaged by roads can be restored, and nearby biotopes of the same significance can be protected as parks or reserves.

- Compensation for lost fish diversity and reduced fisheries production can be compensated by stocking nearby or other fishing grounds with artificially hatched/reared fish fries and fingerlings. Thus, impediments to the livelihood of fishermen's families could be eased or set off.
- For compensatory aquaculture measures, it must be strictly prevented to consider the introduction of exotic species (such as Nile Perches, Tilapia) since these may put the local and indigenous fish fauna and the entire ecosystem balance at hazard. Any compensatory fish stocking must follow a thorough feasibility analysis and assessment by the regional fisheries extension services or experts before adopting this measure.

- Measures under Green Highway Concept
  - Afforestation and Forest Management through silviculture principles
  - Promotion of forest awareness raising and planning
  - Wildfire management. Forest Fire Detection and Monitoring System through Moderate Resolution Imaging Spectroradiometer (MODIS) data to detect, locate, characterize and monitor forest fires

6.3.2.4 Avoiding Habitat Fragmentation

- Mitigative Measures
  - Animal crossings can be used to assist the migration of animals. At important crossing points, animal tunnels or bridges have sometimes been used to reduce collision rates, especially for protected or endangered species. Tunnels are sometimes combined with culvers or other hydraulic structures.
  - These measures are expensive and should be used only at a few locations where they are both justified (by the importance of the animal and population and the crossing route) and affordable (relative to the cost of the project and the funds available).
  - In forest areas, reducing the width of vegetation clearance in selected areas may allow trees to touch over the roadway, providing a means of crossing for canopy dwellers.
- Measures under Green Highway Concept
  - Designing Green and Resilient Wildlife Crossing throughout the EW Highway Experience may be based on the results from the wildlife underpasses in the 'Narayanghat - Mugling Road in Barandabhar Corridor Forest'. Such measures will maintain habitat connectivity, enhance habitat quality, support species-specific conservation programs and reduce roadkill.
  - Investments in Wildlife Risks Mitigation Activities such as Conservation infrastructure (fences, water canals, watch towers etc.); Control, including through community works, of invasive species; Eco-friendly engineering designs
  - Establishing community-based conservation areas; Focal species programs (tiger, rhino, buffalo, blackbuck); Habitat patrolling, law enforcement (no arm, no ammunition; Incremental cost for road crossing structures in wildlife corridors Management plans; Parks' conservation infrastructure, breeding centers; Preparing management plans for wetlands of international importance; Restoration of flood plains; Restoring degraded critical habitats; Restoring degraded forest in Churia; Surveillance and monitoring; etc.

6.3.2.5 Control of Illegal Harvest of Forest Products and Poaching on Wildlife

The labourers will depend on forest products for their energy requirement if not provided alternate fuel for cooking and heating. Without strict control and management, labourers are likely to collect the fuel wood from the nearby forest.

- Preventive Measures:
  - The Contractor documents must include provisions to restrict work forces with regard to forest product and wildlife collection and trade.
  - The contract documents must include provisions to instruct or arrange alternate energy such as kerosene, LPG and micro hydropower for labour by making provisions in contract document should be minimized, and buffer zones of undisturbed vegetation should be left between roads and watercourses.
- Mitigation Measures:
  - The Contractor must prevent illegal cutting of forest wood by labour force should. He is also liable for penalties to violators.
  - Equally, collection of non-timber forest products (e.g. bamboo, medicinal plants, mushrooms) by work staff must be prohibited and enforced.
  - The project management should instruct the project officials, labour force, contractors, consultants and other stakeholder not to indulge in such activities and abide by the forest act and its regulation.
  - The project should closely coordinate with Forest Office and its outlets to control illegal poaching and trapping by the project stakeholders or other outside wildlife poachers, wildlife traders and timber smugglers.

6.3.3 Impact Mitigation relating to the Socio-Economic and Cultural Environment

6.3.3.1 Loss of Properties and Productive Land

- Preventive Measures:
  - Make adequate provisions and compensation arrangements in the Resettlement Action Plan ad the Land Acquisition Plan to satisfy and compensate all PAPs in a fair and timely manner.
  - Align the road such that acquisition of productive and irrigated agricultural land is minimized.
- Mitigation and Compensatory Measures:
  - Implement the Resettlement Action Plan.
  - Encourage the involvement of agricultural extension services to increase local crop production and adopt better hill farming techniques;
  - Encourage community development programs to increase product diversification and the development of alternative livelihood activities.
  - Use spoil to reclaim lowland and waste places and cover them by at least one meter of top soil to use it as agriculture field;
  - Adopt compensatory plantation for lost trees, fruit orchards etc.;
  - Arrange/assist in food supply programs for food deficiency areas.

6.3.3.2 Avoid Impacts on Indigenous People

Indigenous people are generally the poorest segments of a population. They engage in economic activities that range from shifting agriculture in or near forests to wage labour or even small-scale market-oriented activities. The cultural, social, political and economic integrity that characterizes

indigenous peoples renders their lives extremely vulnerable to disruptions from outside. Whether a road is being planned to cross an area inhabited by indigenous peoples or to open up that same area, it will have a marked effect on their lives.

- Preventive Measures:
  - Align the road such that the need for acquisition of communal land, house and properties of indigenous people are avoided or minimized as far as possible.
  - Align the RoW of the road and sites for other project investments in a way that they avoid displacement and physical relocation of indigenous people. Impacts on indigenous people, other than physical displacement, will be addressed compensatory arrangements and IPDPs where relevant.
- Mitigative Measures:
  - Engage locally present and experienced NGOs to assist indigenous people in coping better with the new situation to ensure social cohesion and maintenance of identity and livelihood. The NGOs shall develop programs that will specifically help to preserve cultural practices, enhance cultural identity and facilitate continued use of natural resources. The programs need to take into consideration that indigenous people often have no recognized land ownership, and they are not compensated for the land that is taken from them. Rather than fight for their rights in an alien national legal system, they may withdraw from the new population centres, thus increasing the population pressures on other, already traditionally occupied lands. In extreme instances, physical conflict can break out between new settlers and the indigenous peoples as the latter try to reclaim their heritage.
  - Address in the assistance programs specific health and social problems: The proposed assistance program needs to take into account that new arrivals of migrants, as well as the road/ bridge construction/ maintenance crews, often bring with them a serious health and social problems to indigenous groups who normally have weak defence mechanisms, for example against introduced disease, alcohol abuse, violence, sexual abuse, etc.
  - Whilst physical displacement of IPs, and by extension FPIC, is not expected, the project will obtain a free and prior informed consent from indigenous people under the following circumstances.
    - Have adverse impacts on land and natural resources subject to traditional ownership or under customary use or occupation;
    - Cause relocation of Indigenous Peoples/Historically Underserved Traditional Local Communities from land and natural resources subject to traditional owner-ship or under customary use or occupation; or
    - Have significant impacts on Indigenous Peoples/ Historically Underserved Traditional Local Communities' cultural heritage that is material to the identity and/or cultural, ceremonial, or spiritual aspects of the affected Indigenous Peoples.

6.3.3.3 Damages to Community Infrastructure and Social Life Quality

Experience has shown that road/ bridge construction/maintenance activities often disrupt community infrastructures such as irrigation canals, drinking water supply systems, water ponds, schools and trails. Disruption is caused by siltation or burial of irrigation canals, exposure and damages to water supply pipes. Such situations may lead to inconvenience to the rural population in terms of carrying

out their routine lifestyle due to disruption of facilities. Even worse, the effects of such impacts can have serious consequences on public health and cause social conflicts. Equally, such conflicts are likely to affect any smooth progress of works.

- Preventive Measures:
  - Make adequate provisions and identify compensation arrangements in the project's planning documents, above all in the ESAP.
  - Include all identified precautionary measures in the works contracts and tailor the verification indicator in accordance with the respective specification clauses.
  - The project, as well as the contractors should follow established rules and regulations for work safety and health, especially with respect to those activities that bear on community life and resources (details see below next point.
- Mitigative Measures:
  - Explore the possibilities to engage an experienced local NGO to assist in the community awareness program that depicts all aspects to facilitate smooth progress of the work progress and addresses potential sources of grievances and social conflicts. The program shall also include environmental awareness to promote the people's conscience by acting as stewards for their natural environs.
  - CBOs, together with local health workers, shall control and regularly monitor the quality and quantity of the water resources used by both the community and the work forces. Incidents and observations of spills, pollutants or exceptional development of the groundwater table should bring to the immediate attention of the Resident Engineer, who shall direct the Contractor for corrective measures, as applicable.
  - Both Contractor and representatives from the community and VDC should establish an emergency (contingency) plan in case of major accidents (oil spill, fire) resulting from construction/ maintenance activities.
  - The Contractor shall inform the VDC and the community in due time about operations that may represent severance and nuisance, particularly to announce traffic diversions, and detour routes.
  - Work activities causing air and noise emission in the neighbourhood of settlements should be avoided during night hours (8 p.m. to 5 a.m.).
  - Local health workers or organizations working in the health sector shall develop community programs that will specifically address the avoidance and control of vector diseases. Commonly traditional people in remote areas lack adequate sanitary facilities and rarely are aware of hygienic requirements to prevent communicable diseases, including highly infectious diseases such as cholera, tuberculosis, intestinal ailments, HIV/AIDS and other STDs. Similarly, people often are unaware of how settling patterns and avoidance of stagnant waters can contribute to the control of waterborne diseases (malaria, dengue, worms, snails). An appropriate awareness program would therefore be of significant value to cope with the potential risk of the above-mentioned diseases. The program shall also include representatives of the contractor and the work forces.
  - Promotion of health programs that propagate safe sex and use of condoms. Local NGO/CBOs shall be responsible for the distribution of condoms, as well as controlling prostitution, alcohol and drug abuse.

- Mobilize CBOs for local landscape improvement programs aiming at filling and draining stagnant water can avoid or reduce the chances of water-borne infectious diseases.
- The Contractors shall make provisions to maximize local employments, observe gender equity payment for similar works, strictly prevent child labour and observance of local rites and festivals. A contractor should accept, following the agreement with the community, new income activities along with the construction sites, such as small tea-stalls and 'dal-bhat' shops.

6.3.3.4 Observation of Occupational Health and Safety (OHS)

Apart from the basic requirements ensuring work safety, the Contractors shall be obliged to make adequate efforts to maintain social harmony and co-operation among the workers and local residents.

- Preventive Measures:
  - OHS clauses established by DoR must be included in the works contracts. This refers to the World Bank Standard Bidding Documents for road and bridge construction and maintenance works, encompassing all accident preventing measures that potentially can happen at work sites and in the camps.
  - The OHS clauses identify adequate living, sanitary, washing and cooking conditions for the work camps.
  - Approved site management and waste disposal plan is equally an integral part of the works contract.
  - The OHS clauses shall make provision for insurance and indemnities, as well as payments in case of injuries, invalidity and death of workers and affected local persons.
  - Both the Contractor and representatives from the community and VDC should establish an emergency (contingency) plan in case of major accidents (oil spill, fire) resulting from construction/ maintenance activities. Necessary planning and safety approaches should be made for rescue during an emergency. Local health units and hospitals should be assisted to stay ready for emergency cases.
- Mitigation Measures:
  - The Contractor shall inform the VDC and the community in due time about operations that bear the risk of nuisance and accidents, especially when blasting operations are under way.
  - Provision and wearing of proper safety gear and clothes must be standard in all work operations.
  - The contractor is responsible for the provision of adequate first aid boxes, medical supply and routine medical service to all work forces. As necessary, he is obliged to give immediate and free of charge transport to the next/adequate health facility in case of a worker is inflicted in an accident.
  - CBOs, together with local health workers, shall control and regularly monitor the quality of living conditions in the worker's camps as specified in the contracts. Of special concern is the provision of safe drinking water and hygienic latrines for the workers, as required, separately for men and women.
  - The contractor is obliged to keep accurate records of accidents and corrective OHS measures.

- The contractor is responsible (upon advice of the Resident Engineer and Environmental Supervision Expert) for erecting signs and signals on sensitive and unsafe areas, which should be visible from a long distance.
- The contractor is responsible for regularly controlling open defecation and pollution of water bodies by construction/ maintenance crews.
- The contractor is responsible for regular training all work forces in OHS requirements and mechanisms. He should make a record of these training activities and all OHS observations, subject to supervision by DoR.

6.3.3.5 Avoiding Impacts on Cultural and Historical Properties

Cultural heritage is sites, structures, and remains of archaeological, historical, religious, cultural, and aesthetic value. Cultural heritage is a particular form of expression of human values which serves to record past achievements and discoveries. It is important to assess the site to understand the significance of a site and to provide due protection according to its aesthetic, historical, scientific, and social value.

- Preventive Measures:
  - Identify all known cultural sites and artifacts through consultation and collaboration with local communities and ensure that designs accommodate or avoid impacts on such assets and sites. Before initiating excavation works, the sub-project will consult with the members of the local community to understand and identify potential cultural heritage sites and other practices/symbols that represent both tangible and intangible cultural heritage and will seek their support and participation in managing possible risks to the cultural heritage.
  - Specify in the works contracts all required steps, notifications and preservative actions in case new/undiscovered archaeological or other culturally interesting items are encountered during excavation works. The clauses will specify whom to inform and how to proceed with works after the respective approval.
  - Align the road such that acquisition of sites known for cultural heritage is avoided at a good distance (to prevent possible damage by road-induced emissions like air pollutants, vibrations and noise).
- Mitigation Measures:
  - The contractor is responsible for strictly instructing workers to stay away from and respect local cultural assets, to avoid any direct harm to those items or to hurt the traditional feelings of local people.
  - Avoid any actions that bear the risk of destroying the sites or altering their scientific or aesthetic character.
  - In case of accidental damages, the Contractor will be obliged to inform immediately the archaeological department, who will then decide further actions.
  - In case of accidental damages, the Contractor will be obliged to carry out immediate corrective and repair measures to satisfy the local population and, as applicable, the representative of the archaeological department.

6.3.3.6 Chance-Find Procedures

During any construction works, mainly during earthworks, there is a chance of encountering unknown heritage resources, particularly archaeological resources. The chance find procedures will describe the project-specific procedure that outlines actions required in case of any heritage resources are noticed during the construction.

The chance-find procedures that will be used during this Project are as follows:

- Stop the construction activities in the area of the chance find;
- Delineate the discovered site or area;
- Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a nightguard shall be present until the responsible local authorities and relevant Department of Archaeology take over;
- Notify the supervisory Engineer who in turn will notify the responsible local authorities and relevant Department of Archaeology immediately (within 24 hours or less);
- Responsible local authorities and the relevant Department of Archaeology would be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures. This would require a preliminary evaluation of the findings to be performed by the archeologists (within 72 hours). The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage; those include the aesthetic, historical, scientific or research, social and economic values;
- Decisions on how to handle the finding shall be taken by the local authorities and the relevant Department of Archaeology. This could include changes in the layout (such as when finding an irremovable remain of cultural or archeological importance) conservation, preservation, restoration, and salvage;
- Implementation for the authority decision concerning the management of the finding shall be communicated in writing by the relevant Department of Archaeology; and
- Construction work could resume only after permission is given from the local authorities and relevant Department of Archaeology concerning the safeguard of the heritage.

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6.3.4 Potentially Induced and Cumulative Environmental and Social Impacts after Completion of the Road Projects

6.3.4.1 Benefit Augmentation Measures

At this stage, it is not intended by the ESMF to develop further measures to increase or maximize some of the aspects discussed below. This sub-section shall rather serve as a reference for development programs that might be considered for each of the regions where the BBIN road development program becomes operative. Much of the development options that come along with improved road accessibility are under the umbrella of projects that relate to social, agricultural and health aspects, all of which is not the mandate of the Department of Roads. However, which of the sectors briefly discussed hereunder will be directly or indirectly assisted by the MoPIT/DoR is not subject to this ESMF. Among the prominent elements that might be tackled in the near future in the respective regions are the following

Improved Access to Services and Facilities. The proposed road development project will increase the Government's capacity to further deliver infrastructure to the area through cooperation with local authorities as well as direct spin-offs from forthcoming development programs, which invariably require good road access. Beneficial aspects which are likely to be induced by the BBIN roads will promote the development of regional health and education facilities and improve the regional communication system:

- Major benefits will be felt in the health sector, where patients (e.g., childbirth) will have safer, quicker and more comfortable access to health facilities; accordingly, child mortality and other

causes of death due to insufficient and time-consuming access would be significantly be reduced.

- Operation of Public Motor Vehicles and freight and passenger operations ferrying people between various destinations will increase the development of facilities and services;
- Increased access to schools and universities for people who formerly were excluded from those benefits, thus enabling them to find more prosperous income opportunities;
- Improved access to markets and new market outlets (e.g. directed towards the tourist sector).
- Improved trade links for products in high demand (e.g. precious stones, salt, off-season vegetables, livestock, forest products, dairy products, betel nut).
- Improved access to commercial centres for banking and technology.
- Increased use of permanent and semi-permanent building materials (providing better and healthier shelter) enabled by road transport.
- Promotion of cross-cultural communication, with good potential to bring about political and economic stability to formerly secluded regions.
- Greater circulation of printed media and dissemination of information.

Promotion of Small Scale Businesses. After the completion of the project, the road built under the project will provide access to the local farmers to sell their products to bigger markets at a better price. In the case of the Western Districts of Nepal, this will encourage local people to establish small-scale industries, cultivate/harvest citrus, apples and vegetables and other cash crops, dairy products and NTFPs, and expand other micro-enterprises. All these will increase productivity and earnings of the people. The benefit augmentation measure will thus be to promote cooperative and provide bank finance for setting-up business enterprises. Examples for likely development of business opportunities would include:

Development of accommodation facilities and potential for eco-tourism. Lumbini, the bird place of Gautama Buddha, is located about 20 km from the Butwal and is a famous tourism site.

Enhancement of Quality of Life. As a by-product of an increase in productivity and subsequent increase in income level, it is also expected that there will be an improvement in the quality of life of rural people. The improvements can be seen as students can study at night time, people will feel more comfortable with electric light, people can keep television for better media communication and recreation, women can work at night and earn more. All these will subsequently enhance the people's quality of life.

6.3.4.2 Addressing Negative Aspects associated with the Improved Roads

Concerning the time after the sections for the specific BBIN sub-projects become completed, the ESMF generally makes reference to typical mitigation measures for those impacts that are associated with safety and maintenance works bearing some similarities to those during the construction/ maintenance works.

a. Slope Instability and Erosion

The consequences of land slide and soil erosion are far wider than repair and maintenance of the road can cope with. Potential impacts of slope instability and erosion will be in terms of damage of agricultural land and property, reduction in agricultural production, reduction in forest area etc. High speed of vehicles will increase, which may disturb the stability of the slope, thereby leading to slope failure. Depending on the situation, measures to mitigate such impacts may include:

- Correction of the maintenance of the slope protection measures (bio-engineering) and drainage works;

- Rill and gully formations should be regularly monitored and immediately fixed at critical areas;
- Correcting the effects of minor landslides, erosion and mass wasting should be immediately cleared and slope restored with appropriate technology (bio-engineering);
- Promotion/support/assistance to community forestry programs, not only in the right of way but also beyond in erosion-prone lands;
- Soil amelioration methods in the right of way and beyond should be promoted;
- Community development programs for local communities to stimulate self-help initiatives to carry out minor but instantly needed road maintenance works, such as removal of stones falling from slopes, fallen trees, correction of minor gully erosion damage, removal of earth and debris from drainage structures after heavy rainfall, etc.

b. Road Safety and Speed Limit Controls

After the operation of road services, there are incremental risks for accidents affecting persons, vehicles and goods transported. A number of environmental impacts may result from vehicle accidents such as a spill of hazardous liquid and solid materials, soil and water contamination, forest fire, damage to properties, utilities and cultural assets.

In order to mitigate these impacts, the safety measures suggested by this ESMF include the following:

- Provide proper signage regulating permissible speed limits;
- Incorporate physical barriers in the road design to reduce the speed at sensitive sections;
- Ensure regular road police patrolling and enforcement;
- Incorporate environmentally friendly roadside delineators, such as bushes and hedges, as prescribed in the bio-engineering guidebook.
- Conduct, at certain schedules, public meetings to assess the adequacy of road signage and installed safety measures. When upgrading /maintaining roads because of increasing traffic demand, consider design improvement in the pavement condition and geometry of the road,
- As applicable, provide proper signage on sections with increased accident rates and at sites with critical slope development. Include appropriate speed-limit measures (road police patrolling and enforcement, speed bumpers).

c. Control Air, Noise and Water Pollution

Increased traffic movements on the road will invariably cause incremental pollution due to vehicular emissions and dust. The movement of vehicles will increase local noise levels. Similarly, disposal of oil and grease of water body surface run-off from road surface may cause water pollution. Depending on the situation, corrective measures to mitigate such impacts may include:

- Community and road user awareness programs should be organized to enhance public understanding of how individuals can contribute to reducing environmental impacts associated with road uses;
- Provide proper signage on accident-prone spots, and include appropriate speed-limit measures (road police patrolling and enforcement, speed bumpers);
- Control and enforce vehicle emission standards, and stipulate vehicle owners to engage in proper and regular vehicle maintenance;
- Ensure proper use and sale of (clean fuel) at local pump stations;
- For control of dust nuisance, sprinkling of water, speed limit of vehicle and vegetative barrier of earthen bounds should be designed.
- In the congested settlement and sensitive areas (Schools, health posts, hospitals), consider sealed surface of the road for the stretch it passes through the sensitive area. Include

appropriate roadside planting (bushes, hedges, trees) where possible to enhance absorption of vehicle emissions by the plants.

d. Control of Cross-Drainage Outfall and Gullies

Cross-drainage outfall and gullies will be carrying concentrated water discharge from the respective catchments. They could lead to downstream erosion if the outfall area is not protected or guided properly. This impact is more severe on hill roads. Depending on the situation, measures to mitigate such impacts may include:

- Provide proper signage on spots with (seasonal) drainage problems, and include appropriate speed-limit measures (road police patrolling and enforcement, speed bumpers);
- Road-side and the gullies shall be connected to the natural drains with protected outfall.
- Regular maintenance of the drains shall be carried out and blockages cleared; use local community members contracted for such works.

e. Depletion of Forest Resources

Road development often induces or accelerates the pressure on forest resources. Counteract measures are difficult to realize, but to some extent, the following mitigation mechanisms may be successful:

- Provide support to local communities for preserving their forest, especially the community forestry;
- Promote homestead activities to cultivate non-timber-forest products (e.g. medicinal plants, ornamental plants, ornamental animal farming, mushroom cultivation, bamboo);
- Promote the replacement of firewood by a non-forest energy source such as micro hydro, bio-gas and solar energy;
- Introduce or promote energy-saving and improved models for cooking stoves.
- Introduce selected and alternative building material for houses;
- Encourage and support local community for controlling illegal harvesting of forest resources;

f. Collision and Disturbance Afflicting Wildlife

Accidents inflicting wildlife are an almost inevitable risk associated with roads passing through remote and forested areas. Among the proven mitigation measures are:

- Alert drivers of possible wildlife crossing: Provide proper signage where the road transects sensitive habitats and include appropriate speed-limit measures (education signboards, road police patrolling and enforcement, speed bumpers).
- Lower speed limit at sensitive sections during night hours as wildlife is more prone to be inflicted in road accidents when disturbed by vehicle headlights;
- In cases where protection of rare or endangered species is of high importance, impacts may be mitigated through translocation them in homologous habitat of nearby vicinity. Such actions should be based on detailed studies and carried only by experts.
- Local community, forest user groups, school going children should be given awareness training on protection of forest and wildlife. Consequently, the chances of harassing, poaching or trapping wildlife will be reduced.

- In case certain road sections cause repeated or incremental risks of wildlife collision, rehabilitation works may be considered to incorporate wildlife under passages.
- Other effective prevention means include the erection of roadside fences that will prevent terrestrial wildlife from entering the road corridor. However, the establishment of fences needs to be implemented with caution as this may severely impact migratory species or species travelling to feeding and breeding habitats across the road. Wildlife fence establishment needs, therefore an adequate study of possible effects on the local fauna, taking into full account a full season of observation on migratory species.
- Roadside reflectors may be used to scare animals away from the roadway when vehicles approach at night.

g. Control of Ribbon Settlement along the Road and Encroachment in the RoW

Once a road passing through new (remote) lands is completed, there are likely chances of growing ribbon settlements and undesired squatter development. Apart from land-use and other social conflicts, this will cause congestions to road users and increased accident risks.

Mitigation measures depend much on the local government's ability for good land-use planning and governance to discourage and/or remove such newly upcoming settlements along the road. Effective means include:

- Establish public notes that specify the acquisition/property rights of the RoW and that explain at the same time non-permissive uses of the RoW by non-entitled persons.
- Establish and propagate an effective land-use plan for the region; such land-use plan should clearly incorporate future visions for acquiring land for further road net expansion.
- Prepare good cadastral records that can easily be verified by land-use planners.
- Good demarcation of RoW, incorporating physical barriers and appropriate planting (through community forestry programs) of selected zones adjacent to the road.
- Incorporate physical barriers in zones of potential / prospected encroachment risks, e.g. by roadside plantation schemes;
- Initiate by engaging local NGOs/CBOs, community awareness and assistance programs to prevent undesired land-take and roadside squatter development.
- Put in place appropriate mechanisms for grievance resolution to settle disputes between new squatters and local communities.
- Exert all legal and socially acceptable means to evict illegal occupants of the RoW, but take into due consideration the needs and constraints of vulnerable and indigenous groups.
- Consider long-term solutions to avert undesired growth (e.g. expanding markets along road or on different axis) by planning for road bypasses in congested areas.

h. Labour Influx

The rapid migration to and settlement of workers and followers in the project area is called labor influx, and under certain conditions, it can affect project areas negatively in terms of public infrastructure, utilities, housing, sustainable resource management and social dynamics. The influx of workers and followers can lead to adverse social and environmental impacts on local communities, especially if the communities are rural, remote or small.

Key principles for managing risk from labor influx are:

- Reduce labor influx by tapping into the local workforce;
- The assessment and management for labor influx in the project should be based on the risks identified in the ESIA. The management of risk identified in the ESIA covers site specific Labor Influx management plan and/or workers camp management plan;
- Incorporate social and environmental mitigation measures into the civil works contract: Most adverse impacts from labor influx can only be mitigated by the contractor commissioned by the DoR to carry out the works.

Accommodating workers in camps can have positive and negative effects, for the workers, the host community, and the environment. Depending on the local situation, as well as the project's size, duration and risk profile, accommodating incoming workers in dedicated camps may be more or less desirable.

Effective assessment and management of the potential impacts of labor influx on communities include the following steps:

- Screening and assessment of the type and significance of potential social and environmental impacts that may be generated by labor influx;
- Assessment of the location of the project, contextual factors in the country, and assessment of the policy and legal framework of the Borrower;
- Development of a management plan for social and environmental impacts in consultation with affected communities;
- Implementation of appropriate mitigation and monitoring programs, which includes development and implementation of a stakeholder engagement program;
- Establishment of a grievance redress mechanism (GRM) for workers and host community; and
- Monitoring and supervision, and, as needed, adaptive management actions.

Hiring of local labor

If contractors are able to identify suitable labor at the local level, they will not need to bring in a large number of labourers, which will not only limit negative impacts, but also reduce the contractor's costs as they will be no need to provide a large a labor camp. The recruitment criteria should be transparent and fair to local communities to avoid conflicts. The approach can be used in a World Bank-supported project is for the Government to advertise upcoming opportunities through the local media and, in consultation with the Ministry of Labour, Employment and Social Security, prepare a roster of interested workers and their skills. The lists have to be provided to contractors at the pre-bid meetings for recruitment consideration. At the same time, the Government has to advise contractors that work permits would only be provided for workers with skills unavailable locally. This serves to minimize the imported labor on the project. Prohibiting contractors from hiring "at the gate" of the workers' camp and instead of setting up formal recruitment offices is another option to discourage project "followers" from loitering and/or settling around the project site in the hope of job opportunities.

Workers code of conduct

A code of conduct for workers in the transport project is an important aspect. It protects each activity of the project and the proponent and also informs the employees of the projects about the principles and expectations of the project. The code of conduct should include

- The safety and security of working environment
- The health, hygiene and safety of workers,
- The prevention of conflicts of interest to local community and project employee

- The employee should keep themselves in discipline as per the rule of the project and should not violate the surrounding community
- Compliance with regulations and guidelines of the government of Nepal and WB
- The mechanism for addressing the voices through grievances redress mechanism
- Eliminate all forms of forced, compulsory labour and child labour
- Eliminate discrimination in respect of employment and occupation
- The workers should be kept high in priority during project implementation

i. Gender-Based Violence

Nepal has high incidences of GBV cases, with mostly women as victims. Out of the 15 most GBV prevalent countries in the world, Nepal ranks 4th in domestic violence and violence by a partner. The current status of gender inequality and gender-based violence in Nepal reveals the serious need to mainstream gender sensitivity and GBV risk mitigation measures at all organization levels and all phases of the project cycle. In Nepal, GBV is prevalent due to unequal gender relations and discrimination towards women in both the public and private spheres. It has direct implications on the reproductive health status of women and the physical, emotional, and mental health of their children

The Gender Based Violence (GBV) mapping research carried out by WB team found that upgrading of NNM and KDP, those areas had existing high volume and various form of GBV; lack of well-defined and coordinated response mechanism with potential GBV risk associated with labor influx. Therefore, the research suggests a 'substantial' level of GBV risk in the BBIN. Furthermore, the lack of institutional and infrastructural capacity of the GBV service provider increases the inefficient response to GBV survivors.

The report recommends the orientation to the DoR and associated project team on GBV and to prioritize GBV on the project, and the mechanism that will be implemented. The report recommends the GBV mitigation management plan should be prepared by contractors with a clear set of rules and responsibilities. The WB/ DoR must monitor frequently and provide additional guidance as necessary at the project implementation location.

7 Stakeholder Engagement and Consultation

Development interventions such as the BBIN are expected to achieve positive social development outcomes such as increased social connectivity and economic empowerment through trade. These expected outcomes can be enhanced through effective stakeholder consultations, which allow uptake of stakeholder concerns and ideas in project design, implementation and operation. Participation mechanisms facilitate the consultative process and include information sharing, consultation with APs and other stakeholders, and active involvement of APs in project tasks, committees, and decision-making. The Project Management will share with the stakeholders all aspects of the envisaged project (policies, planning, design, alternative options), and possible/anticipated impacts of the project) at the project identification as well as during planning and implementation stages. This section describes stakeholder engagement procedures designed to achieve effective involvement of relevant stakeholders throughout the project cycle to promote a better understanding of the project goals and their impacts. The following principles will guide stakeholder consultations in the project:

- Promoting easy means of communication
- Openness and truthful in the disclosure project information
- Ensuring effective involvement of stakeholders in the preparation and implementation of the project
- Commitment to address and resolve project-related complaints in a timely manner
- Evaluating the effectiveness of the engagement plan against expected outcomes

A detailed project stakeholder engagement plan (SEP) is being prepared and contains detailed procedures and strategies by which the DoR and MoICS will consult with project stakeholders. The SEP covers the role of stakeholders implementing institutions and timetable and grievances procedures. The process of stakeholder engagement covers

- stakeholder identification and mapping
- planning of engagement
- disclosure of information
- meaningful consultation and
- addressing and responding to the grievances and reporting

Public participation, consultation and information dissemination in a project will be an integral part of all environmental and social impact assessment activities during the initial phases of project preparation. Concerned stakeholders will be regularly provided with information on the project prior to and during the process of IEE or EIA/ESIA, respectively, while the design and EIA Consultants prepare the ESIA/ESMP, RAP, IPPF and SEP documents.

7.1 Stakeholders Identification and categorization

key stakeholders of the project – both affected and interested parties - have been identified, informed and consulted about the project, including individuals, institutions, and local communities (see table 6.2 below). Vulnerable people such as Dalits in the project locations will be identified and consulted, recognizing the limitations on their ability to access relevant project information and access the opportunities that may come through the project, such as construction jobs. These stakeholders were identified using the following criteria:

- **Dependency:** individuals or groups significantly dependent on the project or ongoing operations, and who stands a chance of being further affected by the proposed project in economic, financial, or utility terms.
- **Representation:** Individuals or groups with the right to be represented in the project or ongoing operations, and this right is legitimated through legislation, custom and/or cultural specifics.
- **Influence:** Individuals or groups who may be able to substantially influence the project planning, implementation, or ongoing operations.
- **Liability:** Project implementation or ongoing operations may result in legal, financial, or other liabilities of the project to a social group.
- **Partnership:** There are opportunities for building partnerships between the project and a given social group in the framework of the project implementation or ongoing operations.
- **Expressed interest:** A social group and/or individual may express interest in a project or ongoing operations, and this group is not necessarily directly affected by the planned or current activities. The ESMF has identified targeted institutions and governmental agencies who hold interest and different responsibilities regarding the proposed road development program, as indicated below.

Table 7.1: Main Stakeholders

1) ROAD AGENCY: DEPARTMENT OF ROADS	

• Planning and Design Branch
  ▪ Geo-Environment & Social Unit
  ▪ Planning Monitoring and Evaluation Unit
  ▪ Road and Traffic Unit
  ▪ Highway Management Information System Unit
• Bridge Branch
  ▪ Design and Monitoring Unit
  ▪ Maintenance and coordination Unit
  ▪ Bridge Construction Coordination Unit, DDG
• **Mechanical Branch**
  ▪ Equipment maintenance & Management Section
  ▪ Planning and Equipment Procurement Section
  ▪ Mechanical Training Centre
  ▪ Heavy Equipment Divisions
	• Development Cooperation Implementation Division
	• **Maintenance Branch**
	▪ Maintenance Unit
	▪ **Quality, Research and Development Center**
	• Roads Sector Skills Development Unit
	• Innovation, Tunnel and Alternative transportation Unit
	• Research and. Investigation

2) TRADE AGENCY: MINISTRY OF INDUSTRIES, COMMERCE AND SUPPLIES	
• Nepal Intermodal Transport Development Board • National Trade and Transport Facilitation Committee	• Department of Customs • Trade and Export Promotion Center
3) GOVERNMENT LINE AGENCIES	
• Ministry of Physical Infrastructure and Transport • Nepal Roads Board (in a supervisory role)	• Ministry of Federal Affairs and General Administration • *Department of Local Infrastructure (where agricultural roads and/or other local infrastructure are affected)*

• Ministry of Physical Infrastructure and Transport • *Dept. of Transport Management*	• Ministry of Energy, Water Resources and Irrigation
4) OTHER RELEVANT GOVERNMENT MINISTRIES	

• **Ministry of Forest Environment**
  • Dept of Forests and Soil Conservation
  • Department of National Parks and Wildlife Conservation
  • Department of Environment
  • Ministry of Health and Population
• Ministry of Women, Children and Social Welfare
	• Ministry of Culture, Tourism and Civil Aviation
	  • Department of Archaeology
	• Nepal Electricity Authority / Dept. of Electricity Development
	• Nepalese Army
	• Ministry of Labor, Employment and Social Security
	  • Department of Labor and occupational safety

5) CONSULTANTS	
• **Environmental/EIA Consultants** • **Social/RAP Consultants**	• **Technical/Engineering Consultants** • **Legal Consultants**
6) CONTRACTORS	
• Construction Implementing Contracts	
7) COMMUNITY LEVEL STAKEHOLDERS	

• **Local Authorities (LAs)**
  • District Coordination Committee
  • Municipalities/ Rural Municipalities
  • Wards of Municipality/Rural Municipalities
• Community-Based Organizations
• Non-Governmental Organizations
	• Local Constructive Forums
	• Compensation Determination Committee (CDC)
	• Road Neighbors
	• Political Leaders and Representatives
	• Affected Communities

8) PRIVATE INVESTORS UNDER NEW CONTRACTING APPROACH	
• BUILD OPERATE AND TRANSFER (BOT) • Hybrid annuity model (design-build finance operate maintain and transfer) •	

7.1.1 Stakeholder categorization

The project stakeholders are categorized as:

- **Affected parties:** They include individuals, groups, and entities within the project's Area of Influence, which is set as the area within the 150 meters each side from the central line of the proposed road, that may be directly impacted by the project activities and/or have been identified as most susceptible to the change associated with the project. So, the project-affected parties need to be closely engaged in identifying impacts, as well as in decision-making on mitigation and management measures. They include:
  - Local population living or public service providers located within the area of 150 meters each side from the central line of the proposed road and may be adversely affected mainly by noise, dust, vibration, and the vehicular movements that will be used for the construction activities,

- Persons or households who may lose temporary or permanent access to land and/or will be restricted from accessing natural resources because of the project, e.g., farmers, landowners, informal settlers, forest user groups, etc.
- Local health centers that provide basic health supports to the project staff and migrant workers.

Interested Parties:

The interested parties in this project, other than those directly affected, include:

- Government officials (elected and non-elected), regulatory, and permit awarding agencies at the federal, provincial, and local levels, including environmental, technical, and labor authorities. E.g. Ministry of Forest and Environment
- Government officials at District level offices of key ministries, including Divisional Forest Offices, Road Offices, Survey Office, Land Revenue Offices, and Electricity Authority, etc.
- Non-elected officials with wide recognition within the community, such as headteachers of local schools, religious leaders, or leaders of local cooperatives
- Leaders of informal or traditional community institutions such as women groups, Dalits Samaj, water consumer groups, village councils, etc.
- NGOs and CBOs at national, provincial, and local levels on the welfare and rights of indigenous people and vulnerable groups such as Dalits and other minorities, gender/GBV issues, etc.
- Residents and communities within the project area that can benefit from increased economic opportunities, employment, and training opportunities stemming from the project; and,
- Media including district and local press clubs.

7.2 Disadvantaged/vulnerable individuals or groups

The project recognizes the need to understand whether impacts may disproportionately fall on disadvantaged or vulnerable individuals or groups that are often unable to express their concerns or not in a position to react to the impacts due to various social barriers or may not even understand the impacts of a project. The vulnerability may stem from an individual's gender, race, age, health condition, ethnicity or caste, education and income levels and other elements of marginalization. The stakeholder engagement activities in this project will consider these elements of vulnerability and deploy strategies such as periodic disclosure of information in a way comprehendible to local communities and meaningful consultations in a culturally appropriate manner to ensure that the disadvantaged and vulnerable individuals fully understand the potential impacts and mitigation measures of the project. The project will also take special measures to ensure that disadvantaged and vulnerable groups have the opportunity to participate in accessing project benefits, provide feedback, and submit grievances. These groups may include and are not limited to the following:

- Physically-challenged and visually-impaired people
- Individuals with chronic diseases and pre-existing medical conditions
- Minority groups, including Dalits and Muslims (see table 3.2 below)
- Indigenous peoples and groups
- Disaster-affected populations
- Poor households, including homeless and landless families
- People/children with disabilities; and,
- School children, especially in relation to safety in crossing roads

7.3 Stakeholder Engagement Strategy

Based on Subproject categorization, SEP will provide the engagement strategy. An example is shown in Table 7.2.

Table 7.2: Stakeholder Engagement Strategy

Stakeholder	Engagement Strategy
Project affected and beneficiaries parties	• Identify stakeholders • Maintain contact details of the individuals/institutions categorized in the group and update them regularly • Maintain regular and close contacts • Organize regular sessions on project impacts, including compensation and resettlement issues • Organize quarterly consultation meeting • Form and use local consultative forums during construction • Provide updates about the project, including the past and upcoming ones • Specialized sessions to be organized with low caste and minority groups and women • Information on community notice boards
Interested parties	• Regular contacts with individuals/institutions and line agencies responsible for social, economic, environmental, forestry issues in the project area • Response when permitting and policy issues are raised • Provide updates about the project, including the past and upcoming ones • Organize sector specific consultations with interested parties
Other Interested Parties	• Maintain close contact with individuals/institutions categorized in the group and update it regularly • Ensure consultations are organized in an appropriate manner and make sure the time and location of consultation are appropriate to their needs.

7.4 Stakeholder Engagement Tools

The project aims to use multiple tools of engagement to inform stakeholders about the project activities and to receive and address their feedback. Tools will be implemented, keeping in mind the safety of stakeholders and project staff against Covid 19. The various tools include:

Engagement during preparation:

- Group consultation
- Training, seminar, and workshop
- Electronic publications
- Information leaflets and brochures
- Cluster meetings with provincial authorities
- Face-to-face or virtual meetings, webinars including interviews with PAPs
- Telephone calls, emails, and SMS
- Information boards, leaflets, and brochures
- Regularly updated project information on DoR's website

- Periodic small group meetings with vulnerable and IP groups
- Socioeconomic baseline survey as well provides an opportunity for consultation with the concerned public.

Engagement during project implementation:

- Sharing project updates and reports through emails and meetings
- Electronic publications as well as dissemination of hard copies
- Virtual/face-to-face consultations provincial authorities, with local municipalities and ward offices
- Information boards/campaigns, project websites, project leaflets and brochures
- Periodic face-to-face/virtual meeting with project stakeholders
- Distribution of electronic publications and Dissemination of hard copies (Information will be provided in Nepali and local languages
- Public notices
- Press releases in the local media and on the project website
- Formation of committees and/or groups comprising of stakeholders at various stages of the project,
- Periodic small group meetings with vulnerable and IP groups by adopting COVID protocols
- Regular contacts through electronic means, such as phone calls, and emails, text messages

Specific public participation and consultation activities that will take in the project cycle with respect to PAPs are summarized in **Table 7.3**.

Table 7.3: Project Stage and Nature of Participation of PAPs in the Process

Project Stage	Participation of Project Affected Persons and target beneficiaries
Project Identification and design	• Identification/prioritization of community issues • Participate in public meetings • Identify alternatives to minimize resettlement and other adverse impacts assessing perception and views of indigenous communities regarding the project. • Assist in developing and choosing alternative options for relocation and income restoration
Feasibility Study and Resettlement Planning	• Involve communities in environment and social risks screening (observatory role) • Help to choose resettlement site • Facilitate/ participate in survey • Participate in meetings with the host population • Provide suggestions to entitlement provisions • Provide inputs in RP preparation • Suggest a mechanism for grievance redress and conflict resolution

Project Implementation	• Participate in the implementation process • Join local decision-making committees like in Compensation Determination Committee (CDC) • Establish project information centres in local communities • Decide on the management of common property • Use established mechanisms for grievance redress • Provide inputs to Local Consultative Forum (LCF) • Participation in road and bridge construction and maintenance • Prioritize local people for unskilled jobs (e.g. 30 percent of unskilled jobs to be reserved for women)
Monitoring & Evaluation	• Ensure quality of the project and activities • Participate in the monitoring team
Maintenance	• Participation in maintenance as employee/caretaker

7.5 Public Disclosure of Information

For the success of the project, all relevant information, including designs, proposed activities, ESIAs, ESMF, RPF, IPPF, LMP and SEP and their expected results will be disclosed to project stakeholders: both affected and/or interested public. Information dissemination will be mainstreamed through environment and social impact assessment activities during the initial phases of project preparation. Local authorities and NGOs, APs will be provided with information on the project and the resettlement process prior to and during the RAP and IPPF preparation and implementation stage. Agencies working for nature conservation or other ecological aspects will also be informed at both local and national levels about the ongoing and planned activities to identify jointly appropriate protective or corrective measures.

The following strategies will be adopted to disseminate project-relevant information to the general public:

- ***Distribution of the project documents:*** A series of project-related information materials in the Nepali version will be distributed prior to each construction and maintenance work in the proposed road and bridge projects to local officials, LCFs, PAP and others concerned. Such information includes entitlement frameworks, various periodic information sheets on compensation entitlements, project time frames etc. This information will also be made available on DoR website.
- **Workshops:** A series of scheduled RAP and VCDAP workshops will be held in the sub-project sites for information sharing with the target beneficiaries and stakeholders concerned.
- ***Mass media:*** Local media Project related information will also be broadcasted through local radio/FM, TV and newspapers

During the implementation stage, an information centre will be established to disseminate all the documents related to the project and its activities. The centre will be accessible to any person interested/concerned about the project.

Other relevant information such as ESIA/ESMP, EIA, IEE, SIA, RAP IPDP will be disclosed on DoR's website and the website of the World Bank.

7.6 Establishing a Collaborative Partnership Mechanisms between Communities, Local Authorities and the Project Management

To reach the local communities and to ensure maximum employment among the local population, as well as ensuring the inclusion of vulnerable groups and women in the income-generating process associated with the road and bridge construction and maintenance works, each sub-project will establish mechanisms and structures to involve all project-affected people and stakeholders.

At the first stage, before contractors move into the area, the Social Assessment Teams prepare the SIA to conduct a local labour availability survey, producing a list of wo/men from each ward/road section willing to work in road and bridge construction and maintenance. The survey shall also assess the level of skill available among the local communities. Skilled labour will be given priority in employment. If the labour required for the work will be insufficient in the local area, outside labourers will be allowed to meet the shortfall only. It is proposed from the past practices that at least 70 % of the labour should be reserved for the PAFs in particular and local population in general. Public meetings will be held that explain this strategy and demonstrate the job opportunities to the local population. This arrangement will promote the local economy and help PAFs and local community to gain skills related to road and bridge construction and maintenance. This will also increase the feeling of ownership over the road and will ensure maintenance assistance in the future.

The Project Proponent will then engage qualified NGOs or CBOs who will be responsible, throughout the construction/ maintenance period, for community mobilization and facilitation of employment. The mobilization and facilitation activities will include a number of awareness and skill training programs that will put the potential work candidates in a better understanding of the works required and the risks and opportunities associated with such work. Specific awareness aspects will relate to environmental protection, agriculture, health, STDs and social conflict avoidance.

7.7 Summary of Stakeholder Engagement Activities

Consultations have been carried out with a cross-section of above stakeholders during the preparation of the ESMF (during December 2021 and January 2022) and after disclosure of the draft ESMF and ESIA of Butwal-Gorusinghe (during February 2022). Details of these consultations are presented in Table 7.4. The participants include households that have encroached into the ROW, the local population, public service providers, and local health facilities. The other interested parties are local governments (1 Sub-metropolitan City, 3 Municipalities and 1 Rural Municipality), local non-governmental organizations (NGOs), civil society, teachers, political leaders, women groups, local entrepreneurs, local user groups (forest, water, irrigation etc.), security personnel (traffic police and army), drivers and road users (including travellers); and vulnerable and marginalized groups, including those who are differently-abled. In the first round of consultations, during the preparation of the ESMF and ESIA, the government disclosed early project concepts and objectives and noted their ideas, suggestions, and concerns used to inform the project design. The second round of consultations was carried out through two workshops, one with the national-level stakeholders and the other with the local-level stakeholders, after disclosure of the draft ESMF, to obtain feedback on the draft ESMF. A total of 544 stakeholders, 418 men and 126 women, were consulted through all these meetings.

Table 7.4: Summary of Consultation Meetings

S.No.	Location	Date	Participants		
			Male	Female	Total
I	**First Round of Consultations**				
A	**WARD and Municipal Level Consultations**				
1	Butwal Sub-Metropolitan City	2022/01/13	5	3	8
2	Butwal Sub-Metropolitan City - Ward no. 1	2022/01/02	7	2	9
3	Butwal Sub-Metropolitan City - Ward no. 2	2022/01/11	5	3	8
4	Butwal Sub-Metropolitan City - Ward no. 12	2021/12/20	9	17	26
5	Butwal Sub-Metropolitan City - Ward no. 13	2021/12/21	14	5	19
6	Sainamaina Municipality	2022/01/11	4	1	5
7	Sainamaina Municipality – Ward no. 1	2021/12/21	8	6	14
8	Sainamaina Municipality – Ward no. 2	2022/01/10	14	1	15
9	Sainamaina Municipality – Ward no. 3	2021/12/19	10	6	16
10	Sainamaina Municipality – Ward no. 4	2021/01/18	18	4	22
11	Sainamaina Municipality – Ward no. 5	2021/12/17	8	3	11
12	Sainamaina Municipality – Ward no. 6	2021/12/30	19	2	21
13	Sainamaina Municipality – Ward no. 8	2021/12/29	17	3	20
14	Sainamaina Municipality – Ward no. 9	2021/12/31	21	3	24
15	Sainamaina Municipality – Ward 10	2021/12/28	10	5	15
16	Sainamaina Municipality – Ward 11	2021/12/28	12	1	13
17	Kanchan Rural Municipality	2022/01/11	8	2	10
18	Kanchan Rural Municipality – Ward 5		6	4	10
19	Banganga Municipality	2022/01/05	6	1	7
20	Banganga Municipality – Ward no. 1	2022/01/11	11	4	15
21	Banganga Municipality – Ward no. 2	2022/01/04	13	2	1
22	Banganga Municipality – Ward no. 4	2022/01/04	43	20	63
23	Banganga Municipality – Ward no. 7	2022/01/04	16	5	21
24	Banganga Municipality – Ward no. 8	2022/01/05	18	0	18
25	Buddhabhumi Municipality	2022/01/05	6	4	10
26	Buddhabhumi Municipality – Ward 2	2022/01/06	9	2	11
27	Buddhabhumi Municipality–Ward 4	2022/01/06	15	1	16
		TOTAL WARD-LEVEL	**332**	**110**	**442**
B	**Environmental Agencies and NGOs**				

S.No.	Location	Date	Participants		
			Male	Female	Total
28	Community Forest Groups in the Project Area	14 to 29 December 2021	31	6	37
29	Wildlife Conservation Nepal - Kathmandu	25 Oct 2021	3		3
30	Bird Conservation Nepal - Kathmandu	25 Oct 2021	1		1
31	Department of Forest /IEE/EIA Section, Kathmandu	27 Oct 2021	2		2
32	Sub Divisional Forest Office, Kanchan, Rupandehi district	14 Dec 2021	2		2
33	Sub Divisional Forest Office, Gorusinghe	14 Dec 2021	2		2
II	**Second Round of Consultations**				
A.	**Disclosure Workshops**				
34	Consultation Workshop with national-level stakeholders	9 Feb 2022	23	6	29
35	Consultation workshop with local-level stakeholders	20 Feb 2022	22	4	26
		GRAND TOTAL	**418**	**126**	**544**

Feedback from the consultations was overall supportive of the project from both local communities and the government agencies. All participants unanimously agreed that the draft environmental and social reports were very comprehensive and extensively covered all environmental, social aspects, including measures for the protection of wildlife, conservation of natural resources, and entitlements for resettlement and rehabilitation assistance. The feedback from the first-round consultations (during the preparation of the ESMF is summarized in Table 7.5, and the second of round of consultations (after disclosure of the draft ESMF is summarized in Table 7.6.

Table 7.5: Feedback from First Round of Consultations

S.No.	Issues/Concerns/Demand	Response/ Action
1	Construction work to be carried out only after infrastructures like; water pipelines, electricity wires and poles, telecommunications wires, canals, drains etc., which exist along the roadside, to be managed and shifted accordingly after consulting with respective organizations. Also, there shouldn't be any hindrances in the water supply during the construction phase.	The mitigation measures will address these issues during implementation, and a sufficient budget will be allocated to resolve these issues in the New design.

S.No.	Issues/Concerns/Demand	Response/ Action
2	The facility of cross drainage management and replacement of old worn-out Hume pipes with new culverts to facilitate excess water flow.	The social and environmental report (mitigation measures) will address these issues during implementation, and a sufficient budget will be allocated to resolve these issues in the new design
3	Landslide prone area hence adequate study to be carried out before carrying out construction work.	The social and environmental report (mitigation measures) will address these issues during implementation and a sufficient budget will be allocated to resolve these issues in the new design
4	Should come up with ideal plan in regards of minimizing pollution during the construction phase of project.	The social and environmental report (mitigation measures) will address these issues during implementation, and a sufficient budget will be allocated to resolve these issues in the new design
5	Provision of overhead bridges (sky bridges) and underpass to reduce road accidents and easy access on either side.	The new design has made provisions to address these issues.
6	Construction to be carried out by dividing the entire road section into small parts which would help in reducing the pollution.	The new design has made sufficient provisions to address these issues/ Will discuss with the technical team if possible
7	Telephone and electricity wires to be undergrounded if possible.	The new design has made sufficient provisions to address these issues
8	Different types of environmental pollution may generate as a result of various road construction activities (especially air pollution), which should be mitigated with appropriate measures. The bituminous road must be demolished at the end period to prevent air pollution.	Air pollution measures will apply, such as water sprinkling during the construction period;
9	The project should be sensitive to the occurrence of likely social distortion during road construction and should implement public awareness program.	Social and environmental awareness will be conducted during the implementation
10	The project should be started in coordination with the concerned agencies regarding the existing structures related to electricity, drinking water, telephone, sewerage, and irrigation.	It is necessary to coordinate with concerned agencies
11	Dust and smoke should be completely controlled during road construction.	The new design has made sufficient provisions to address these issues
12	Skill development programs related to livelihood should be conducted for the locals.	These issues will be addressed through RP.
13	Construction work to be carried out by adopting safety measures.	The new design has made sufficient provisions to address these issues
14	Local people from the project-affected settlement should be prioritized in terms of providing employment in the project on the basis of their skill, qualification, and capability.	The project document has provisions to resolve the issues.
15	The project should be sensitive to the occurrence of likely social distortion during road construction and should implement public awareness program.	Project documents have provisions to resolve the issues GRM will be established in each municipality to address the issues.

S.No.	Issues/Concerns/Demand	Response/ Action
16	The project should be completed within a fixed period of time.	The donor and government have fixed the construction period.
17	Proper provisions of CCTV and traffic lights on the roads.	These issues will be discussed, technical team.
18	As there is Lumbini Sajedhari/Tilaurakot Collaborative Forest in this area, arrangements should be made to use the forest produce collected in Lumbini Sajedhari Forest.	Discussion will be done with Divisional Forest Office, local bodies and respective community forests
19	The project will have to reconstruct the Buddha statue, waiting for station and other structures near the Lumbini entrance gate within the road section.	RAP will address the issues. A sufficient budget will be allocated to reconstruct the affected structures.
20	Tree plantation arrangements should be made.	Cost for tree plantation/compensatory plantation will be allocated.
21	The project should help in controlling the floods with the proper provision of drains on either side of the road from Geruwa, Bangai to Koili Bridge.	The new design will address the issues.
22	As there is Mayadevi Stadium in the western part of Banganga Bridge and Shanti Udyan in the north, it should be properly managed and action plan should be made to maintain local identity and pride.	RAP will address the issues. A sufficient budget will be allocated to reconstruct the affected structures.
23	When constructing roads between urban areas and settlements, certain types of pollution-preventing plants should be planted.	Ornamental tree/ shrub will be a plantation in green belt/median.
24	A powerful deity temple, Jhadulamai, lies along the roadside hence, construction work needs to be done with its preservation and protection.	We will discuss this with the technical team. These issues will be given priority
25	Barbed wire fence along roadside should be reconstructed by contractors after demolishing them	Damage by the project will be reinstated/ reconstructed included in the engineer's estimate
26	Ownership of harvested trees should be granted to respective forest user groups	The discussion will be done with Divisional Forest Office, local bodies and respective community forests
27	Construction of Gabion around high Embankment and unstable area and landslide prone areas	For the protection of embankment erosion, bio-engineering measures and civil structures will be constructed as per requirement
28	Roadside plantation should be restored after its removal for road extension	The issue will be addressed according to Forest Clearance Guidelines. (When 1 tree is felled, it should be replaced with 10 as compensatory plantations) the cost will be allocated
29	Construction of wildlife corridor for easy wildlife passage on both side of road	Certain measures will be applied in the forest area such as warning signs of wildlife crossing, speed limit sign, display board

S.No.	Issues/Concerns/Demand	Response/ Action
30	Construction of sewage channel to prevent water flooding in residential areas	Side drain provision is the road design
31	Construction of pavements to connect roadway with major picnic spot	This issue will be discussed with the technical team for incorporation project cost.
32	Construction of wildlife corridor for easy wildlife passage on both side of road	Certain measures will be applied in the forest area such as warning signs of wildlife crossing, speed limit sign, display board
33	Construction of sewage channel to prevent water flooding in residential areas	Side drain provision is the road design
34	Construction of pavements to connect roadway with major picnic spot	This issue will be discussed with the technical team for incorporation project cost.
35	Filing material required for road construction should not be extracted from the community forests	Filling material will not be taken from the community forest area
36	Land stabilization activities should be done in Chure region considering its senility during excavation	This issue will be discussed with the technical team for incorporation project cost.
37	Need to prepare cross drainage structure (Box culvert, bridge) wildlife friendly in Jungle area height and width, and need certain interval	Widlife-friendly culverts will e designed
38	Gaida lake is near the project area there is Vulture restaurant	It will be studied during the environmental assessment
39	For removal of roadside tree need to follow Government trees clearance criteria 2071 (2014 AD) (Number 4 and 10) It is national Priority project or not For compensatory plantation need to follow 1:10, compensatory cost need to include in project cost Recommendation letters is necessary Divisional Forest Office	We review the Government tree clearance criteria 2071 (Numbers 4 and 10). It is a national priority project; Project will include the compensatory cost in project cost. A letter will be collected from DFO during IEE
40	Take all trees from ROW, using GPS coordinate, diameter and height We will support for census survey if required. Compensatory cost to be included in project cost	The survey team will take GPS coordinate, diameter and height of all trees The compensatory cost will be included in the ESIA/project cost
41	Take all trees from ROW, using GPS coordinate, diameter and height Compensatory cost to be included in project cost	The survey team will take GPS coordinate, diameter and height of all trees The compensatory cost will be included in the ESIA/project cost

Table 7.6: Feedback from Second Round of Consultations

SN	Issue Raised	Response
1	Are the climate change adaptation measures for the design of hydraulic structures adequate?	The project design has considered an additional 10% flow as the climate change adaptation measures consistent with the DoR related to climate change adaptation Also, the existing pipe culverts will be replaced by box culverts to improve the flow conditions

SN	Issue Raised	Response
2	What is the basis of the Butwal-Gorusinge-Chanauta road section into two separate subprojects?	The feasibility and design of the Butwal -Gorusinghe are in progress with the support of ADB funding. While the studies for the Gorusinge-Chanauta section are yet to be undertaken. World Bank will finance the study.
3	Controlling mechanism for encroachment in the forest area	The project will not develop any temporary facilities (like construction camps and material storage areas) in the forest areas. The forest user groups will also regularly monitor these areas during the implementation.
4	Construction of wildlife crossings for mammals and wild animals in forest areas.	The project will design all the culverts in the forest areas suitable for mammal crossings. In addition, the ESIA recommended culverts to facilitate the movement of herpetofauna in Budhi forest areas. The ESIA has included measures for monitoring wildlife movement in the B-G road section.
5	Please ensure that the project will comply with the government's policies on health and safety and labor and employment.	The ESIA and labour-management Procedure (LMP) have been prepared consistent with the national occupational health safety and labour rights regulations and World Bank Environmental and Social Standards. The compliance with the ESMP and LMP will be monitored during the implementation.
6	Application of bioengineering techniques in the road design	Bioengineering measures will be included in the road design for control of potential landslides and riverbank and embankment erosion.
7	The modality for implementation of compensatory plantations.	The compensatory plantation will be carried out with the support of the forest department. The budget for implementing these activities is already included in the ESIA.
8	Responsible agencies for regular monitoring of the implementation of ESMP.	As detailed in the ESIA, there will be adequate Environmental Social Health and Safety staff with the contractors, construction supervision consultants and PCU (DCID) to ensure implementation of ESMP and regular monitoring. Further, the safeguard officers of the Geo-Environmental and Social Unit (GESU) of DOR will also carry out regular monitoring.
9	Install traffic lights along the alignment	Traffic lights will be proposed at all junctions along the project alignment
10	Issues related to dust nuisance and disturbances in traffic in the construction phase should be adequately managed	Measures related to control of dust through the regular sprinkling of water and traffic control are included in the ESMP.
11	Compensation related to land structure, crops, fodder and fruits	Compesnation will be provided for all losses as per Land acquisition Act, 2034 and Resettlement Action Plan prepared for the project
12	Delay in construction and problem to public regarding access and disturb their regular activities	Construction activities will be completed timely as per the construction schdule

SN	Issue Raised	Response
13	Relocation of religious structures, bus shelters, restig places and public utilities	Relocation activities will be carried out in consultation with local people during project implementation phase
14	Construction of overpass bridge near Namuna School and Durga Higher Secondary School	Overpasses are recommended in the ESIA in the sensitive areas such as schools and will be incorporated in the project designs

7.8 Grievance Redressal Mechanism (GRM)

The process for resolving complaints that may arise in the project will be handled by the project-level grievance redress mechanism (GRM).

7.8.1 Project-Related Grievances

The project GRM addresses overall project-related grievances. The construction-related issues, impacts related to land acquisition and compensation, relocation and rehabilitation of public utilities, impact on private and public structures, impacts on forest and natural resources, issues of landslide, draining management, road safety, traffic management and community-related grievances etc. will be covered by the project-level GRM.

Any household or stakeholder who feels that they are impacted by adverse and material harm caused by the project may contact municipality leaders or local leaders of affected municipalities or rural municipalities who would then forward the complaint to the CSC, or the stakeholder may contact directly PCUs of DOR and MOICS. The Municipality and CSC staff will also be ready to receive a complaint and resolve and will take it to a higher level of authority if necessary.

Stakeholders will have access to both locally established grievances redress committees (GRC) as Local Consultative Forum (LCF) and formal courts of the appeal system. The Local Consultative Forum will be formed prior to the project implementation consisting of the representative of CSC, a representative from proponent site office, a representative from project-affected municipalities and wards, representative from the construction contractor, local NGO, Community Based Organizations and local political representatives. The LCF will be responsible for assisting the project during compensation determination, distribution of compensation and compliance monitoring. However, LCF will act as GRC in order to settle all the social and environmental complaints and grievances registered during the time of project construction. Every PAP can appeal to the court if they feel any project related grivence they feel was not adequately addressed by the project level GRM. They may appeal to the appellate court within 35 days of the public notice given to them. The project level GRM is detailed in the SEP.

7.8.2 Grievance related Project workers

A GRM will be explicitly established for worker-related grievances, following ESS2. This includes all issues of project workers. The accommodation (health and sanitation), availability of safety gazettes, equal wages to males and females for works of similar nature, delay in payments, hiring of labours without contract documents and SEA/SH. The project workers related GRM is detailed in the Labour Management Procedures (LMP).

7.8.3 Gender Based Violence (GBV) Related Grievances

This includes issues of SEA/SH issues within the project, workers and in the community level (PAP), where a well-equipped separate mechanism for reporting cases of GBV-local based GBV-GRM with GBV skilled community members will respond to such cases and contractors will need to have a Code of Conduct (CoC) as well as proper documentation of each labourer including social sanctions.

7.8.4 Implementation of GRM in the Project Cycle

The Safeguard and Monitoring & Evaluation Unit under the Project Management and Construction Supervision Consultant (CSC) will establish the project GRM within 1 month from the start of the project and before construction work begins. The types of grievances expected to be handled concerning either land acquisition or, more generally, construction-related grievances, and any other social and environmental issues brought up during construction by households and affected people who live relatively close to construction sites.

Local households and stakeholders will be informed about the setting up of the Grievance mechanism by the CSC before the start of any construction as part of the community mobilization process. Besides, the information board will be in place at the construction site with specific information related to the construction works and will provide in the local language the description of the project and grievance mechanism, where and to whom stakeholders can deliver their complaints, and in what form: verbal or written.

When obtaining the information from the complainant, in verbal or written form, either directly or from the Municipality/District Coordination Committee (DCC) and Community offices, the CSC office will complete a Grievance Action Form (GAF) to record all grievances and actions taken in a Grievance log. Minimal information recorded in this form will include (i) basic data about the affected person (name, address, contact number); (ii) category of the grievance filed (legal, social, environmental, technical/ engineering, financial, etc.); (iii) detailed description of grievance; and (iv) type of action taken. The GAF will be filled out by the person receiving a grievance and signed by the affected party and the receiver of the complaint. The affected party will receive a copy signed by both.

The Safeguard and M&E Unit will handle received grievances related to works on the road construction in collaboration with the GESU-DOR and the construction contractor. In each case, the Safeguard and M&E Unit will be supported by the CSC in cooperation with the proponent DCID, DOR. The construction contractor will clarify if the construction works cause the complaint. The CSC will inform and update the complainant about the progress of grievance mitigation within 24 hours for urgent issues and 7 days for non-urgent issues.

Once verified problem/complaint is well-founded and due to the construction works, the decision will be implemented together with the Safeguard Unit, CSC and Contractor. The contractor will take the necessary corrective actions and try to resolve the grievance informally directly with the complainant. If any sort of filled level grievance is not possible to redress or at the choice of the complainant, a formal redress can be forwarded to the Grievance Redress Committee (GRC).

The GRC will be formed to review complaints that cannot be resolved immediately. The committee will be formed by the Project Director of the proponent as a chair, the Unit Leader from the Safeguard and M&E Unit (CSC) and members of local stakeholders involved: Municipality representative, community members, NGOs, etc. A complainant has the right to appear in person, to be accompanied by a family member, and/or to request to be represented by a senior community member. In the event that the contractor, proponent, CSC do not address a grievance, the affected person can seek legal redress of the grievance in the appropriate courts under the formal legal court system.

In the case the established GRM is not in a position to resolve the issue, affected people can also use the World Bank Accountability Mechanism through direct contact (in writing) to the World Bank or Government of Nepal (GoN). The complaint can be submitted in any of the official languages of WB or in the local Nepali language.

Depending on the complaints and the mitigation measures decided and implemented, if necessary, the ESMP will be updated in order to avoid similar problems afterwards. The CSC Safeguard unit will provide monthly reports of any complaint registered and how it has been dealt with to the local authorities. The CSC Safeguard unit will regularly provide information to disseminate to the local stakeholders and communities of any grievances received and how they have been resolved through the community mobilization process or through the Communication Strategy Plan implementation.

Grievance recording register will be established at the project office, Contractor's Office and Consultant's RE office as well. Project affected people, as well as local people, can lodge their complaints at these Offices related to assets acquisition and other social and environmental concerns due to construction-related activities.

Special project grievance mechanisms such as the on-site provision of complaint hearings allow project-affected persons to get fair treatment on time. The GRC will be established in each road section covering affected Rural municipalities/Municipalities to handle initial grievances of the project-affected people. The grievant will have unhindered access to the grievance redress office to forward and file complaints. The provision of a Social Mobilizer in the project implementation is good practice in this regard. Social Mobilizer can be mobilized in order to help grievants to file the complaints to the concerned agency. Grievants will be exempted from all administrative fees incurred pursuant to the grievance redressed procedures except for cases filed in court. The proposed mechanism for grievance resolution is given below:

Stage 1:Complaints of grievants on any aspect of compensation, relocation, or unaddressed losses will be settled in the first instance verbally or in written form in the field-based project office. The concerned personnel to settle the issues at local level can discuss the complaint in an informal meeting with the grievant. The community consultation involvement of social and resettlement specialists and environmental specialists will be helpful in this regard. It will be the responsibility of the GRC and Project In-charge to resolve the issue within 15 days from the date of the complaint received.

Stage 2:If no understanding or amicable solution reaches or no response from the project office, the grievant can appeal to the CDC and project proponent/DOR. While lodging the complaint, the grievant must produce documents to support his/her claim. The CDC will provide the decision within 15 days of registering the appeal. In this case, if established GRM is not in a position to resolve the issue, affected people can also use the World Bank Accountability Mechanism through direct contact (in writing) to the World Bank or Government of Nepal (GoN).

Stage 3:If the grievant is not satisfied with the decision of CDC and project proponent or in the absence of any response of its representatives, within 35 days of the complaint, the grievant, in his/her last resort, may submit its case to the court.

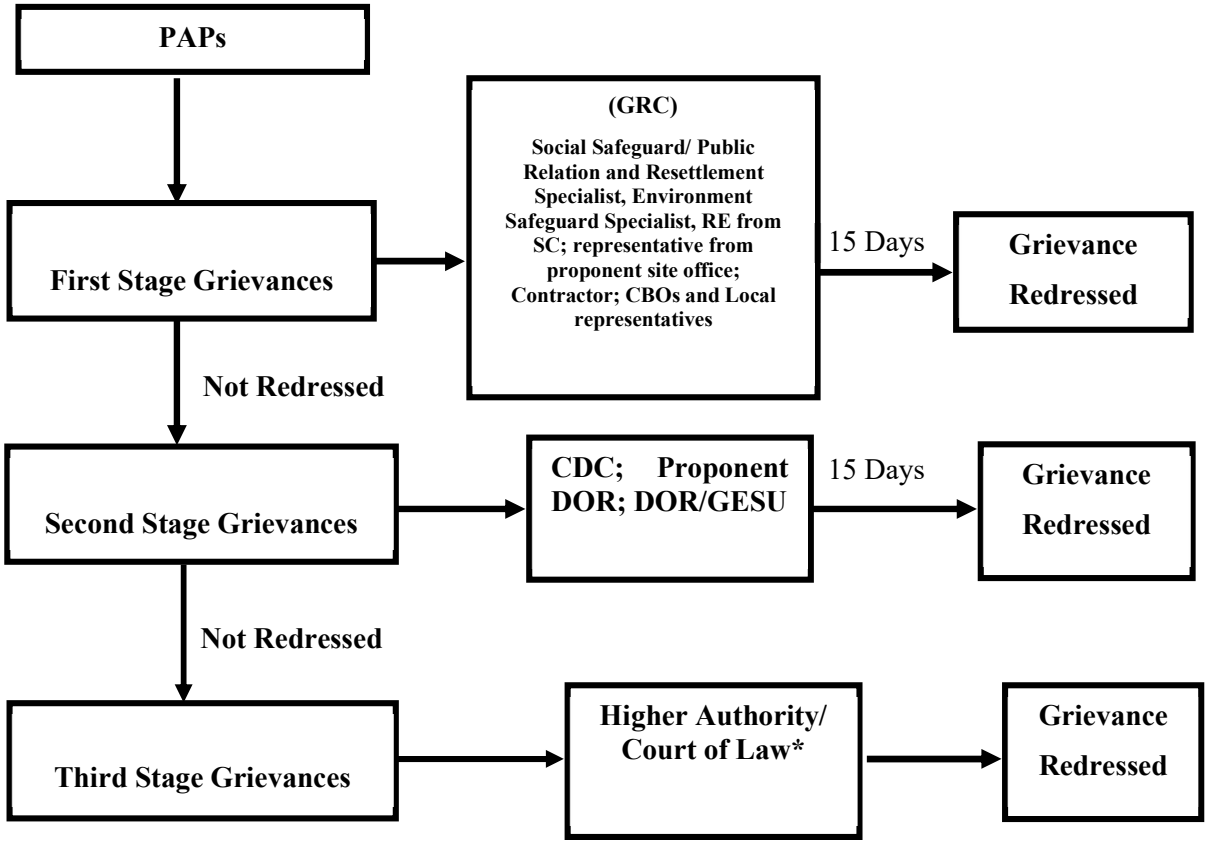

Figure 7.1: Grievance Redress Mechanism structure in the project cycle

CDC= Compensation Determination Committee, PAPs= Project Affected Persons, GRC= Grievance Redress Committee, CSC= Construction Supervision Consultant, DOR= Department of Roads, GESU= Geo-Environment and Social Unit. *Aggrieved person may also access the country's legal system at any stage (of the three stages) of the grievance redress mechanism.

8 Project Institutional Framework

8.1 Institutional Arrangements for E&S Instrument Preparation and Implementation

The BBIN 1 institutional framework and environmental and social staffing arrangement within the institutions are shown in Figure 8.1. The road works will be implemented by DOR, and trade-related works will be implemented by MOICS. The DCID in the DOR will act as the PCU, and new PCUs will be established in the MOICS and MOFE. The PCUs will hire environmental and social staff for implementation of the ESMF, hire environmental and social consultants to prepare the required E&S instruments, and contractors with adequate environmental, health and safety (ESHS) specialists for implementation of the subprojects.

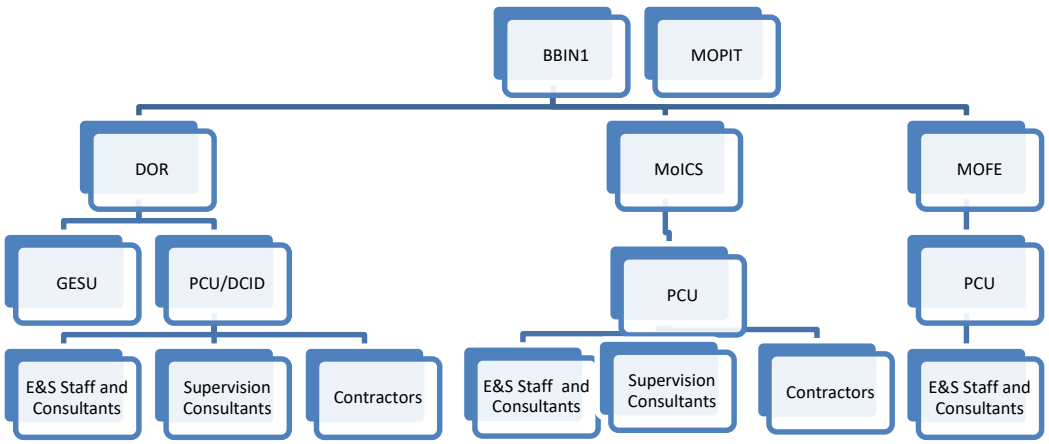

Figure 8.1: E&S Implementation Arrangements of BBIN 1

8.2 Institutional Capacity of DOR

DOR has extensive experience in working with the World Bank and other donor-funded projects. It has a permanent Geo-Environment and Social Unit (GESU) with four environmental and social staff. The DCID, which will act as the PCU, has four existing environmental and social staff. The details of existing E&S staff within the PCU/DCID and the GESU are shown in Table 8.1.

Table 8.1: Environmental and Social Staff of PCU/DCID and GESU of DOR

S.No.	Position	No. of position	Recruited (Yes/No)
E&S staff in DCID/PCU			
1	Social Development Expert/Consultant	1	Y
2	Environmental Safeguard Consultant/Expert	1	Y
3	Gender Specialist	1	Y
4	Occupational Health and Safety Specialist	1	Y
GESU			
1	Sociologist	1	Y
2	Environment Inspector	1	Y
3	Environmental Advisor	1	Y

S.No.	Position	No. of position	Recruited (Yes/No)
4	Social Development Advisor	1	Y
5	Geo-Technical Engineer	1	Y

The DOR and E&S staff in the PCU/DCID team has extensive experience in working with the World Bank funded projects, and World Bank safeguard policies and ESF. They are also currently working for World Bank funded Nepal Strategic Road Connectivity and Trade Improvement Project (SRCTIP), which was prepared under the ESF requirements. They also participated in the preparation of this ESMF and ESIA of the Butwal-Gorusinghe road subproject of BBIN 1.

The GESU is a permanent unit in DOR with two permanent staff, one Sociologist and one Environmental Inspector. In addition, it also has two consultants, an Environmental Advisor and a Social Development Advisor. The E&S staff in DOR are responsible for preparing IEE and EIA for government-funded road projects and supervising the implementation of ESMP. The GESU E&S staff are responsible for reviewing the safeguard documents of the different projects under DCID and forwarding them to the respective line ministries and departments. The DCID E&S experts are responsible for incorporating the idea of GESU E&S staff and updating the documents as necessary. GESU E&S team is responsible for monitoring the DCID projects and providing suggestions while implementing E&S compliance. The DCID mainlyfocuses on the doner funded projects while GESU looks after doner funded as well as GoN funded projects.

Besides these, the role of the GESU is very important for improved efficiency, effectiveness and sustainability of the projects. Although the need for the right of way acquisition is identified in EIA/ESIA, GESU is not normally involved in the land acquisition and hence, rarely if at all interacts with the land agencies. Sometimes, RAPs from the donor-funded project are submitted to the GESU for review. The relation of DoR-DCID, DoR-PCU and GESU has been sketched in **Figure 8.2**.

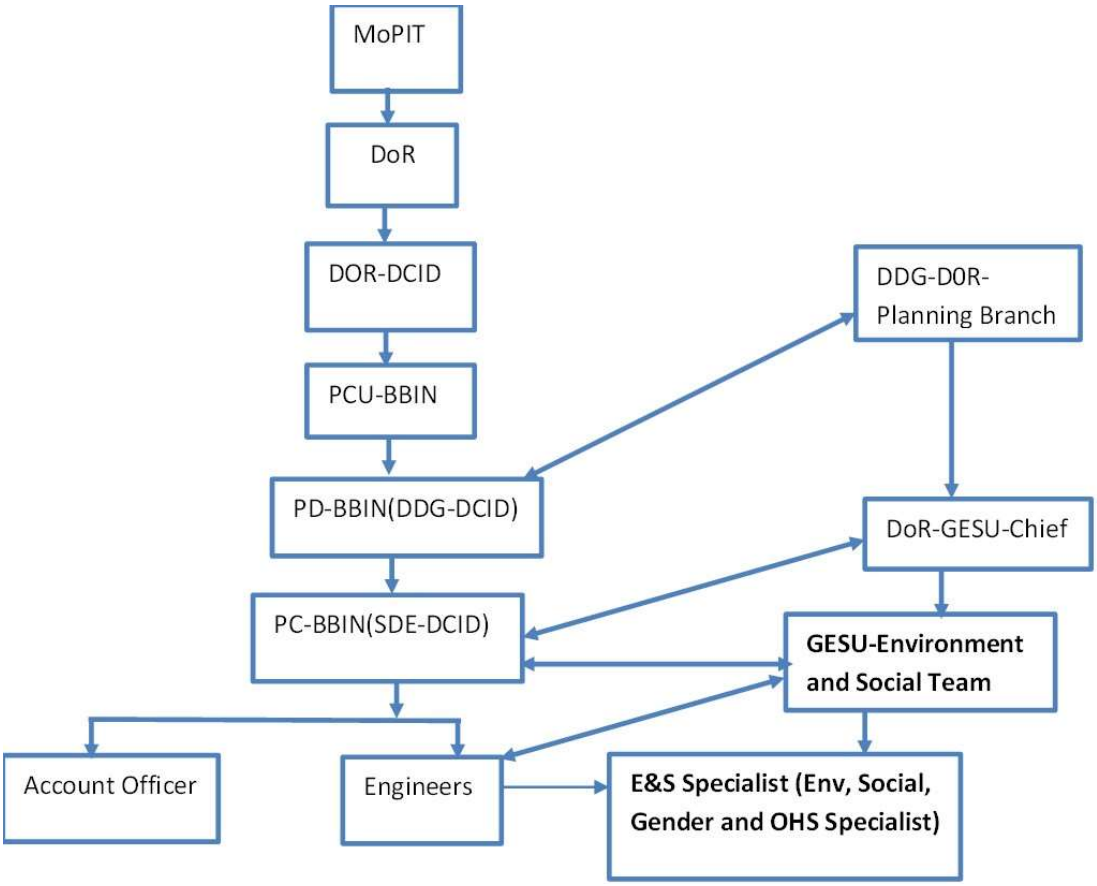

Figure 8.2: The relation of DoR-DCID, DoR-PCU and GESU

8.3 Institutional Capacity of MOICS and MOFE

MOICS is a longtime client and partner of the World Bank and is quite familiar with Bank safeguard policies and Bank processes. It currently implements Nepal-India Regional Trade and Transport Project (NIRTTP) and other donor-funded projects. It has a good experience, performance and acceptable track record in implementing the ESMP for trade-related projects and other infrastructures, including implementing ESMPs. The Project Coordination Unit under NIRTTP has one environmental specialist and one social specialist position, which are yet to be filled.

MOFE has been working with the World Bank on, REDD Readiness Preparation Program, Emission Reduction Program and Nepal Forests and Prosperity Project which aims to improve sustainable forest management. It has been assessed under this project that the environmental and social capacity of the MoFE and its provincial and local level government units charged with the management of environmental and social issues is inadequate.

8.4 Capacity Building of DOR, MOICS and MOFE

The proposed capacity building programs under BBIN include the hiring of additional environmental and social specialists in each PCU. One junior environmental specialist and one junior social specialist will be hired for the PCU of DOR to support the existing E&S staff. One environmental specialist and one social specialist will be hired for the PCUs of MOICS and MOFE. The monitoring capacity of DCID

E&S staff will be strengthened by procurement of one field vehicle and environmental monitoring equipment. Further, training programs will be conducted for these staff to strengthen their capacity to manage the environmental and social impacts and risks of the subprojects.

The capacity building plan ensures that the E&S risks associated with individual road projects under the BBIN will be managed in accordance and in compliance with the World Bank E&S Standards. The long-term goal is to build a permanent capacity at DoR, MOICS and MOFE to manage ES risks of all its future projects and programs, serving as a model for other agencies and helping catalyze government-wide institutional change in E&S Risk Management. The training programs will focus on WB ESF-compliant ESIA, Occupational Health and Safety issues in Road development and mitigation measures, Monitoring and Audit System, Audit Protocols, E&S Compliance Monitoring, and so on.

8.5 Roles and Responsibilities of Implementing Agencies

PCUs. The PCUs will be responsible for the overall implementation of the subprojects, including procurement of design consultants, E&S consultants to prepare necessary E&S instruments, construction supervision consultants (CSCs) and contractors. PCUs will have dedicated E&S staff, as discussed in the above sections. Detailed roles and responsibilities of all these agencies on E&S implementation are given in Table 8.2.

Construction Supervision Consultants. The construction and supervision consultant team has the responsibility to support the construction, activities of road/bridge improvement or upgrading works. The major role of construction supervision consultant is to carry out construction supervision of road and bridge works under BBIN project including environmental and social management plan, health and safety plan, and other environment and social-related plans, resettlement implementation support, relocation of utility services, quality management, and all aspects of contract management as "Engineer" for the implementation of civil works contracts including Construction and 5 years Maintenance Phase. The CSCs will have adequate ESHS staff in their team, including environmental specialists, social specialists, and OHS specialists.

E&S Consultants. The PCUs will hire E&S consultants to prepare necessary E&S instruments, such as ESIA, RAP, IPDP, and IEE/EIA needed for the World Bank and government approvals.

Contractors. The contractors will have adequate ESHS specialists to implement the environmental and social management plans prescribed in the ESMP.

Table 8.2: Roles and Responsibilities in E&S Management of the Project

Organization	Responsibility
PCUs	• Coordination with the MoPIT and WB and other line agencies • Recruitment of CSC consultants and Consultant for ESIA studies • Preparation of Quarterly Progress Reports and share with the line ministry and World Bank. • Ensure that all project activities are well-managed and coordinated; • Procurement of works and goods; • Payment of compensation to the project affected households; • Ensure day to day compliance monitoring during the execution of works
E&S staff within PCUs	• Screening of proposed subprojects to identify their risk category and requirement of safeguard instruments to be prepared (ESIA or IEE, RAP, IPDP, etc.) • Prepare terms of reference for the E&S studies of subprojects

	• Reviewing consultant deliverables related to environmental assessment, reviewing bid documents for inclusion of ESMP measures, supervising construction activities, producing periodic monitoring reports, • Supervising CSC for the implementation of ESMP • Closely coordinate with other concerned agencies, local governments, and communities to support the implementation of ESMP
CSC	• Prepare feasibility studies and detailed engineering designs for projects; • Supervision of civil works, ensuring compliance with all design parameters including quality requirements and ESMP implementation; • Preparation of monthly reports (Technical and E&S report) and submit to PCU • CSC will have dedicated environment, social and OHS staff
E&S Consultants	• Carrying out E&S assessment studies in compliance with the procedures described in the Program's ESMF • Prepare required E&S instruments for the subprojects
Contractors	• Prepare construction ESMP (C-ESMP) with site-specific mitigation measures; • implementation of mitigation and monitoring measures proposed in the ESMP; • Each contractor will recruit an Environmental, Health, and Safety Manager, who will be responsible for implementing the contractors' environmental, health and safety responsibilities, and liaising with government agencies. • The contractors will have adequate environmental, social, health, and safety staff.

8.6 Budgets for Implementation of ESMF

A budget of USD 0.95 million is proposed to implement ESMF, which covers the preparation of E&S instruments, hiring E&S staff in the PCUs and procurement of a field vehicle and monitoring equipment for the DCID/PCU of DOR. Detailed cost estimates for implementing ESMPs and RAPs will be provided in respective ESIA and RAPs. Details of the ESMF budget are given in **Table 8.3**.

Table 8.3: Budget for E&S Implementation

S.N.	Activities	Tentative cost in US$
1	Preparation of ESIA and IEE/EIA for subprojects	100,000.00
2	Preparation of RAP and IPDP for subprojects	100,000.00
3	Environmental and Social Staff in the PCUs (two specialists in each PCU)	600,000.00
4	Capacity building programs	50,000.00
5	Vehicle for DCID during compliance monitoring and implementation phase and monitoring equipment	100,000.00
	Grand Total	950,000.00

Annex 1: Environmental and Social Screening Checklists

Annex 1.1: Screening Checklist for Roads

Annex 1.2: Screening Checklist for Bridges

Annex 1.3: Screening Checklist for Trade FacilitiesAnnex 1.4: Screening Checklist for Forest Activities

Annex 1.5: Indicative Structure of E&S Screening Report

Annex 1.1. Screening Checklist for Roads

A. General Information

Project Title:	
Subproject Name:	
Sector Division:	
Category of Road:	
Project Districts:	
Description of Proposed Project Activities:	

B. Environmental Screening

S.N.	Issues	Yes	No	Remarks
1	Is the sub-project area adjacent to or within any of the following environmentally sensitive areas?			
	• Cultural heritage site			
	• Protected Area			
	• Wetland			
	• Buffer zone of protected area			
	• Forests			
	• Significant area for protecting biodiversity (e.g. Key Biodiversity Area, Important Bird Area, etc.)			
2	Whether subproject work requires clearing the forest area or any other environmentally sensitive areas mentioned in the above question? If yes, area of clearance, and type of forest/tree to be removed.			
3	Would the proposed road rehabilitation/upgradation affect the movement/migration of fauna species such as mammals, reptiles and amphibians?			
4	Whether the sub-project is encroaching the historical/cultural areas; alteration of landscape by road embankments, cuts, fills, and quarries?			
5	Alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site?			
6	Deterioration of surface water quality due to silt runoff and sanitary wastes from work-based camps and chemicals used in construction?			
7	Increased local air pollution due to rock crushing, cutting, and filling works, and chemicals from asphalt processing?			
8	Risks and vulnerabilities related to occupational health and safety due to physical, chemical hazards during project construction and operation?			

S.N.	Issues	Yes	No	Remarks
9	Noise and vibration due to blasting and other civil works?			
10	Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?			
11	Community safety risks due to both accidental and natural causes, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning.			
12	Availability of Construction Materials and space available for storage yard etc. for storing materials.			
13	Appropriateness and adequacy of designated tipping sites and their dumping capacity, any requirements for protection works etc.			

C. Social Screening

S.N.	Issues	Yes	No	Remarks
1	Will there be dislocation or involuntary resettlement of people? If yes, provide estimates on the affected area and affected households			
2	Will there be dislocation and compulsory resettlement of people living in right - of -way? If yes, provide estimates on the affected area and affected households			
3	Is there any presence of Indigenous People in the project area?			
4	Are there any impacts on the indigenous people?			
5	Disproportionate impacts on the poor, women and children, or other vulnerable groups?			
6	Other social concerns relating to inconveniences in living conditions in the project areas that may trigger cases of upper respiratory problems and stress?			
7	Hazardous driving conditions where construction interference?			
8	Accident risks associated with increased vehicular traffic, leading to accidental spills of toxic materials and loss of life?			
9	Increased noise and air pollution resulting from traffic, leading from traffic volume?			
10	Increased risk of water pollution from oil, grease and fuel spills, and other materials from vehicles using the road?			
11	Social conflicts if workers from other districts/province or neighboring countries are hired?			
12	Large population influx during project construction and operation that causes increased burden on social			

	infrastructure and services (such as water supply and sanitation systems)?			

D. Climate Change and Disaster Risk Screening

S. N.	Issues	Yes	No	Remarks
1	Is the project area subject to hazards such as earthquake, flood, landslide, storm etc.?			
2	Could changes in temperature, precipitation, or extreme events patterns over the project lifespan affect technical or financial sustainability (e.g. increased erosion or landslide could increase maintenance costs, soil moisture content could affect sub-grade)			
3	Are there any demographic or socioeconomic aspects of the project area that are already vulnerable (e.g. high incidence of marginalized populations, rural-urban migrants, illegal settlements ethnic minorities, women or children)?			
4	Could the project potentially increase the climate or disaster vulnerability of the surrounding area (e.g. by encouraging settlement in areas that will be more affected by floods in the future or encouraging settlement in earthquake zone)?			

E. Gender Based Violence- General Supervision

SN	Issue	Confirm (Y/N/ NA)	Potential Impacts	Remarks
1	Is there any impact of not having Separate accommodation & Sanitation facilities and wages discrimination			
2	Possibility of Sexual exploitation and abuse (SEA) and Sexual harassment (SH)?			
3	Any type of work that may require female labor skill?			

F. Stakeholder Consultation

SN	Issues	Confirm (Y/N/NA)	Potential Impacts	Remarks
1	Have there been meaningful public dialogue, engagement, consultation and disclosure in the past about the project and its associated ES risks and impacts?			
2	Is there the potential for any public opposition for the project?			
3	Is there the potential for any public support for the project?			

4	Are project stakeholders likely to exhibit widely divergent views on the need, objectives or activities defined under the project?			
5	Will support for the project pose a reputational risk to the Bank in any way regarding perception of ES risks and impacts?			
6	Is the project likely to face any barriers to information disclosure, transparent sharing of project information among stakeholders, or other aspects that could affect meaningful consultations?			
7	Does the Borrower or implementing entity have a positive performance track record in engaging with stakeholders in similar projects?			
8	Does the Borrower or implementing entity have a demonstrated track record regarding the establishment and use of grievance mechanisms?			

G. Conclusion

E&S Risk Category of the Subproject (High, Substantial, Moderate, Low):	The guidance for risk-categorization High-risk: Subprojects that involve complex and large scale civil works. The anticipated impacts are high in magnitude and/or spatial extent, and high probability of serious adverse impacts on sensitive ecosystems and public health. Substantial Risk. Subprojects that involve large-scale civil works. The anticipated impacts are medium in magnitude and/or spatial extent in time. Medium to low probability of impacts on sensitive ecosystems and public health Moderate Risk. Subprojects that involve medium scale civil works, and the impacts are temporary in nature and low in magnitude. The impacts will not be felt beyond the actual footprints of the subprojects Low Risk. Subprojects that involve minor civil works and its potential impacts on public health and the environment are likely to minimal and negligible.
Recommendation on E&S instruments including management plans, studies and/or assessment to be prepared for the proposed subproject e.g. ESIA, ESMP, use of Generic/Standard ESMP	
Recommendations to the Design Engineer	
Conclusion and summary of overall screening findings	

Assessed/Prepared by:	Designation: Date:
Endorsed by:	

Annex 1.2 Screening Checklist for Bridges

A. Bridge Information

I	Bridge name	
II	Bridge ID	
III	River name/Type	
IV	Bridge length/No of Span	
V	Bridge type	
VI	Road name	
VII	District/VDC (Both side of bridge)	**Right bank:** **Left bank:**
VIII	Brief description of subproject activities	

B. Environmental Safeguard Screening

SN	Issue	Confirm (Y/N,NA)	Potential Impacts	Remarks
1	Whether the subproject area located within environmental sensitive areas (protected area, buffer zone, reserved forest, wetlands, cultural heritage site, habitat of important species or other sensitive area etc.)			
2	Whether subproject work requires clearing the forest area? If yes, area of clearance, and type of forest/tree to be removed.			
3	Any changes to waterways/river regime due to bridge work?			
4	Whether the bridge work require borrow pit/stockpiling? What are the probable locations for borrow pits/Stockpiling and how far?			
5	Whether the bridge works require using chemicals, bitumen or other liquid/chemicals? And what are they?			
6	Whether bridge works during construction carried out day and night?			
7	Potential impacts on Historical / religious / cultural/ cremation/graveyard sites and/or intangible cultural assets.			
8	Potential Air, Water and Noise pollution and vibration expected due to bridge work?			
9	How much construction yard needed for bridge works?			
10	Whether the bridge works will have impacts on flora, fauna and biodiversity etc.?			

11	What will be the impact on the movement of regular traffic, and/or pedestrians, and access to amenities due to bridge construction works?			
12	What type of solid/hazardous waste generated during construction due to bridge construction works? Any potential issues related to treatment/disposal?			
13	Labor camps will be established? If yes, please specify the area.			
14	Creation of temporary breeding habitats for diseases such as those transmitted by mosquitoes and rodents during the construction works?			
15	Is siting and/or routing of the subproject (or its components) likely to be affected by climate conditions including extreme weather related events such as floods, droughts, storms, landslides etc.?			
16	Whether the project design (e.g. the clearance for bridges) needs to consider any hydro meteorological parameters level, (e.g., peak river flow, reliable water level, peak wind speed etc.)?			
17	Whether the climatic conditions, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of subproject's input over the life of project outputs (e.g. construction material)?			
18	Whether the climatic conditions, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s)? (E.g. depositions of debris/silt, scouring, river bank cutting etc.)			
19	Information about alternatives under consideration or to be considered?			
20	Will certain ES risks and adverse impacts be difficult to avoid, or minimize, or mitigate because i) the project involves a technology that is new and/or complex, and the risks and/or impacts of this technology are not fully understood, and/or ii) the project involves (a) complex mitigation measure(s) that its implementation success is not fully assured?			
21	Does the scale of the project have the potential to cause diverse and multiple ES			

	risks and impacts extended over a large area? This applies to both direct and indirect (Induced) risks and impacts			
22	Does the project require demolition of part/all of existing bridge structure?			

C. Social Safeguard Screening

SN	Issue	Confirm (Y/N, NA)	Potential Social Impacts	Remarks
1	Temporary land acquisition required for the maintenance work if yes go the following number 2.			
2	Acquisition of land (with ownership type)			
2.1	Estimated Area:			
2.2	Affected HHs Nos.:			
3	Loss of income sources HHs Nos.			
4	Loss of houses/shelter and other structure Nos. for maintenance purposes (title holder and non-title holder).			
5	Impact on Community/Public Property (e.g. Irrigation, water supply, access road, foot trail, telephone/electric pole etc.)			
	If yes			
5.1	Irrigation System			
	Type : Length:			
5.2	Water Supply System			
	Type : Length:			
	Loss of fodder/timber/fruit trees of commercial value Nos.			
	Loss of crops grown in the affected land (estimated quantity)			
5.3	Other Specify (community property):			
6	Employment Opportunity (in direct benefited area)			
6.1	Local peoples willingness to work			
	If Yes			
	Available skilled labor: Unskilled labor:			
7.	Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?			
8.	Is there potential for employment of community workers?			
9	Is there a potential for employment of vulnerable individuals or groups, such as women, people with disabilities, migrant			

	workers and/or children (of working age as per ESS 2)?			
10.	Is there risk or potential for the employment of child labor and/or forced labor?			

D. Occupational Community Health and Safety Safeguard Screening (OCHS)

SN	Issue	Confirm (Y/N, NA)	Potential Impacts	Remarks
1	Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as fuel and chemicals etc. during construction of the bridge works?			
2	Potential accidents due to absences of site-barricade or safety signage on construction worksites?			
3	How many shifts the construction activities take place during execution of works?			
4	Are there any nearby emergency health facilities?			
5	Whether the construction activities include high occupational health and safety risk jobs? *(Works at height/hazardous works etc.)*			
6	Impacts due to influx of migration of workers? *(transmission of pandemic diseases, STDs, etc)*			
7	Community safety risks due to both accidental and natural causes, especially where the structural elements or components of the subproject are accessible to members of the affected community could result in injury to the community throughout project construction, operation and decommissioning.			
8	Any risks of increasing exposure of communities to project related traffic/road safety risks?			

E. Gender Based Violence- General Supervision

SN	Issue	Confirm (Y/N/ NA)	Potential Impacts	Remarks
1	Is there any impact of not having Separate accommodation & Sanitation facilities and wages discrimination			
2	Possibility of Sexual exploitation and abuse (SEA) and Sexual harassment (SH)?			
3	Any type of work that may require female labor skill?			

F. Stakeholder Consultation

SN	Issues	Confirm (Y/N/NA)	Potential Impacts	Remarks
1	Have there been meaningful public dialogue, engagement, consultation and disclosure in the past about the project and its associated ES risks and impacts?			
2	Is there the potential for any public opposition for the project?			
3	Is there the potential for any public support for the project?			
4	Are project stakeholders likely to exhibit widely divergent views on the need, objectives or activities defined under the project?			
5	Will support for the project pose a reputational risk to the Bank in any way regarding perception of ES risks and impacts?			
6	Is the project likely to face any barriers to information disclosure, transparent sharing of project information among stakeholders, or other aspects that could affect meaningful consultations?			
7	Does the Borrower or implementing entity have a positive performance track record in engaging with stakeholders in similar projects?			
8	Does the Borrower or implementing entity have a demonstrated track record regarding the establishment and use of grievance mechanisms?			

G. Conclusion

E&S Risk Category of the Subproject (High, Substantial, Moderate, Low):	The guidance for risk-categorization High-risk: Subprojects that involve complex and large scale civil works. The anticipated impacts are high in magnitude and/or spatial extent, and high probability of serious adverse impacts on sensitive ecosystems and public health. Substantial Risk. Subprojects that involve large-scale civil works. The anticipated impacts are medium in magnitude and/or spatial extent in time. Medium to low probability of impacts on sensitive ecosystems and public health

	Moderate Risk. Subprojects that involve medium scale civil works, and the impacts are temporary in nature and low in magnitude. The impacts will not be felt beyond the actual footprints of the subprojects Low Risk. Subprojects that involve minor civil works and its potential impacts on public health and the environment are likely to minimal and negligible.
Recommendation on E&S instruments including management plans, studies and/or assessment to be prepared for the proposed subproject e.g. ESIA, ESMP, use of Generic/Standard ESMP	
Recommendations to the Design Engineer	
Conclusion and summary of overall screening findings	
Assessed/Prepared by:	Designation: Date:
Endorsed by:	

Annex 1.3. Screening Checklist for Trade Facilities

A. General Information

SN	General Information	Description
1.	Project Name:	BBIN1
2.	Sub-project Name:	
3.	Location of the subproject	
4.	Description of the proposed Activities	
5.	Name of the connected road/highway: Entrance Chainage:	
6.	Altitude:	
7.	Approach Road Condition	Gravel ☐ Earthen ☐ Black Topped ☐ Feeder Road ☐
8.	Length of Approach Road	
9.	Land Use Pattern:	
10.	Available area to perform construction activities?	
11.	Total Area of the Infrastructure	
12.	Status of Fencing	
13.	Screening Assessment Date:	

B. Environmental Screening

S. N.	Issue	Confirm (Y/N,/ NA)	Potential E*S Risks	Remarks
1.	Does the proposed area of parking yard, access road and other infrastructures infrastructure construction sites/ neighborhood gets affected?			
2.	Is there a potential temporary disruption to nearby community due to construction of parking yard, access road and other infrastructures?			
3.	Will there be enough space inside the proposed area for the storage of the construction materials?			
4.	Is there enough open space for multifaceted works?			
5.	Is there emergency gathering place within the area?			
6.	Will there be any damage or disturbance to existing lines (water supply, connection, drainage, telephone/sewer and electric pole)?			

S. N.	Issue	Confirm (Y/N,/ NA)	Potential E*S Risks	Remarks
7.	Does High Tension Line (HTL) pass across the proposed site? If Yes, at what distance, and of what is the power in kVA in transmission line?			
8.	Impact on movement of traffic, and / or movement of people?			
9.	Is there any Protected Area in the vicinity?			
10.	Is there any forest in the vicinity?			.
11.	Does the proposed area needs clearance of vegetation (Shrubs/bushes/ trees)? Will there be any requirement of clearing forest or other environmental sensitive areas?			
12.	How many numbers to grown up trees within the construction site? If any then specify the numbers and types.			
13.	Is there any possibility to enhance the greenery with additional ornamental tree plantation?			
14.	Are there any landslides or erosion-prone areas?			
15.	Is there any Flood prone/River cutting/Low lying areas?			
16.	Are there any water sources/water bodies (pond, lake, river, stream, spring, etc.)			
17.	What is the quality of air, water sources, soil, and noise, etc?			
18.	Water supply source (currently being used) and future provision?			
19.	Water requirement fulfillment during construction of the project? Whether it will be pumped from river or managed for elsewhere?			
20.	Risk and hazard associated with constructing or operating sites?			
21.	Status of Approach road ICP? How wide is it, is there need for widening?			
22.	Availability of construction material such as sand gravel, brick or stone?			
23.	How to manage solid waste during operation phase of parking yard, access road and other infrastructures? Is there any need for incinerator? What about kitchen waste?			
24.	How to manage surface drainage? Is there possibility to collect surface runoff in lagoon and excess water then will be discharged to nearest water bodies (Kholsa and Kholsi)? The retained water may be used for gardening during dry season.			
25.	Is there any effluents generated from the existing lab or buildings?			
26.	Is there any possibility of rainwater harvesting?			

C. Social Screening

S.N.	Issue	Conformation (Yes/No)	Magnitude of Social Impacts	Remarks

1	Are the lands proposed for construction of trade facilities legally owned by NITDB or any competent government entities?			
2	Possibility of access restriction of local communities due to construction of the proposed trade facilities and other related activities such as extension of access road?			
3	Is there any indigenous and vulnerable community along the alignment and vicinity?			
4	Are there any historical/Religious/Cultural/Archeological sites (such as temple, mosque, church, palaces ruins, etc.?)			
5	What are the available Common property resources in the project area such as forest, grazing land, open public spaces etc.?			
6	What is the status of the civic amenities such as hospital, Health Pos, School/collage			
7	Any security threat from the neighborhood or during operation phase, need to be highlighted so that this provision will be addressed in detail design of the project.			
8	Water requirement fulfillment during construction of the project? Whether it will be pumped from ground or managed for elsewhere?			
9	What are the Adjoining main settlement and trade centers?			
10	Does the project need to acquire land, house, or other private property?			
11	Is there any loss of livelihood/Income source etc.?			
12	Are there any IPs/Marginalized groups of people in the neighborhood?			
13	Are there any community infrastructures that may require relocation (such as Irrigation canal, water supply pipes, foot trails, culverts, resting places (chutara in Nepali), electricity and telephone poles, etc.)?			
14	What are the potential income-generating activities in the neighborhood?			
15	How would the poor, marginalized, and IPs benefit from the projects?			
16	Opportunity to involve local people during construction of the project (skilled or unskilled labor such as mason, labor etc.) available in local market?			

17	Is there any community health and safety risk to women, children, and elderly people from the project?			
18	Are there any disputes which might hinder/delay the successful accomplishment of the proposed project?			

D. Occupational Community Health and Safety Safeguard Screening (OCHS)

SN	Issue	Confirm (Y/N, NA)	Potential Impacts	Remarks
1	Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as fuel and chemicals etc. during construction of the bridge works?			
2	Accidents due to absences of site-barricade or safety signage on construction worksites?			
3	How many shifts the construction activities take place during execution of works?			
4	Are there any nearby emergency health facilities?			
5	Whether the construction activities include high risk jobs? *(Works at height/hazardous works etc.)*			
6	Impacts due to influx of migration of workers? *(transmission of pandemic diseases, STDs, etc)*			
7	Community safety risks due to both accidental and natural causes, especially where the structural elements or components of the subproject are accessible to members of the affected community could result in injury to the community throughout project construction, operation and decommissioning.			

E. Gender Based Violence- General Supervision

SN	Issue	Confirm (Y/N/ NA)	Potential Impacts	Remarks
1	Is there any impact of not having Separate accommodation & Sanitation facilities and wages discrimination			
2	Possibility of Sexual exploitation and abuse (SEA) and Sexual harassment (SH)?			
3	Any type of work that may require female labor skill?			

F. Stakeholder Consultation

SN	Issues	Confirm (Y/N/NA)	Potential Impacts	Remarks
1	Have there been meaningful public dialogue, engagement, consultation and disclosure in the past about the project and its associated ES risks and impacts?			
2	Is there the potential for any public opposition for the project?			
3	Is there the potential for any public support for the project?			
4	Are project stakeholders likely to exhibit widely divergent views on the need, objectives or activities defined under the project?			
5	Will support for the project pose a reputational risk to the Bank in any way regarding perception of ES risks and impacts?			
6	Is the project likely to face any barriers to information disclosure, transparent sharing of project information among stakeholders, or other aspects that could affect meaningful consultations?			
7	Does the Borrower or implementing entity have a positive performance track record in engaging with stakeholders in similar projects?			
8	Does the Borrower or implementing entity have a demonstrated track record regarding the establishment and use of grievance mechanisms?			

G. Conclusion

E&S Risk Category of the Subproject (High, Substantial, Moderate, Low):	The guidance for risk-categorization High-risk: Subprojects that involve complex and large scale civil works. The anticipated impacts are high in magnitude and/or spatial extent, and high probability of serious adverse impacts on sensitive ecosystems and public health. Substantial Risk. Subprojects that involve large-scale civil works. The anticipated impacts are medium in magnitude and/or spatial extent in time. Medium to low probability of impacts on sensitive ecosystems and public health Moderate Risk. Subprojects that involve medium scale civil works, and the impacts are temporary in nature and low in magnitude. The impacts will not be felt beyond the actual footprints of the subprojects

	Low Risk. Subprojects that involve minor civil works and its potential impacts on public health and the environment are likely to minimal and negligible.
Recommendation on E&S instruments including management plans, studies and/or assessment to be prepared for the proposed subproject e.g. ESIA, ESMP, use of Generic/Standard ESMP , or use of Environmental Code of Practices	
Recommendations to the Design Engineer	
Conclusion and summary of overall screening findings	
Assessed/Prepared by:	Designation: Date:
Endorsed by:	

Annex 1.4 Screening Checklist for Forest Activities

A. General Information

SN	General Information	Description
14.	Project Name:	BBIN1
15.	Sub-project Name:	
16.	Location of the subproject	
17.	Description of the proposed Activities	
18.	Name of the connected road/highway: Entrance Chainage:	

B. Environmental Screening

SN	Sample Checklist for Environmental Screening	Compliance to the standards/criteria		
		Yes	No	Comments
1	Is the project likely to cause soil erosion?			
2	Are there any possibilities to harm cultivated/arable land due to this project?			
3	Is this project likely to degrade/reduce the quality of the drinking water?			
4	Is this project likely to use chemical fertilizers excess to the agreeable amount (beyond the recommendations)?			
5	Is this project likely to use chemical pesticides excess to the agreeable amount (beyond the recommendations)?			
6	Does the proposed activity intend to use or depend on any resources of national parks and protected areas or any critical aquatic and terrestrial habitat area?			
7	Is the proposed project being implemented in areas surrounding national parks or protected areas?			
8	Is the proposed project being implemented in areas surrounding forest or wildlife areas other than national parks and protected areas?			
9	Is the project being implemented in open forest land and likely to loss biodiversity and harm young leaves/twigs?			
10	Will the proposed proposal be implemented in the areas surrounding water bodies, lakes and ponds and intend to use or depend on them for the implementation, likely to dry them?			
11	Will the proposed proposal be implemented in areas located in high risk zone such as landslide prone area,			

	steep slopes, highly degraded land in hills, riverine area susceptible to annually flooding, or in areas causing large-scale soil erosion?			
12	Will the proposed proposal involve land clearance on very steep slopes?			
13	Will the proposed project be implemented in the areas physical cultural heritage sites?			
14	Will the proposed proposal involve logging?			
15	Will the proposed proposal endanger indigenous plant species of ecological significance?			
16	Will this project cause/involve in any activities which could harm human health/hazard?			
17	Will the proposed proposal use banned pesticides and chemicals?			
18	Will this project/activity cause transfer of communicable livestock diseases?			
19	Is the project likely to cause any other negative environment effect apart from those listed above (1-18)? If yes, list them.			
20	Has this project formulated EMP? (If response is "No" to questions 1-18. Please note that the project shall not be financed if there is even is one "yes" in above 19 questions.)			

C. Social Screening

SN	Sample Checklist for Social Screening	Yes	No	No information
1	Will the proposed proposal cause displacement or relocation of families due to implementation or construction of infrastructure?			
2	Will the proposed proposal require some families losing their farm land and assets on the land?			
3	Does this project/activity discriminate wage by virtue of gender, caste, and ethnicity in the broader project area?			
4	Will the proposed proposal involve activities that are likely to make irreversible adverse impact on indigenous communities, women and vulnerable groups?			
5	Will the proposed proposal include any activity that promotes or involves incidence of child labor?			
6	Will implementation of this project risk thespread of communicable diseases such as STDs and HIV/AIDS due to increased labor force?			

D. Conclusion

E&S Risk Category of the Subproject (High, Substantial, Moderate, Low):	The guidance for risk-categorization High-risk: Subprojects that involve complex and large scale civil works. The anticipated impacts are high in magnitude and/or spatial extent, and high probability of serious adverse impacts on sensitive ecosystems and public health. Substantial Risk. Subprojects that involve large-scale civil works. The anticipated impacts are medium in magnitude and/or spatial extent in time. Medium to low probability of impacts on sensitive ecosystems and public health Moderate Risk. Subprojects that involve medium scale civil works, and the impacts are temporary in nature and low in magnitude. The impacts will not be felt beyond the actual footprints of the subprojects Low Risk. Subprojects that involve minor civil works and its potential impacts on public health and the environment are likely to minimal and negligible.
Recommendation on E&S instruments including management plans, studies and/or assessment to be prepared for the proposed subproject e.g. ESIA, ESMP, use of Generic/Standard ESMP , or use of Environmental Code of Practices	
Recommendations to the Design Engineer	
Conclusion and summary of overall screening findings	
Assessed/Prepared by:	Designation: Date:
Endorsed by:	

Annex 1.5. Indicative Structure of E&S Screening Report

Executive Summary

1. Background

2. Description of proposed sub-project

- Name, location, project footprint, technologies used, other project specification
- Map showing project area, nearby communities, river, forest, wetland and other ecosystems

3. Objectives of Environmental and Social Screening

4. Methodology

5. Screening findings

    5.1 Environmental baseline and potential risks and impacts

    5.2 Socio-economic baseline and potential risks and impacts

    5.3 E&S risks categorization

    5.4 Need for ESIA, ESMP, IEE, RAP, VCDP and/or other E&S instruments/studies/measures

6. Stakeholder engagement

    6.1. Stakeholder identification

    6.2. Proposed stakeholder engagement approach

    6.3. Result of stakeholder consultation

7. Conclusion and Recommendation

Annex:

- Project site photos
- Stakeholder consultation records
- Completed E&S screening checklist

Annex 2: Environmental ToRs/ToCs

Annex 2.1: Standard Content for a Scoping Document for EIA Studies

Annex 2.2: Table of Contents for ToR for EIA Studies in Nepal Requiring Approval of MoFE

Annex 2.3: Table of Contents for IEE Report

Annex 2.4: Table of Contents for EIA Report (for MOFA Approval)

Table 2.5: Proposed Table of Contents for ESIA (for World Bank Approval)

Annex 2.1 Standard Content for a Scoping Document for EIA Studies

Executive Summary, Abbreviations
1. Introduction
    - 1.1 Background
    - 1.2 The Proponent
    - 1.3 Project Description
    - 1.4 Policies, laws, Guidelines
    - 1.5 Objectives of the Scoping
    - 1.6 Project Area Delineation
2. Existing Environmental Condition
    - 2.1 Physical Environment
    - 2.2 Biological Environment
    - 2.3 Socioeconomic Environment
    - 2.4 Cultural Environment
3. Scoping Methodology
    - 3.1 Literature Review
    - 3.2 Public Notice
    - 3.3 Walkover Survey
    - 3.4 Issues Prioritization Methods
    - 4. Issues Identified and Raised Stake holders
    - 4.1 Issues Identified
    - 4.2 Issues Raised by Stakeholders
5. Issues Prioritized for EIA Study
    - 5.1 Physical Issues
    - 5.2 Biological Issues
    - 5.3 Socioeconomic Issues
    - 5.4 Cultural Issues
    - 5.5 Management Issues
6. Work Schedule

Annexes: Road Design Standards adopted,
Photos, Maps,
List of Contact Persons
Public Notices,
Suggestions / Comments / Issues,
Composition and schedule of Study Team

Annex 2.2: ToR for EIA Studies in Nepal Requiring Approval of MoFE

Section No.	**Table of Content**
1	Name and address of the individual or institution (proponent) preparing the IEE/EIA report
2	Proposals: a. General introduction b. Relevancy of the proposal
3	Procedure to be adopted while preparing the IEE report
4	Policies, laws, rules, and manuals to be taken into account while preparing the IEE/EIA report
5	Preparation of the IEE report: a. Time b. Estimated budget
6	Specific impact of the implementation of the proposal: a. Social and Economic b. Cultural and Physical c. Chemical d. Biological
7	Alternatives for the implementation of the proposal: a. Design b. Project site c. Technology, procedure of operation, time schedule, raw materials to be used
8	Matters concerning prevention of impacts from implementation of the proposal on the environment
9	Matters to be monitored while implementing the proposal
10	Other necessary matters

(Ref.: EPR 1997 Schedule 3)

Annex 2.3: Table of Contents for IEE Report

Chapter	Sub-Chapters Required in IEE Report
1	1. Name and address of individual or institution preparing the report (proponent)
2	2. Executive Summary, indicating - Proposal and detailed particulars of the area where the project is implemented - Objectives of proposal - Impacts on Land-use - Adverse impacts on environment, impacts on human life, population pressure - Damage to be suffered by local goods or objects - Other necessary matters
3	3. Technical Information 3.1 Type of proposal and Project Description (nature, location) 3.2 Technology and materials to be used 3.3 Emissions resulting from the implementation of the proposal 3.4 Energy to be used 3.5 Manpower requirements 3.6 Resources required for the implementation of the proposals 3.7 Other necessary matters
4	4. Impacts of implementation of the proposal on the environment: 4.1 Physical impacts 4.2 Biological impacts 4.3 Impacts on social, economic, and cultural domain
5	5. Alternatives for implementation of the proposal
6	6. Measures to reduce or control the impact of implementation of the proposal on the environment
7	7. Matters to be monitored while implementing the proposal
8	8. Other necessary matters
9	9. (or *Annex*): Data, maps, photographs, tables, charts, graphs, etc. as required

Annex 2.4: Table of Contents for EIA Report

Standard Format Required for EIA Reports
1. Name and address of individual or institution preparing the report (proponent)
2. **Executive Summary**, in Nepali and English, indicating ▪ Name and location of the proposed project ▪ Brief description of the project ▪ List of development permits or public financial assistance ▪ Summary of identified alternatives ▪ Summary of potential environmental and Social impacts ▪ - List of key mitigation measures
3. Detailed Description of the Project ▪ Type, size, and proposed use of project ▪ Objective and anticipated benefits of the project ▪ Description of physical characteristics of the project and its surrounding, illustration with location map and site plan in appropriate scale and level of details ▪ A time table, approximate cost, and methods and timing of construction of the project. ▪ Other necessary matters
4. Existing Environmental and Social Condition – Description and analysis of physical, biological, chemical, economic, and social condition of the project site, surroundings and the region. ▪ Physical Environment – topography, geology, seismicity, hydrology (surface and ground water), climate, air quality, and noise, ▪ Biological Environment - Plants, animals and habitats, national parks, sanctuary, rare and endangered species, sensitive ecological areas ▪ Socio-economic, cultural, health & safety- Population, settlement, community Infrastructures (Irrigation, drinking water, schools, etc), Agricultural land, Potential for development (cash crop, industry, etc), recreational resources, scenic qualities, open spaces, historical, cultural and religious sites,
5. Impact Identification, prediction and Evaluation – Analysis of positive, negative, direct, indirect, extent, duration, reversibility and magnitude. The impact should be identified in relation to the construction, and operation stages ▪ Physical ▪ Biological ▪ Socioeconomic, Cultural, Occupational and Community Health and Safety
6. Alternatives of Project ▪ Project Alternative ▪ Alternative Route ▪ Alternative Design and Construction Methods ▪ Do Nothing Alternative
7. Mitigation Measures – make reference to the Environmental Code of Practice ▪ Beneficial Impacts in pre-construction, construction, and operation phases of project - Physical - Biological - Socioeconomic and cultural ▪ Adverse Impacts in pre-construction, construction, and operation phases of project - Physical - Biological - Socioeconomic and cultural • Implementation schedule and responsibilities of the proposed mitigation measures

Standard Format Required for EIA Reports
8. Environmental and Social Management Plan • General • Environmental Monitoring Plan (compliance and impact monitoring)
9. Review of Policy and Legal Provisions
10. Conclusion and Recommendations
11. References – documents and data sources used for this EIA
12. Appendices • Photographs • Response to the comments • Supporting Documents, baseline data, maps, drawings, etc • Details of Public Consultation/List of people participated • Copy of questionnaire/Checklists/Formats/Charts • Climatic Records • Records of Flora and Fauna • Records of Geological data • Air, noise and water quality data Copy of approved Terms of Reference

Annex 2.5: Proposed Outline of the ESIA

(a) Executive Summary

- Concisely discusses significant findings and recommended actions.

(b) Legal and Institutional Framework

- Analyzes the legal and institutional framework for the project, within which the environmental and social assessment is carried out
- Identifies and assesses the environmental and social requirements of the World Bank.

(c) Project Description

- Concisely describes the proposed project and its geographic, environmental, social, and temporal context, including any offsite investments that may be required (e.g., dedicated pipelines, access roads, power supply, water supply, housing, and raw material and product storage facilities), as well as the project's primary suppliers.
- Includes a map of sufficient detail, showing the project site and the area that may be affected by the project's direct, indirect, and cumulative impacts.

(d) Baseline Data

- Sets out in detail the baseline data that is relevant to decisions about project location, design, operation, or mitigation measures. This should include a discussion of the accuracy, reliability, and sources of the data as well as information about dates surrounding project identification, planning and implementation.
- Identifies and estimates the extent and quality of available data, key data gaps, and uncertainties associated with predictions.
- Based on current information, assesses the scope of the area to be studied and describes relevant physical, biological, and socioeconomic conditions, including any changes anticipated before the project commences.
- Takes into account current and proposed development activities within the project area but not directly connected to the project.

(e) Environmental and Social Risks and Impacts

- Takes into account all relevant environmental and social risks and impacts of the project. This will follow the procedures given in the ESMF of the Project
- Identifies mitigation measures and significant residual negative impacts that cannot be mitigated and, to the extent possible, assesses the acceptability of those residual negative impacts. Identifies differentiated measures so that adverse impacts do not fall disproportionately on the disadvantaged or vulnerable.
- Assesses the feasibility of mitigating the environmental and social impacts; the capital and recurrent costs of proposed mitigation measures, and their suitability under local conditions; and the institutional, training, and monitoring requirements for the proposed mitigation measures.
- Specifies issues that do not require further attention, providing the basis for this determination.

(g) Analysis of Alternatives

- Systematically compares feasible alternatives to the proposed project site, technology, design, and operation—including the "without project" situation—in terms of their potential environmental and social impacts.
- Assesses the alternatives' feasibility of mitigating the environmental and social impacts; the capital and recurrent costs of alternative mitigation measures, and their suitability under local conditions; and the institutional, training, and monitoring requirements for the alternative mitigation measures.
- For each of the alternatives, quantifies the environmental and social impacts to the extent possible, and attaches economic values where feasible.

(h) Environmental and Social Management Plan

- Develop an environmental and social management plan
- Describe the institutional arrangements for implementation of ESMP and reporting.

(i) Consultations and Disclosure

- Summarize the consultations carried out and feedback received on the draft ESIA.

(j) Appendices

- List of the individuals or organizations that prepared or contributed to the environmental and social assessment.
- References—setting out the written materials both published and unpublished, that have been used.
- Record of meetings, consultations and surveys with stakeholders, including those with affected people and other interested parties. The record specifies the means of such stakeholder engagement that were used to obtain the views of affected people and other interested parties.
- Tables presenting the relevant data referred to or summarized in the main text.
- List of associated reports or plans.