GOVERNMENT OF SAINT VINCENT AND THE GRENADINES

VOLCANIC ERUPTION EMERGENCY PROJECT

PROJECT NUMBER: P176943

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Table of Contents

List of Tables

List of Figures

Acronyms and Abbreviations

ANSI	American National Standard Institute
AOI	Area of influence
As	Arsenic
BOD	Biological Oxygen Demand
BoQ	Bills of Quantities
BRAGSA	Roads, Building and General Services Authority
CBO	Community-based organisation
CDEMA	Caribbean Disaster Emergency Management Agency
CESAP	Construction Environmental and Social Action Plan
CHMP	Cultural Heritage Management Plan
CHS	Community Health and Safety
Cl	Chlorine
CO	Carbon Monoxide
CO2	Carbon Dioxide
COD	Chemical Oxygen Demand
CSC	Construction Supervision Consultant
DMF	Daily Monitoring Forms
DO	Dissolved Oxygen
DoEP	Director of Economic Planning
E&S	Environmental and Social
EC	Electrical Conductivity
ESCoP	Environmental and Social Code of Practices
EHS	Environmental Health and Safety
EHSGs	Environmental Health and Safety Guidelines
EP&R	Emergency Preparedness and Response
EQS	Environmental Quality Standard
ERISP	Early Recovery Income Support Program
ESA	Environmental and Social Assessment
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESIA	Environmental and Social Impact Assessment
ESIRT	Environment and Social Incident Reporting Toolkit
ESM	Environmental and Social Management
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standards
ESTP	Environmental and Social Training Plan
FC	Fecal Coliform

Fe	Iron
GAP	Gender Action Plan
GBV	Gender Based Violence
GoSVG	Government of Saint Vincent and the Grenadines
GRM	Grievance Redress Mechanism
GRS	Grievance Redress Service
HRAC	Hazard Risks Assessment Codes
ICR	Implementation Completion and Results Report
IEE	Initial Environmental Examination
ILO	International Labor Organization
IP	Injured Person
ISO	International Standardization Organization
km	Kilometer
KPI	Key Performance Indicators
LITE	Labor Intensive Temporary Employment
LMP	Labor Management Procedures
LMP	Labor Management Plan
m	meter
M&E	Monitoring and Evaluation
MoA	Ministry of Agriculture
MoFEP	Ministry of Finance, Economic Planning, and Information Technology
MoNM	Ministry of National Mobilization
MoTCASDC	Ministry of Tourism, Civil Aviation, Sustainable Development and Culture
NCR	Non-compliance Report
NGO	Non-governmental organization
NH3-N	Ammonium Nitrate
NO2	Nitrogen Dioxide
O/M	Operation and Maintenance
OCHS	Occupational and community health and safety
OCHSMS	occupational and community health and safety management system
OHS	Occupation Health and Safety
OHSP	Occupational Health and Safety Plan
OSHA	Occupational Safety and Health Administration
PDNA	Post Disaster Needs Assessment
PDO	Project Development Objective
PICs	Public Information Centres
PM	Particulate Matter
PMU	Project Management Unit
PPDB	Physical Planning and Development Board

PPE	Personal Protective Equipment
PPU	Physical Planning Unit
PS	Principal Secretary
PSC	Project Steering Committee
PSIPMU	Public Sector Investment Programme Management Unit
RAC	Risks Assessment Codes
RFI	Request for Inspection
ROW	Right-of-Way
RPF/RAP	Resettlement Policy Framework/Resettlement Action Plan
SCP	Social Code of Practices
SDU	Sustainable Development Unit
SEA/SH	Sexual Exploitation and Abuse / Sexual Harassment
SEP	Stakeholder Engagement Plan
SO2	Sulfur Dioxide
SOP	Standard Operating Procedures
sq	Square
SVG	Saint Vincent and the Grenadines
TC	Total Carbon
TDS	Total Dissolved Solid
TSS	Total Suspended Solid
UNCBD	United Nations Convention on Biological Diversity
UNCCD	United Nations Convention to Combat Desertification
UNFCCC	United Nations Framework Convention on Climate Change
VECs	Valuable Environmental Components
VEEP	Volcano Eruption Emergency Project
WAPDA	Water & Power Development Authority
WB	World Bank
WBG	World Bank Group

Chapter 1 : INTRODUCTION

1.1 Country Background

Saint Vincent and the Grenadines (SVG) is an archipelagic State nation within the Lesser Antilles in the eastern Caribbean Sea.[1] It consists of the main islands of Saint Vincent, which is located north of the 32 islands and cays, and the Grenadine islands. The island Saint Vincent is home to the La Soufrière volcano (13.33◦N, 61.18◦W), located at the highest point to the north of the island at 1,238 metres or 4,048 feet. Soufrière is a geologically active volcano that erupted in 1812, 1902, 1979, and most recently in 2021.[1] Between December 28, 2020 and April 8, 2021, the La Soufrière Volcano experienced effusive eruptions, which culminated in explosive eruptions on April 9, 12, and 13. Between December 29, 2020 and April 7, 2021, the alert level for the La Soufrière volcano had been elevated to an Orange level as a result of increased activity and the ongoing effusive eruption (CDEMA, 2021A)[2]. An Orange Level alert means that there is highly elevated seismicity or, fumarolic activity, or both, or other highly unusual symptoms and eruptions may occur with less than 24 hours' notice. On the morning of April 9, 2021, the largest explosion occurred and launched an ash plume to 8 km in altitude. These eruptions covered the entire country in ash layers, with the heaviest concentrations occurring in the northwestern part of the island closest to the volcano. The eruptions also released massive amounts of gas and generated superheated pyroclastic flows. Furthermore, the remaining tephra (volcanic debris) and ash deposits remain a threat during the rainy/hurricane season due to the potential for it turning to lahars flows (destructive mudflows containing a hot or cold mixture of water and rock fragments down the slope of volcanoes towards valley areas) and further damage the landscape.[3,4]

1.2 Project Background

The La Soufrière's volcanic eruptions have impacted the social, economic and physical stability of entire population of SVG. Fortunately, there was no loss of life directly due to the effects of the eruptions as a result of an effective monitoring system and timely evacuations. According to the CDEMA Situation Report N0. 32, on July 11, 2021, 45 public shelters were being run by 536 volunteers for 1,990 evacuees.[5] There were four thousand five hundred and fifty seven (4,557) displaced families (19,390 persons) from the red, orange, and yellow zones were registered in private home placement, and 791 persons were being fed from private shelters. As of September 15, 2021, the volcano alert level was changed from orange to yellow.[6] According to the NEMO website: "A YELLOW alert means that the Volcano is still restless: seismic or fumarolic activity or both are above the historical level at the volcano but have reduced significantly since the last eruption on April 22, 2021." The lowering of the alert level to Yellow means that all previously evacuated residents could have now returned to

[1] Tolson, Richard. (2021, March 10). Saint Vincent and the Grenadines. Encyclopaedia Britannica Inc. Retrieved from https://www.britannica.com/place/Saint-Vincent-and-the-Grenadines.

[2] CDEMA. (2021, April 9). EXPLOSIVE ERUPTION AT LA SOUFRIÈRE VOLCANO, ST. VINCENT: SITUATION REPORT No. 8. Caribbean Disaster Emergency Management Agency. Retrieved November 3, 2021 from https://www.cdema.org/images/2021/CDEMA_Situation_Report_8_Volcano_SVG_9Apr2021_final.pdf

[3] USGS. (n.d.). Volcano Hazards Program. Lahars move rapidly down valleys like rivers of concrete. Retrieved November 1, 2021, from https://www.usgs.gov/natural-hazards/volcano-hazards/lahars-move-rapidly-down-valleys-rivers-concrete

[4] Encyclopaedia Britannica. (2020, January 20). Lahar. Encyclopaedia Britannica Inc. Retrieved from https://www.britannica.com/science/lahar

[5] CDEMA. (2021, August 4). LA SOUFRIÈRE VOLCANO, ST. VINCENT: SITUATION REPORT No. 32. Caribbean Disaster Emergency Management Agency. Retrieved November 3, 2021 from https://www.cdema.org/images/2021/08/CDEMA_Situation_Report_32_SVG_VH_4_August_2021.pdf

[6] NEMO. (2021, September 15). VOLCANO ALERT LEVEL CHANGED FROM ORANGE TO YELLOW. National Emergency Management Organisation. Retrieved November 3, 2021 from http://nemo.gov.vc/nemo/index.php/news-events/news-release/682-volcano-alert-level-changed-from-orange-to-yellow

their homes, once it was habitable. However, access to the volcano remains off limits due to uneven and dangerous terrain, along with a potential threat of lahars after rainfalls additionally hot gases are still being emitted from the volcano and hot surface temperature of the areas close to the volcano. Lahars and heavy steaming/degassing is expected to continue to be a hazard during periods of heavy rainfall.

The Government of Saint Vincent and Grenadines (GoSVG) is working to rebuild the island nation following this natural disaster. World Bank (WB) approved a US $42 Million to support Volcanic Emergency Response and Recovery in Saint Vincent and the Grenadines.[7]

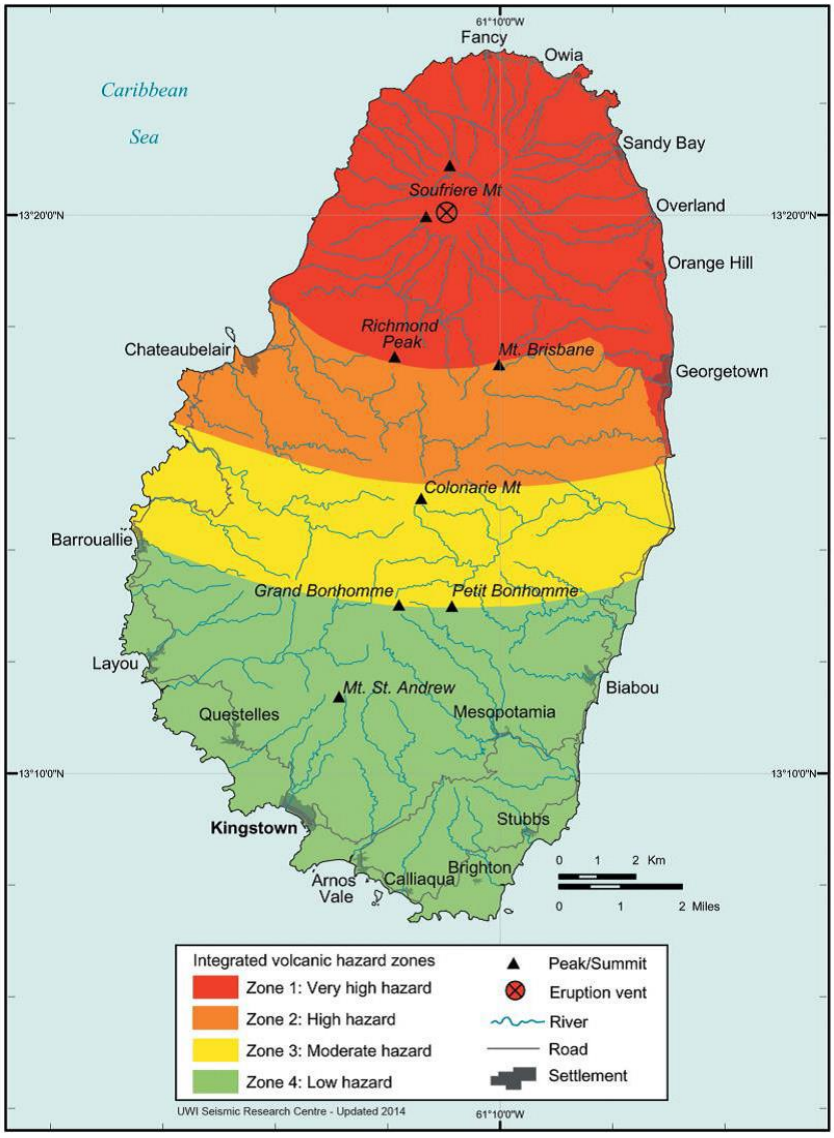


Figure 1-1: Volcanic hazard zones by April 2021 Volcano

The Project Development Objective (PDO) of the Volcanic Eruption Emergency Project (VEEP) is to support Saint Vincent and the Grenadines by providing short-term income support and building back better critical services following the La Soufrière eruption. The Project focuses mainly on the areas

[7] WB. (2021, July 20). Project Appraisal Document, Volcanic Emergency Response and Recovery in Saint Vincent and the Grenadines. World Bank Group.

affected by the La Soufrière Volcano eruption, focusing primarily on the northern, northeastern and northwestern communities of Saint Vincent, the 'red' and 'orange' volcanic hazard zones, such as Fancy, Overland, Sandy Bay, Owia, Magum, Georgetown, Tourama, Orange Hill in the north and northeast and northern western communities of Fitz Hughes, Chateaubelair, Petit Bordel, Rose Hall, Rose Bank, Troumaca, Coulls Hill and Spring Village (Figure 1-1).

The PDO will be achieved through:

1) Component 1: Early recovery income support program (ERISP):
    a) Subcomponent 1.1 – Temporary cash transfers and social support services program
        i) target selected poor and vulnerable households from the affected areas (red and orange zones displaced by the volcanic eruptions of La Soufrière), who will be provided with income support for a period of six months
        ii) The entry point of registration for beneficiaries is NEMO's National Evacuation Registry (NER)
        iii) Beneficiary selection will prioritize households from the selected geographic areas that are in the lowest income levels based on the established poverty line and households headed by women and/or with elderly, disabled members and/or with an unemployed head of household
    b) Subcomponent 1.2 - Labor Intensive Temporary Employment (LITE) Program; and
        i) the implementation of the LITE program will be on an as-needed basis, and its purpose is to provide income support and short-term employment
        ii) It will include income-generating opportunities targeted at women, not only as site workers but also in supervision and monitoring of the implementation of the work, and/or will include gender-specific needs
    c) Subcomponent 1.3 - Strengthening institutional capacity to administer and monitor income support programs.
        i) aim to strengthen the capacity of the line agencies to administer and monitor the existing income support programs
2) Component 2: Restoration and "Building Back Better" of critical services and strengthening emergency preparedness and response capacity. Investments under this component will focus on three main areas:
    a) support for reconstruction planning
    b) investments in rapid restoration and resilient reconstruction of priority infrastructure
    c) strengthening of EP&R systems and capacity
3) Component 3: Project Management

    The technical studies, feasibility studies, and detailed engineering designs of infrastructure interventions and operations will be carried out mainly in the areas of public facilities, transport infrastructure, water supply systems, agricultural centers, and slope stabilization. These studies will address the critical needs of reconstruction while supporting SVG to be better prepared for the impacts of climate change and build resilience into physical and operational infrastructure. The shortlist of the subprojects is under preparation by different government agencies. The potential response and immediate restoration activities will include:
    a) Cleanup of volcanic ash and debris,
    b) Restoration of affected water supply systems
    c) River cleaning and training

d) Purchase/rental of machinery and equipment
e) Restoration of transport services.

The potential longer-term reconstruction investments will include:

a) Resilient reconstruction of water supply systems,
b) Reconstruction of schools and other public buildings,
c) Repair and reconstruction of roads, drains, culverts, and bridges
d) Construction of emergency warehouses.

The rebuilding efforts will be geared towards the various sectors that were impacted during the eruption and subsequent events. Subprojects for the following sectors may be included in the project's suite of works:

- Water supply
- Electricity supply
- Agriculture, fisheries, forestry
- Tourism
- Transportation – roads, bridges
- Infrastructure – residential, commercial, or institutional buildings

Sector-wise summary of damage, loss, and recovery costs are presented in

Table 1-1. The estimated costs are based on registered damages and losses, and the costs of recovery needs are built on the concept of building back better to counteract not only the damages caused by the volcanic ash fall but also any future catastrophic events, including hurricanes and storms, applying an additional 20% to replacement values. A detailed breakdown of the damages is included in Chapter 3.

Table 1-1: Summary of La Soufrière volcanic eruption damage and losses and recovery

Sector	Damage (XCD)	Loss (XCD)	Total Effects (XCD)	Recovery Needs (XCD)
SOCIAL	**281,286,577**	**33,421,158**	**314,707,735**	**384,565,074**
Housing	263,542,495	32,333,364	295,875,859	355,994,870
Health	3,151,203	358,150	3,509,353	10,329,105
Education	14,592,879	729,644	15,322,523	18,241,099
INFRASTRUCTURE	**30,414,030**	**46,612,510**	**77,026,540**	**92,434,207**
WASH	304,530	1,337,596	1,642,126	1,890,426
Transport	30,000,606	44,363,134	74,363,740	89,327,028
Electricity	108,894	911,780	1,020,674	1,216,753
PRODUCTIVE	**104,378,880**	**138,541,537**	**242,920,417**	**260,353,540**

Sector	Damage (XCD)	Loss (XCD)	Total Effects (XCD)	Recovery Needs (XCD)
Agriculture, Forestry, Fisheries	103,848,380	126,296,910	230,145,290	258,855,290
Tourism-Accom.	-	11,810,000	11,810,000	-
Tourism-Parks	530,500	434,627	965,127,327	1,498,250
CROSS CUTTING				
Disaster Risk Reduction				2,375,265
TOTAL	**416,079,487**	**218,575,205**	**634,654,692**	**739,728,086**

Source: Table obtained from PDNA (2021)

1.3 Purpose and Rational of the ESMF

The GoSVG has prepared this Environmental and Social Management Framework (ESMF) to ensure that the recovery efforts are carried out in an environment-friendly and socially sound way and in accordance with the national and international standards so no further damage is done to the natural and social environments. The ESMF is intended to be used as a practical tool during program formulation, design, implementation, and monitoring of the VEEP. This document will be used as a guide during project implementation for ensuring environmental and social integration by the IAs and contractors in planning, implementing, and monitoring of project-supported activities. To ensure good environmental management in the proposed project, the ESMF will provide guidance on pre-investment works/studies (such as environmental and social screening, environmental and social assessment, environmental and social management plans, etc.), provide set of steps, processes, procedure, and mechanism for ensuring an adequate level of environmental and social consideration and integration in each investment in the project-cycle; and describes the principles, objectives and approach to be followed to avoid or minimize or mitigate impacts. The specific objectives of this ESMF are to:

- Integrate the environmental and social concerns into the identification, design and implementation of all project interventions in order to ensure that those are environmentally sustainable and socially feasible;
- Detail institutional roles and responsibilities, monitoring and reporting requirements, an estimated E&S budget, and capacity-building measures
- Ensure all relevant environmental and social issues are mainstreamed into the design and implementation of the projects/sub-projects and in the subsequent phases of the VEEP;
- Consider in an integrated manner the potential environmental and social risks, benefits and impacts of the program and identify measures to avoid, minimize and manage risks and impacts while enhancing benefits;
- Ensure compliance with national and World Bank requirements. The ESMF presents potential impacts of the VEEP, mitigation, enhancement, contingency and compensation measures, environmental and social management and monitoring plan, and institutional

framework, including inter-agency cooperation for implementing ESMPs. The ESMF will facilitate the compliance of the Government of SVG's policies, acts and rules along with the World Bank's Environmental and Social Standards (ESSs) of the newly adopted Environmental and Social Framework (ESF).

- Guide conducting the detailed ESA/IEE/ESIAs of the later stages of the VEEP as appropriate to the project components/sub-components.
- Provide E&S Screening Checklist for risk classification of site-specific activities.
- Explain the procedures for safe storage, transportation, commercial use (if any) and disposal of ash, including assessment of existing disposal sites.

This ESMF sets out the principles, rules, guidelines, and procedures to assess the environmental and social risks and impacts of the subprojects to be implemented under the project. It contains measures and plans to reduce, mitigate and/or offset adverse risks and impacts, provisions for estimating and budgeting the costs of such measures, and information on the agency or agencies responsible for addressing project risks and impacts, including on its capacity to manage environmental and social risks and impacts. It includes adequate baseline information on the area in which subprojects footprints are expected to be sited, including any potential environmental and social vulnerabilities of the area; and on the potential impacts that may occur and mitigation measures that might be expected to be used.

1.4 Approach and Methodology followed in preparing the ESMF

This ESMF has been prepared taking into account the following methods:

- Review of all available documents provided by the client that helped a better understanding of the project and the project objectives
- Outlined the ESMF scope using previous ESMFs used in the region as a guide
- Conducted literature review to obtain baseline condition and the missing information
- Used data made available by the concerned agencies of the government of SVG, especially the PDNA Report of 2021.

1.5 Structure of this ESMF

- **Chapter 1** provides introductory and contextual information on the ESMF and is followed by:
- **Chapter 2** reviews the national regulatory requirements relevant to this project and WB policies.
- **Chapter 3** presents the baseline conditions of the project area.
- **Chapter 4** provides an evaluation of the Potential environmental and social impacts and risks of the project.
- **Chapter 5** covers the occupational and community health and safety aspects of the project and provides an outline for the Occupational and Community Health and Safety (OCHS) framework Plan.
- **Chapter 6** discusses the institutional framework of SVG in relevance to carrying out the project.
- **Chapter 7** presents environmental and social management procedures, including procedures for subproject-specific document review and standard and specific mitigation measures and an estimated cost.

Chapter 2 : POLICY, LEGAL AND REGULATORY FRAMEWORK SUMMARY

The subprojects will involve the reconstruction of infrastructure from various sectors. As such, multiple pieces of legislations may be relevant to this project. This will result in the involvement of several Ministries, organizations and other entities, as appropriate, for environmental and social support for this project. These include:

- National Parks, Rivers, and Beaches Authority
- Ministry of Health, Wellness and the Environment
- Ministry of Transport, Works, Land and Surveys, and Physical Planning
- Ministry of Agriculture, Forestry, Fisheries, Rural Transformation, Industry and Labour
    - *Department of Labour Department - Occupational Health and Safety*
- National Trust
- Central Water and Sewerage Authority
- Ministry of Finance, Economic Planning, and Information Technology
- National Emergency Management Organisation

The types of permits that the PIU and/or contractor may be required to obtain will depend on the nature and scope of the individual works. Specific permit requirements may include:

- The Motor Vehicles and Road Traffic Regulations (2009) are designed to regulate and control the flow of traffic. This is done by way of signposts, markings, reflectors and bumps on the street's surface. Contractors on public projects are required to submit a Traffic Management Proposal to the Ministry of Works. The Ministry consults with Traffic Police in its review. Non-compliance with an approved Proposal is deemed breach of contract.
- The Electrical Inspectorate Division promotes electrical regulation and electrical safety.
- The Physical Planning and Development Board (PPDB) has the legal authority for carrying out the purpose and provisions of the Town and Country Planning Act. The PPU functions as the technical/advisory arm of the Physical Planning and Development Board (PPDP) and is responsible for ensuring project development occurs within the environmental and social requirements of St. Vincent & the Grenadines. Review agencies include civil society members with the Town Planner as Secretary. Other members of the PPDB include representatives from the Police, National Properties, Transport and Works (Chief Engineer), Housing and Land Development Corporation, CWSA, VINLEC, Lands and Surveys, Kingstown Town board, the Ministry of Health Wellness and the Environment, Ministry of Agriculture, and the Permanent Secretary in the Ministry of Housing.
- The Town and Country Planning Act (No.45, 1992) is the principal legislation governing physical development in St. Vincent and seeks to ensure orderly and progressive physical development in St. Vincent and the Grenadines. It provides for “the orderly development of land, the assessment of the environmental impacts of development, the grant of permission to develop land and for other powers to regulate the use of land, and for related matters.” Under Article 29 of the Act, an EIA for environmentally sensitive projects or activities is required. The PPU has the legal authority for environmental management in relation to development, including the evaluation of the need for and level of EIA requirements. EIA regulations are in draft, and it is not clear when they will be declared. The scope of the EIA required is determined through discussion with the PPU. As part of its regular responsibilities, the PPU will review the EIA and development applications as well as oversee all other development control related matters, from inspection, to monitoring and

enforcement. This ESIA along with technical drawings and application forms will constitute the request for planning approval to undertake this project.

Table 2-1 summarizes the relevant ESS, national laws and guidelines, and recommendations for addressing gaps.

Table 2-1: ESS Requirements, relevant laws and guidelines and gap analysis

Environmental and Social Standards (ESS)	Relevant to Project (Yes/No)	Relevant National Laws and Guidelines	Gaps and how to address them
ESS1 – Assessment and Management of Environmental and Social Risks and Impacts	Yes	• *Town and Country Planning Act (1992*)	Ensure adherence to the relevant national laws and guidelines. The EIA regulations do align with ESF and SVG guidelines. The following are the main steps advised to address the gap: • Refer to ESS1 for detailed instructions for the ESCP, EHSGs, Environmental and Social Audits, and outlines for a mitigation plan
ESS2 – Labor and Working Conditions	Yes	• *Employment Act, 2003 (Act No. 20 of 2003)* • *Wages Councils Act (Act No. 1 of 1953).* • *Employment of Women, Young Persons and Children Act (Chapter 148)* • *Equal Pay Act, 1994 (No. 3 of 1994)* • *Factories Act, 1995 (Cap. 335)*	Ensure adherence to the relevant national laws and guidelines. For the limit in the OHS provisions, refer to the OHS plans included in the ESMF.
ESS3 – Resource and Efficiency, Pollution Prevention and Management	Yes	• *Fisheries Act* (No.8, 1986), & later amendments (No.32, 1986, and No.25, 1989) • *National Fisheries and Aquaculture Policy* (2018) • *Agricultural Small Tenancies Act, 1957 (Cap. 29)*	Ensure adherence to the relevant national laws and guidelines. Incorporate resource efficiency measures wherever possible. The following are a few resource efficiency measures: • Use local products • reuse and recycle whenever possible and safe to do so • reduce the usage of raw and construction materials as much as possible by only ordering and using what is needed • minimize carbon and water footprints

Environmental and Social Standards (ESS)	Relevant to Project (Yes/No)	Relevant National Laws and Guidelines	Gaps and how to address them
		• Agriculture Ordinance 1951 (No. 23 of 1951) • *Marine Parks Authority Act* 1997(No.33, 2002) • *Wildlife Protection Act* (No.16, 1987) & later amendments (1988, 1991) • *Wildlife Conservation Act* (1991) • *Forest Resource Conservation Act* (No.47, 1992) • *Environmental Health Services Act* (No.14, 1991) • *Litter Act* No 15 of 1991	
ESS4 – Community Health and Safety	Yes	• *Public Health Act (1977)* • *Public Health (Amendment) Act (2020)* • *Town and Country Planning Act (No.45, 1992)* • *Noise Control Act, 1988* • *Central Water and Sewerage Act* (No.6, 1978), amended in 1992 • *Central Water and Sewerage*	Ensure adherence to the relevant national laws and guidelines. Since SVG does not have specific CHS guidelines, follow the CHS plan included in this ESMF.

Environmental and Social Standards (ESS)	Relevant to Project (Yes/No)	Relevant National Laws and Guidelines	Gaps and how to address them
		Authority Act (No.17, 1991)	
ESS5 – Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement (Project Design)	Yes	• *Land Acquisition Act (1947) (Chapter 241)* • *Town and Country Planning Act (No.45, 1992)* • *Saint Vincent and the Grenadines National Trust Act, 1969 and Amendment Act (2007)*	If any form of relocation is required due to the land being unsuitable for rebuilding due to eruption damage, World Bank's ESS5 guidelines should be followed. The rebuilding efforts should also ensure adherence to local zoning practices and legislation.
ESS6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources	Yes	United Nations Conventions ○ UNCBD ○ UNCCD ○ UNFCCC ○ Cartagena Convention – LBS protocol ○ National Climate Change Policy (2019) and National Climate Change Strategy and Implementation Plan (2019)	Ensure adherence to the relevant national laws and guidelines. Perform Biodiversity Impact Assessments when dealing with at-risk species and vulnerable ecosystems.
ESS7 - Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional	No		ESS7 is not currently relevant but relevance will be determined through an Assessment which will be undertaken by the World Bank.

Environmental and Social Standards (ESS)	Relevant to Project (Yes/No)	Relevant National Laws and Guidelines	Gaps and how to address them
Local Communities			
ESS8 – Cultural Heritage	Yes	• *Town and Country Planning Act (1992)* • *Saint Vincent and the Grenadines National Trust Act, 1969 and Amendment Act (2007)*	As part of site-specific ESIAs and ESMPs, carry out screening/assessment of tangible and intangible cultural heritage present in areas that may be affected by Project activities per requirements specified in the ESMF. If an ESIA and/or ESMP identifies the need for a Cultural Heritage Management Plan (CHMP), develop, adopt and implement such CHMP according to the requirements of ESS8. A Chance Finds Procedure will be included as part of this ESMF.
ESS9 – Financial Intermediaries	No	Not assessed	Not assessed
ESS10 – Stakeholder Engagement and Information Disclosure	Yes	• *Freedom of Information Act (2003)* • *Environmental Impact Assessment Regulations (Draft, 2009)* • *Environmental Management Act* (2009)	Ensure adherence to the relevant national laws and guidelines. Follow the SEP.

Chapter 3 : SUBPROJECT ENVIRONMENTAL AND SOCIAL BASELINE

3.1 Current Status of the La Soufriere Volcano

The National Emergency Management Organization (NEMO), lowered the volcano alert from Yellow to Green on March 16, 2022.[8] This means the current seismic and fumarolic (steam vent) activities at the La Soufrière Volcano are at or below the historical level. There have also been no changes in the gas composition of the plume since measurements taken in late January, indicating that the plume chemistry has returned to a pre-eruption state. However, the La Soufriere trails remain closed due to uneven and dangerous terrain and a potential threat of lahars after rainfall.

[8] NEMO. (2022, March 16). Volcano Alert Level Lowered From Yellow To Green. Retrieved on June 29, 2022 from http://nemo.gov.vc/nemo/index.php/news-events/news-release/692-volcano-alert-level-lowered-from-yellow-to-green

3.2 Environmental and Social Screening

The Environmental and Social Screening Form, included in Annex-A (at the end of this document), will be used to perform the subprojects' environmental and social assessments. The results of the screening will determine the degree of the detailed baseline information that is required. Baseline information can be developed using secondary sources, and if the secondary sources are lacking or not specific to the subproject, primary baseline information should be collected.

When filling out the form, many sections should be treated as a checklist (a detailed explanation for how to fill the form is included in Annex-A). The checklists should be completed using existing information and professional knowledge. The sections that are determined to have impacts will require further research and information gathering depending on the degree of anticipated impacts.

3.3 Guidelines to prepare subproject Environmental and Social Baseline

All the subprojects do not require preparation of a separate, stand-alone ESIA. After the screening, an ESMP will be directly prepared where further assessments are not required. An ESIA will be required only for the subprojects with significant potential risks. In such cases, detailed baseline information will need to be collected. When using the screening form and certain risks require additional details for their risk rating, the following methodology can be modified to collect the risk-specific information. However, when creating an ESIA, all aspects of a subproject must be researched, and in such instances, baseline information will be required for all aspects of the subproject. It may be noted that the project has been classified 'Substantial' as per the World Bank ESF. If the subproject level screening result shows a 'High' risk project, the GoSVG will seek the World Bank guidance on processing the subproject.

While preparing the subproject baselines, the following should be considered as per ESS1 Guidance Note:

- Detail the baseline data 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.
- Identify and estimate the extent and quality of available data, key data gaps, and uncertainties associated with predictions.
- Where the project involves specifically identified physical elements, aspects, and facilities that are likely to generate impacts, the collection and analysis of environmental and social baseline information and data at an appropriate level of detail for the project, are essential to define the project's area of influence. It is also required for describing relevant physical, biological, ecological, socioeconomic, health, and labour conditions, including any changes anticipated to occur in the foreseeable future. Examples of such changes include projected variability in climatic and environmental conditions due to climate change or other factors that would require adaptation measures that could occur over the life of the project, along with current and proposed development activities within the general project area but not directly connected to the project to be financed.
- Confirm the area of influence to be studied and describe existing relevant physical, biological, and socioeconomic conditions, including any changes anticipated before the project commences based on current information.

- The baseline information should be accurate and up-to-date from the socioeconomic perspective. Rapidly changing situations, such as the in-migration of people in anticipation of a project or lack of data on disadvantaged and vulnerable groups within a community, can affect the efficacy of social mitigation measures. Socioeconomic studies that the GoSVG conducted may be used to (a) understand the characteristics and dynamics of the project area; (b) establish the conditions of the people that will be affected by the project; (c) identify events, including potential for conflict, that could affect the adequate implementation of the project; and (d) identify opportunities for enhancing project development benefits.

3.4 Defining the Area of Influence

The AOI should be defined using the Valuable Environmental Components (VECs) and how far different disturbances will extend. VECs include environmentally sensitive/valuable areas and socially significant infrastructure such as hospitals, schools, residential buildings, cultural heritage sites, etc. In addition, the AOI may include any auxiliary or ancillary facilities, such as quarries, transport or access routes, material and equipment laydown or storage areas, and disposal sites for excavated soil or demolition waste. The following are general guidelines for how AOIs are defined for construction projects:

- Noise – 500 m radius around the construction site
- Roads – 50 m from Right-of-Way (ROW) on both sides
- Linear Structures – 50 m from ROW on both sides
- Air pollution (dust/ash) – Sensitive receptors within 500 m of the worksite (e.g., hospital, school, and residence close to the construction site) in a downwind direction.

If there are VECs within the disturbance radius, they must be secured, and all legal processes must be followed before construction can begin. For example, if there is an environmentally protected area near where construction must occur, the following steps must be taken:

- Determine the legal requirements
    - Legislations may restrict any harmful activities within a certain distance of environmentally valuable areas. In such cases, the construction area must be moved, or special permits may be required before work can begin.
- If construction is permitted, the following assessments must be completed before starting work:
    - Identify the important species
    - Define the species' habitat range
    - Define the species movement path
    - Define the species' breeding and spawning ground
    - Define the species forging grounds
- Based on the assessment, certain areas may need to be blocked off and secured to prevent disturbance (exclusion zones). This is usually done using fencing, caution tapes, and signage.

A similar process must be followed if there are other VECs, such as residential complexes close to a potential project site. In all cases, mitigation measures must be put in place to reduce the impact of the construction activities on the surrounding.

3.5 Requirements of key baseline information

The following are the key basliene information to be considered at the subproject level. However, relevancy of the any baseline information will be depend on the nature, scope and location of the subproject.

- Defining the AOI
- Identify the VECs, e.g., air, water, noise, species of concern, etc., based on the construction activities.
- Baseline Conditions

  Present a brief description of the proposed subproject area's environment, including the physical resources, biological resources, environmental quality baseline, social and cultural profile, and economic activities. Based on the screening, the following baseline information should be collected either from secondary sources or, in the absence, collect primary data (if there is a potential for significant impacts or risks on the VECs):
  - Physical Resources
    - Topography
    - Soils
    - Land Use
    - Climate
    - Geology and Geomorphology
    - Catchment Degradation
    - Climate Change and Variability
    - Surface Water Resources
    - Groundwater Resources
  - Biological Resources
    - State of Biodiversity
    - Forests and Protected Areas
    - Ecological Baseline
  - Environmental Quality
    - Noise Quality
    - Surface Water Quality
    - Groundwater Quality
    - Potable water Quality
    - Wastewater Quality
  - Socio-Economic Profile
    - Population Dynamics
    - Population Characteristics
    - Land Acquisition
    - Cultural Characteristics
    - Physical and Cultural Resources
    - Economic Activities and Resources
    - Tourism
    - Health Facilities and Conditions
    - Educational Infrgastructure and Access to Education
    - Water Supply and Sanitation
    - Roads and Communication

- Access to Energy

Chapter 4 : POTENTIAL KEY ENVIRONMENTAL AND SOCIAL IMPACTS AND RISKS, AND MITIGATION MEASURES

4.1 Introduction

The project will be implemented primarily in northern, northeastern and northwestern communities on the main island of Saint Vincent. Saint Vincent island is highly dependent on its natural environment and vulnerable to natural disasters. The island is highly vulnerable to major geologic hazards and hydro-meteorological events, including earthquakes, hurricanes, floods, drought, landslides, and volcanic eruption, which threaten its economic stability and the safety and well-being of its population. SVG is located on an active volcanic and tectonic subduction zone and the so-called "hurricane belt" and is highly exposed to natural disasters. These risks are exacerbated by climate change and associated sea-level rise.

The major risks of the project implementation are associated with the stabilization of slopes and riverbeds and the rehabilitation and reconstruction of high-priority public and community-level infrastructure. The volcanic eruption of La Soufriere experienced effusive eruptions between December 28, 2020, and April 8, 2021, culminating in large explosive eruptions on April 9, 12, and 13, 2021. These series of eruptions spread layers of ash across the entire country, with the heaviest concentrations in the northwestern part of St. Vincent Island. The explosive eruption generated massive amounts of gas and ash as well as several superheated pyroclastic flows, which resulted in the distribution of ash and boulder-sized rocks across the northern (red zone) portion of the island and destroying virtually everything in their path, removing trees and structures and leaving behind rocks and boulders in the accumulated tephra (volcanic debris) deposits. In addition, heavy rains mobilized ash concentrations on the volcano's slopes, which resulted in lahar flows (hot or cold mixtures of water and rock fragments that flow down the slopes of a volcano, typically along river valleys). The steep topography of the island, coupled with rainfall events, aggravates the movement of the accumulated material to downstream inhabited areas in the form of landslides, further threatening lives, livelihoods, and infrastructure. The volcanic eruption has directly affected 100% of the St. Vincent and Grenadines (SVG) population, leading to the displacement of 22,440 people, with 4,456 people in shelters and 17,932 in private residences.

Before the volcanic eruption, the impact of the COVID-19 pandemic caused a near-halt in tourist arrivals, increased health expenditures, stresses to social cohesion, and reduced productivity due to social distancing and other preventive measures. The pandemic, combined with the socioeconomic context, has contributed to the further loss of jobs and increased poverty. The effects of COVID-19 have worsened the situation of people affected by volcanoes and the potential compounded impacts of the hurricane season due to the high concentration of displaced persons living in shelters and host situations. As of February 2023, one shelter remains open, the Golden Years Activity Center at Pembroke, where five (5) senior citizens (60+ years) are being housed.

Women and the poor are the most susceptible to eruption impacts due to disparities in labour opportunities and limited social protection programs. SVG has made significant progress in increasing educational access and decreasing disparities between gender participation in primary and secondary schooling. However, the unemployment rate remains high and agricultural production is the primary employment of vulnerable groups disproportionately impacted by natural disasters, including the current volcanic eruption. Furthermore, the limitation of social protection programs with established

links to disaster preparedness, response, reconstruction, or risk reduction hinders the ability of affected households, most of whom are disproportionately poor and vulnerable, to recover quickly.

4.2 Risk Screening

The activities under the Component 1 (Early recovery income support program (ERISP) will not require any environmental and social screening since three subcomponents (Subcomponent 1.1 – Temporary cash transfers and social support services program, Subcomponent 1.2 - Labor Intensive Temporary Employment (LITE) Program; and Subcomponent 1.3 - Strengthening institutional capacity to administer and monitor income support programs) do not have any potential environmental and social risk assessed during the project preparation. However, this component used separate guidelines for beneficiary selection criteria and monitoring program. The environmental and social screening and assessment apply to Component 2. Component 2 has three (3) subcomponents: (i) Subcomponent 2.1 – Support to reconstruction planning that incorporates climate change considerations; (ii) Subcomponent 2.2. The restoration and reconstruction of critical infrastructure services; (iii) Subcomponent 2.3. Strengthening of EP&R systems and capacity. The environmental and social screening and assessment will be more relevant for subcomponent 2.2. The subproject risk screening will be done using the Environmental and Social Screening Form, included in Annex-A, along with instructions for how to fill out the form.

Identified impact or risk should be further evaluated based on its degree of significance. A four-tier risk category defines the degree of significance of an impact or risk. To study the risks and impacts involved with the project, risk screening criteria based on WB ESF was employed as presented in Table 4-1. Table 4-2 presents the potential impacts and risk of the overall project according to ESSs and corresponding rationale for risk categorization. In Table 4-2, unless listed under a specific subheading (i.e., agriculture, forestry etc.), all impacts are general to all sectors. Risk screening will be conducted at the subproject level when interventions are finalized.

Any subproject activities that are rated *High* during screening will not be undertaken before consultation with the World Bank, as the overall risk rating of this project is substantial. Future mitigation measures for all activities with a substantial rating are provided using the World Bank's mitigation hierarchy. The mitigation hierarchy is based on the following approach: (a) Anticipate and avoid risks and impacts; (b) Where avoidance is not possible, minimize or reduce risks and impacts to acceptable levels; (c) Once risks and impacts have been minimized or reduced, mitigate; and (d) Where significant residual impacts remain, compensate for or offset them, where technically and financially feasible.

Table 4-1: Risk category and screening criteria for determining impacts

Risk Category	Screening Criteria
High	The resource/receptor would likely experience a large magnitude impact that would endure for a long time, extend over a large area, exceed national/international standards, endangers public health and safety, threatens a species or habitat of national or international significance, and/or exceeds a community's resilience and ability to adapt to change. The Project may have difficulty complying with the applicable ESF requirement, and significant mitigation would likely be required.
Substantial	The resource/receptor would experience a clear, evident change from baseline conditions and approach but not exceed applicable standards. The Project would comply with the applicable ESF requirement, but mitigation would be required.
Moderate	The resource/receptor would experience a noticeable effect, but the magnitude of the impact is sufficiently small (with or without mitigation) that the overall effect would remain well within applicable standards. The Project would comply with the applicable ESF requirement, but mitigation would be required.
Low	The resource/receptor will be unaffected, or the likely effect will be imperceptible or indistinguishable from natural background variation. The Project would comply with the applicable ESF requirement, and mitigation would typically not be required.

Table 4-2: Risk rating and rationale for St. Vincent and the Grenadines' Volcanic Eruption Emergency Project (VEEP)

ESF Standards, Environmental and Social Risks and Impacts	Risk Rating			Rationale
	Early Recovery	Construction	Operation	
ESS1: Assessment and Management of E&S Risks and Impacts				
Risk of Exclusion of Vulnerable groups	Substantial	Substantial	Substantial	The northern end of Saint Vincent has many disadvantaged, vulnerable neighbourhoods. Specifically, the following communities were identified as the most vulnerable: Georgetown, Sandy Bay, and Chateaubelair. These communities are located in the red and orange impact zones. Other vulnerable groups are women, women-headed households, elderly, children, disabled, and LGTBQA+, especially if they are from the areas that were evacuated and whose property has been damaged. These groups require special consideration, but there is a

ESF Standards, Environmental and Social Risks and Impacts	Risk Rating			Rationale
	Early Recovery	Construction	Operation	
				potential to exclude them from stakeholder consultations as these groups might not have the ability or resources to join consultation meetings. The PSIPMU shall explore various methodologies for sharing information with the different stakeholders. The PSIPMU shall engage and involve all stakeholders in the planning, design and implementation process. Meaningful Consultations apply to those affected and project beneficiaries irrespective of group status. *As it relates to the Garifuna ESS7 is not currently relevant but relevance will be determined through an Assessment* . The assessment will be completed by end of 2023. This requires special efforts to engage and involve vulnerable groups with appropriate mitigation measures.
Cumulative Impacts	Substantial	Substantial	Moderate	There are no expected cumulative impacts of this project with any other regional projects. However, impacts from other natural hazards and the COVID-19 pandemic could cumulate and make the situation more challenging. These two issues are discussed in more detail in ESS 4 below.
ESS2: Labor and Working Conditions				
Working Conditions	Moderate	Substantial	Moderate	A large number of construction workers will be on-site, and a certain percentage will be sourced from the local communities. The PSIPMU will ensure that Contractors comply with the country's labour and human rights laws. Inadequate enforcement of labour laws and undefined penalties lead to denials of civil rights, such as discrimination. The Contractor will ensure that adequate sanitary provision and access to safe drinking water is available to all workers, and CSC, along with PSIPMU, will keep monitoring the enforcement. This requires detailed mitigation measures.

ESF Standards, Environmental and Social Risks and Impacts	Risk Rating			Rationale
	Early Recovery	Construction	Operation	
Worker Accommodations	Moderate	Substantial	Low	Workers will be accommodated in their homes or off-site in existing accommodations. Poor sanitation and hygiene, overcrowding, fire safety issues, transport safety, pest control, and poor ventilation are the likely impacts that need to be addressed in the dormitories assigned for workers since they can pose particular risks in cooking and washing facilities. Additionally, they would be exposed to more significant risks of being infected by COVID-19 due to difficulty being socially isolated in their given living conditions. This requires detailed mitigation measures.
Child Labor	Moderate	Substantial	Moderate	The large labour influx and urgent nature of many projects may make screening for underage workers difficult. The loss of income due to the eruption and evacuation may cause some families to encourage their children to seek employment in the Project. This requires detailed mitigation measures that are documented in the LMP.
Occupational Health and Safety	Moderate	Substantial	Moderate	The occupational health and safety issues are high in this project due to this being a disaster relief/rebuilding project. The work sites can be dangerous as they are post-disaster sites and, as such, are expected to have unstable structures, hazardous and sharp materials, exposed electrical lines, contaminated water lines, exposed pit latrines etc. Other risks include exposure to physical hazards from using heavy equipment and cranes and hazardous materials, trip and fall accidents, increasing levels of dust and noise, falling objects, and electrical hazards.

ESF Standards, Environmental and Social Risks and Impacts	Risk Rating			Rationale
	Early Recovery	Construction	Operation	
				This requires detailed controls for all anticipated hazards. Chapter 5 presents a detailed risk assessment and measures following the hierarchy of controls.
ESS3: Resource Efficiency and Pollution Prevention Management				
General – Applies to All Sectors				
Volcanic ash and debris clearing and disposal	Substantial	Moderate	Low	The 2021 series of eruptions spread layers of ash across the entire country, with the heaviest concentrations in the northwestern part of St. Vincent Island. The explosive eruption generated massive amounts of gas and ash as well as several superheated pyroclastic flows, which resulted in the distribution of ash and boulder-sized rocks across the northern (red zone) portion of the island and destroying virtually everything in their path, removing trees and structures and leaving behind rocks and boulders in the accumulated tephra (volcanic debris) deposits. On April 29, 2021, heavy rains mobilized ash concentrations on the volcano's slopes, which resulted in lahar flows (hot or cold mixtures of water and rock fragments that flow down the slopes of a volcano, typically along river valleys). The island's steep topography and rainfall events promoted the movement of the accumulated material to downstream inhabited areas, further threatening lives, livelihoods, and infrastructure. It is estimated that more than 100 cm thick ash layers were deposited on the roads and other lands. Immediate restoration activities involve first cleaning this debris to initiate the damaged infrastructure's construction. Subsequently the quantities of ash and debris in sub-project targeted sites require mitigation measures in-terms of designated disposal locations and

ESF Standards, Environmental and Social Risks and Impacts	Risk Rating			Rationale
	Early Recovery	Construction	Operation	
				their subsequent management, but no longer pose substantial risk as long as safety measure are applied.
Slope stability and debris flow	Moderate	Substantial	Low	As SVG is a country prone to landslides, slope destabilization is a big concern. Due to the large volume of volcanic ash aggravated due to rainfall stored in the slopes, the movement of the accumulated material in an unstable state can pose threats to downstream inhabited areas. It is important to stabilize the surrounding slopes and land and control the debris flow before undertaking any rebuilding efforts. This requires detailed mitigation measures.
Dust generation, vibration, noise, and odour	Moderate	Substantial	Low	The emissions generated by construction equipment and vehicles will affect the local air quality. Dust is expected to be generated during the excavation and transport of the volcanic ash. Even without construction, the ash can be blown by winds, creating visibility and health hazards. The increase in noise will mostly occur during the construction phase and will be contributed by vehicular movements, construction machinery and hand tools. This requires detailed mitigation measures.
Potential hazards caused by bitumen and other toxic chemicals	Low	Moderate	Low	Accidental spills of oils, fuels and lubricants from construction processes and equipment can occur during the construction phase on both the land and water sites. Mitigation measures will ensure that spills and leaks are well contained, and the scale is considered site-specific only. Fuels, oils, and other liquids should be kept in sealed containers to minimize the risk of any leaks. ECoP 2: Fuels and

ESF Standards, Environmental and Social Risks and Impacts	Risk Rating			Rationale
	Early Recovery	Construction	Operation	
				Hazardous Good Management (Annex-B) will be applied to deal with hazardous material management.
Land use change	Moderate	Substantial	Low	The 2021 eruption has impacted a large area on the northern end of the island, and to a lesser extent, smaller areas throughout the island due to ash and lahar flows (hot or cold mixtures of water and rock fragments that flow down the slopes of a volcano typically along river valleys). The areas in the red and orange zone have had significant damage to the infrastructure, buildings, and crops. The recovery plan is expected to rebuild the areas, and therefore it will positively impact the community. However, some areas may not be able to be restored to their previous state due to any potential permanent changes to the landscape. For example, the areas where crops were being grown might no longer be suitable for growing, whereas a different area might become more suitable. Similarly, lands where houses were previously located might no longer be suitable for rebuilding due to the destabilization of the land. It is difficult to provide suggestions for possible land use changes without a proper survey of the post-eruption landscape. Therefore, the suggested mitigation measures are generic and might need to be expanded during the subproject-specific ESMPs. This requires detailed mitigation measures.
Waste management				
Generation, management, and disposal of hazardous and non-hazardous waste	Moderate	Substantial	Low	During excavation and construction, waste will be generated. During the mobilization of construction equipment and vehicles, various wastes such as oil, mud, dust, scrap metal, paper etc. could be generated. Construction wastes such as brick chips, stones, scrap

ESF Standards, Environmental and Social Risks and Impacts	Risk Rating			Rationale
	Early Recovery	Construction	Operation	
				wood, metal, paper, and plastics may be disposed of into nearby canals and water bodies and contaminate surface water. The debris and other material from the volcanic eruption could be hazardous. These will require extra care to handle. However, as much of it can be mixed in with other waste, it is important to use a high level of caution when doing excavation and construction work. This requires detailed mitigation measures.
Generation and disposal of sludge and wastewater from civil and sanitation works	Moderate	Substantial	Low	As this will be a large-scale rehabilitation work, many workers will be involved; therefore, the construction site will have sanitation facilities (portable toilets), temporary offices, storage, and other facilities that will produce solid and liquid waste daily. Also, workers may have limited knowledge and motivation about environmental safeguards, and thus they may carelessly release wastes instead of disposing of them in designated disposal areas or bins. As there has been infrastructural damage, the sewage and water system will need to be repaired in many areas as part of the rebuilding process. The older systems will have sewage and wastewater that might need to be cleared before starting work. This requires detailed mitigation measures.
Generation, treatment, and disposal of household waste post-rebuilding	Low	Low	Substantial	After the residents return to their houses, there will be an increase in household waste. The waste will change from being primarily construction waste to household waste. The changes to the waste collection and treatment facilities and processes to accommodate the increase in construction waste will need to be reverted. This requires detailed mitigation measures.
Agriculture				

ESF Standards, Environmental and Social Risks and Impacts	Risk Rating			Rationale
	Early Recovery	Construction	Operation	
Poor management of fertilizer and pesticides in agriculture practice post-rebuilding	Low	Low	Substantial	Pesticide use in agriculture could increase following the return of locals to their lands. Many farmlands may be altered due to the eruption. The soil may be negatively impacted (increased toxic material, decreased porosity and permeability, decreased soil moisture and nutrient levels). Adverse changes to the soil would result in decreased productivity. In such cases, the farmers may overuse fertilizer and pesticides to increase productivity. This requires detailed mitigation measures.
Potential decrease in agricultural lands	Low	Low	Moderate	Where damages occurred, it is possible that agricultural lands may not be recovered. Mitigation measures include creating smaller parcels of agricultural lands, increasing the soil quality of the existing lands, and compensating farmers if their farmlands are reduced or altered. It may also be necessary to convert the damaged agricultural lands (caused by ash and debris accumulation) to be used for building infrastructure if the land is unavailable for relocation of infrastructure.
Soil erosion from cropland and degradation of water quality	Substantial	Substantial	Moderate	The loss of crop and vegetation cover from the eruption's direct and indirect impacts would expose the soil. Without the cover, the topsoil is prone to erosion from wind and water. The soil can blow or be carried by water into waterbodies, leading to degraded water quality. This requires detailed mitigation measures.
Forestry				
Potential decrease or relocation of forested areas	Low	Substantial	Substantial	There has been substantial damage to the natural and planned forested areas. The established plantations and the natural forests suffered more than 65% damage in the red, orange, and yellow zones. During rebuilding, it may be necessary to rebuild in forested areas. If some areas with infrastructure are no longer suitable for rebuilding

ESF Standards, Environmental and Social Risks and Impacts	Risk Rating			Rationale
	Early Recovery	Construction	Operation	
				(unstable ground, large debris deposit requiring extensive clean-up, presence of hazardous chemicals), alternate rebuilding areas will be required. In such instances, previously forested lands may be used. Similarly, if forested areas have been cleared due to the eruption, those areas might get chosen for rebuilding efforts. This requires detailed mitigation measures.
Increased protection of forested areas acting as a barrier to resource usage by locals	Low	Low	Substantial	In order to protect the remaining forested or replanted areas, increased protection is required. This is necessary for the forests, but it could become a problem for the locals who rely on them. This requires detailed mitigation measures.
Forestry and Erosion	Low	Substantial	Low	Ash, cleaning and forestry activities can cause severe soil loss or erosion, particularly in terrain with steep slopes. In most cases, erosion is triggered by improperly constructing access roads, using streams as trails to haul materials, running log-removal trails down slopes instead of along them, and harvesting trees from steep slopes that are highly vulnerable to soil loss. In general, however, road building is the most important cause of erosion on forestry lands, especially where culverts (channelled stream crossings) are not sufficiently large or numerous or are poorly installed. Severe erosion causes much environmental damage. In extreme cases, soil loss may expose bedrock, making forest regeneration impossible. Soil loss also represents a depletion of site nutrient capital. Erosion also causes secondary damage to aquatic habitats, including the deposition of silt (or siltation), which covers gravel substrates important to spawning fish. Also, the shallower water increases the risk of flooding.

ESF Standards, Environmental and Social Risks and Impacts	Risk Rating			Rationale
	Early Recovery	Construction	Operation	
				This requires detailed mitigation measures.
Fishery				
Depletion of fish species due to unsustainable fishing practices/ overfishing post-rebuilding	Low	Low	Substantial	Fishermen and others relying on the fishing industry for their livelihood may threaten the fish species if not regulated. In order to compensate for their monetary losses during the disaster, the fishermen may try to increase their fishing activities, which may result in overfishing and depletion of the fish population. The primary effects of the disaster may have negatively impacted some fish populations. In such cases, this added impact will further deteriorate the health of the fish colonies. This requires detailed mitigation measures.
Reduced access to fishing due to increased protection	Low	Low	Substantial	In order to protect the fish population impacted due to the eruption, policies may be enacted to protect the population, this will be helpful for the recovery of the population, but the fishery industry and fishermen will struggle. This requires detailed mitigation measures.
Introduction of invasive species during the fisheries development	Low	Low	Moderate	During fisheries development, fish may need to be added from nurseries to help the populations recover, which introduces the risk of accidentally introducing invasive species. However, problems may arise even if fish are not actively introduced to help the recovery efforts and the populations are left to recover on their own. For example, a fish colony population may not recover on its own if it has lost too many individuals due to the direct and indirect impacts of the eruption. In such instances, the populations will still be vulnerable to invasive species. Mitigation measures should focus on helping the

ESF Standards, Environmental and Social Risks and Impacts	Risk Rating			Rationale
	Early Recovery	Construction	Operation	
				populations recover as fast as possible. During the introduction of species, thorough screening should be performed to ensure the correct species are being added. A qualified fisheries specialist should be in charge of all operations. Regular monitoring must be done to check the health of the population. Habitat improvement measures can also be undertaken to help the organisms.
River				
Potential Changes in Water Courses (Canal)	Low	Low	Low	Repair, rebuilding, or construction will need excavation of canals/ditches/ponds/other water courses, including stabilization and deepening of the channel. Re-excavation will only induce localized bed changes. These changes are mostly positive, likely to take place over a long time, and need to be regularly monitored.
Reduced surface water quality due to the potential disposal of ash and debris, and construction material into the rivers	Low	Moderate	Low	The water quality can deteriorate if ash and debris are disposed of in the water during the cleaning and construction phase. Surface water in rivers and canals may still have ash and debris from the primary volcanic eruption. In such instances, the added ash from improper disposal can worsen the situation. Furthermore, there is also the risk of improper construction material disposal into the water. The primary mitigation measure for this is to create a waste management plan and ensure it is followed. Mitigation measures include creating a waste management plan, training and supervision of the workers to ensure they do not dispose of waste improperly, and providing adequate disposal bins.
Road				

ESF Standards, Environmental and Social Risks and Impacts	Risk Rating			Rationale
	Early Recovery	Construction	Operation	
Damage to existing roads during construction and movement of construction vehicles	Low	Substantial	Low	Due to construction, there will be a significant increase in traffic as many trucks will be visiting the site. The expected increase could reduce the capacity of the existing road network (many of which is already damaged from the primary impacts as the road is the most affected of the infrastructure sector) and cause wear and tear due to the large volume of vehicles using the roads as well as contribute to noise, dust and safety issues. A few mitigation measures include road condition surveys, controlling vehicle movement, final road routing, developing a waste management plan and ensuring proper road maintenance. This requires detailed mitigation measures.
Traffic Management and Road Safety	Low	Substantial	Low	The rise in traffic volume would lead to a higher traffic rate and road safety issues, making it crucial to promote traffic safety awareness in communities in the Direct Area of Influence and along the transportation route. Mitigation measures would include engaging in community consultations and monitoring and management plans to prevent possible negative impacts of poor traffic control and ensure the continuous monitoring of traffic and pedestrian in the project area. Moreover, gates on access roads, road signage, and speed restrictions should be implemented, and only licensed contractors and trained drivers should be employed. This requires detailed mitigation measures.
Restricted road access	Moderate	Moderate	Low	During the early recovery phase, the roads will be unsafe for locals, and use will be restricted. During the construction phase, roads will need to be blocked off for rebuilding/repairs or effective transport of ash.

ESF Standards, Environmental and Social Risks and Impacts	Risk Rating			Rationale
	Early Recovery	Construction	Operation	
				These restrictions will cause inconveniences for the locals. However, as there should not be many locals needing to access the damaged sections and thus the impact is considered moderate. Mitigation measures include minimising the time the construction vehicles can use the roads and increasing workers working near important transportation hubs/links to finish the work faster.
Changes in the road network	Low	Low	Moderate	Roads may not be rebuilt in the exact pre-eruption locations due to improvement of the landscape or planning constraints, which can become a source of confusion for the locals. Furthermore, the cost of land may change as the proximity of the land to the road network changes. Mitigation measures include minimizing changes to the road network as much as possible, building around the existing road network, and creating roads to connect the new developments better.
Well				
Decreased groundwater quality	Low	Moderate	Moderate	Groundwater quality has been degraded due to ash disposal by the eruption. Improper handling and depositing of ash during cleaning can worsen this. Also, during a new well installation, the potential exists to pollute the groundwater resources by inappropriate disposal of wastes. However, the risk is considered moderate because there are not many such exposed groundwater sources. Mitigation measures include prioritizing cleaning the groundwater sources to reduce degradation, regular monitoring, and taking extra caution when working near groundwater sources to prevent further damage.

ESF Standards, Environmental and Social Risks and Impacts	Risk Rating			Rationale
	Early Recovery	Construction	Operation	
Relocation of wells	Low	Low	Moderate	Wells might need to be relocated if the water has been contaminated and cleaning is not an option. New locations will need to be discussed with the community in such cases. Mitigation measures include working with the community and conducting a technical assessment to select the optimal location for the new well and increasing municipal water supply so reliance on the well is decreased.
Housing				
Relocation of houses	Low	Low	Substantial	Houses may need to be relocated. Relocation will be challenging for the residents and result in an altered landscape compared to pre-eruption. For example, relocation is planned for houses in the lahar buffer zone. Similarly, houses in other hazardous areas will also need to be moved. This requires detailed mitigation measures documented as part of site-specific RAP.
Selection of new housing development	Moderate	Moderate	Moderate	The location selection for new houses may be difficult due to land constraints. With so many competitive land use and rebuilding needs, finding space for new developments may be difficult. Mitigation measures include building more apartment complexes to reduce land usage, better planning to reduce wasted spaces between infrastructure, converting unused/low-usage commercial/industrial areas to residential areas, and consolidating commercial and industrial complexes to increase the residential zones.
New buildings not built to code	Low	Moderate	Low	The rebuilding and repairing of large quantities of infrastructure may cause less attention to individual buildings. During the construction of houses and buildings, they might not be built to code due to time and resource constraints. Mitigation measures include hiring a specialist to

ESF Standards, Environmental and Social Risks and Impacts	Risk Rating			Rationale
	Early Recovery	Construction	Operation	
				check the quality of the building post-construction to ensure compliance with all building codes and World Bank's Life and Fire Safety codes (see, for example: https://www.ifc.org/en/types/insights-reports/2017/publications-gpn-lfs-hospitals) .
Electrical/Power				
Alignment of distribution lines	Low	Moderate	Low	The relocation of houses and changes in land use can pose challenges for the power distribution lines. The distribution lines may need to be moved, or new lines may need to be installed to accommodate the changes to the landscape. Mitigation measures include planning the new development and the power distribution alignment to keep the buffer zone or right-of-way clear.
Power outages/shortages in nearby districts	Low	Moderate	Low	Power may need to be disconnected in nearby districts as the workers fix any damaged electrical systems in the damaged zone (especially if the other nearby districts are on the same power grid). Mitigation measures include informing the residents of planned outages beforehand and having portable generators available for vulnerable households (households with the elderly and children).
Health				
Increased pressure on hospitals from the labour influx	Low	Moderate	Low	A surge in demand for health services following the eruption overwhelmed the capacity of the health services to provide emergency and essential care to the affected populations. There will be an increased number of persons in the area due to labour influx, putting pressure on the healthcare system as it struggles to deal with the

ESF Standards, Environmental and Social Risks and Impacts	Risk Rating			Rationale
	Early Recovery	Construction	Operation	
				impacts of the disaster and increased number of patients. This situation can also be worsened if there are outbreaks of COVID-19 due to the labour influx. Mitigation measures include providing the workers with adequate masks, sanitizers, gloves and other preventative measures, proper OHS training to reduce workplace injuries, and building field hospitals/nurse stations for the workers.
ESS4: Community Health and Safety				
Traffic management	Moderate	Substantial	Low	There will be a significant increase in traffic due to construction due to a large number of heavy equipment and trucks accessing the site. The expected increase in vehicular volume could reduce the capacity of the existing road network, cause wear and tear on the road surface and contribute to noise, dust and safety issues. Furthermore, some existing road networks may be unusable without cleaning or repair, depending on the damage. This requires detailed mitigation measures.
Traffic and Road Safety	Low	Moderate	Low	The rise in traffic volume would lead to higher traffic and road safety issues, making it crucial to promote traffic safety awareness in communities in the Direct Area of Influence and along the transportation route. Mitigation measures would include engaging in community consultations, monitoring and a management plan to prevent possible negative impacts resulting from poor traffic and road safety culture and ensure the continuous monitoring of traffic and pedestrian presence in the project area, especially addressing the needs of community children and students. Moreover, gates on access

ESF Standards, Environmental and Social Risks and Impacts	Risk Rating			Rationale
	Early Recovery	Construction	Operation	
				roads, road signage, and speed restrictions should be implemented, and only licensed contractors and trained drivers should be employed.
Sexual Exploitation and Abuse /Sexual Harassment (SEA/SH)	Low	Moderate	Low	The influx of workers in impoverished communities may increase the likelihood of exploitive and coercive sexual relations with community members, particularly minors, in exchange for goods or money. The proximity to works without appropriate supervisory and preventative measures may increase the risk of sexual exploitation by project workers of female domestic workers and vendors. Female labourers working alongside male labourers, without separate latrines and other sanitation facilities for males and females, and lacking specific mechanisms for females to share concerns about their working environments can increase the risk of sexual harassment. Mitigation measures are listed in Chapter 7.
The potential outbreak of diseases and increased spread of COVID-19	Moderate	Substantial	Moderate	Crowded workers in worksites could lead to a rise in the spread of certain diseases. As communicable diseases- like COVID-19 spread rapidly through human interactions, the outside labourers may spread diseases unknown to the community because of their unawareness, reluctance to follow health protocol, and intermixing with local communities. Eventually, the community may be affected. Food and water-borne diseases can also spread following disasters as the environment is volatile. Additionally, there being only 0.66 physicians/1,000 population and only 4.3 hospital beds/1,000 population will make dealing with disease outbreaks difficult. As such, mitigation measures are essential to prevent such scenarios. This requires detailed mitigation measures.

ESF Standards, Environmental and Social Risks and Impacts	Risk Rating			Rationale
	Early Recovery	Construction	Operation	
Direct and indirect impacts from other natural hazards	Substantial	Substantial	Substantial	The environment and people are more vulnerable to other disasters after a disaster. Disaster victims who have been displaced will not have the same resilience or tolerance capacity. Similarly, the built and natural environment will also be more vulnerable. As SVG is a country regularly impacted by tropical cyclones and hurricanes, the currently vulnerable population will be continuously at greater risk. This requires detailed mitigation measures.
Women in workplace	Moderate	Moderate	Moderate	Despite laws and regulations requiring women's equality in the workplace, women are not represented fairly. Women have taken on more traditional, unpaid roles. Special efforts should be taken to ensure women have a chance to become a part of the Project workforce should they choose to do so. Mitigation measures should include giving equal/preferential consideration to females when they apply for positions. If they do not meet the requirements for a position, actively check and offer positions they qualify for and should be part of the bidding document for Contractors. Women will also be entitled to equal pay for equal work.
ESS 5: Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement				
Land Acquisition and involuntary resettlement	Low	Low	Low	No new land is expected to be acquired as part of this Project. However, temporary sites may be needed for ash and debris disposal. A Resettlement Policy Framework (RPF) was prepared along with this ESMF to address the land acquisition and resettlement (if needed). If required, prepare, consult, disclose, adopt, and implement the respective Resettlement Plans (RAPs) before carrying out the associated activities, consistent with ESS5 and acceptable to all parties involved.

ESF Standards, Environmental and Social Risks and Impacts	Risk Rating			Rationale
	Early Recovery	Construction	Operation	
ESS 6: Biodiversity, Conservation, and Sustainable Management of Living Natural Resources				
Impacts on ecosystems	Substantial	Substantial	Substantial	There is expected to be forest damage from the lava, ash, lahars, and other indirect impacts. Reforestation will be required in such cases. Organisms living in areas impacted by the eruptions will also be impacted. The ecosystem will already be vulnerable, and any negative impact during construction, such as releasing toxic material, fires, and improper disposal of waste in sensitive areas, can be detrimental. This requires detailed mitigation measures.
The potential introduction of invasive species	Moderate	Moderate	Moderate	The importation of construction materials such as wood allows invasive species to enter the ecosystems. As many of the local species were displaced (including endemic species), this leaves those areas vulnerable to invasive species. Due to the vulnerable ecosystems, it will be easier for invasive species to establish and take over. If this happens, the native species will be endangered. The primary way of mitigating this is ensuring construction materials are sourced from the local area. If the materials are brought in from other places, conduct a thorough visual inspection to check for pests. Any planting and restoration efforts must be conducted and supervised by qualified professionals. The workers are not to leave their pets unsupervised.
Loss of ecological connectivity	Low	Low	Substantial	Relocation or construction of new roads and other infrastructures may disconnect local forested areas, wetlands, and other natural areas, negatively impacting flora and fauna. This requires detailed mitigation measures.
Fish Marine habitat disruption and damage to the aquatic	Low	Low	Substantial	Fishermen and others relying on the marine ecosystems for their livelihood may threaten the ecosystems and fish species if not

ESF Standards, Environmental and Social Risks and Impacts	Risk Rating			Rationale
	Early Recovery	Construction	Operation	
ecosystem due to unsustainable resource usage post-rebuilding				regulated. To compensate for their monetary losses during the disaster, the fishermen and marine resource gatherers (such as coral collectors) may try to increase their activities. Following the rebuilding phase, the locals will return to their livelihoods. This requires detailed mitigation measures.
Over-harvesting of natural resources post-rebuilding	Low	Low	Substantial	Like humans following a disaster, many other species and natural systems also become vulnerable, and this means they no longer have the same adaptive capacity as before and will therefore require extra care. Different natural systems take different amounts of time to recover. When locals return home, many who supplement their livelihood with the natural environment will return to their routines. However, some natural systems may not have had enough time to recover to pre-eruption levels. As such, extra measures must be placed to prevent the overharvesting of natural resources. This requires detailed mitigation measures.
ESS 8: Cultural Heritage				
Tangible and Intangible Heritage	Low	Substantial	Low	Both tangible and intangible cultural heritage issues and objects - movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other aspects of intangible cultural heritage are included.
ESS 10: Stakeholder Engagement and Information Disclosure				
Continuous engagement of stakeholders during implementation	Substantial	Substantial	Substantial	The identified stakeholders have different stakes associated with various aspects of the project depending on their professions and involvements. Public consultations and the participation of

ESF Standards, Environmental and Social Risks and Impacts	Risk Rating			Rationale
	Early Recovery	Construction	Operation	
				stakeholders would ensure that concerns about the project's impacts can be addressed early during implementation. Ministry of National Mobilization - Social Protection Division - Psychosocial support, a Psychosocial Family Life Education for 500 Displaced Families from the Red Zone was conducted from August 01, 2021, for three (3) months. This information was the basis for preparing the PDNA La Soufriere Volcanic Eruption Sector Reports, August 2021. In addition, the Ministry of Transport and Works conducted an assessment based on the interview of persons affected by the volcanic eruption to gather data on structural damage to their property resulting from the eruption. Further, the Ministry of Agriculture interviewed farmers to ascertain damage or loss in the agriculture sector due to the volcanic eruption. In all cases, vulnerable groups will be consulted as per ESS10 requirements discussed in the SEP. This requires detailed mitigation measures.

4.3 Mitigation Measures

The risk mitigation measures will need to be designed according to the subproject risk assessment. In addition, the mitigation herarchy approach (Table 4.3) to be considered in designing the subprojects activities and preparing the mitigation measures. For 'Low' risk subprojects (after confirmation of E&S screening), relevant mitigation measures presented in the Environment and Social Code of Practices (ESCoP) in Annex-B can be considered at the bidding document preparation. The site specific issues and mitigation measures are to be included in the Contractors' Environmental and Social Management Plan (C-ESMP).

For 'Moderate' and 'Substantial' risk subprojects, relevant mitigation measures presented in the Environment and Social Code of Practices (ESCoP) will considered along with site specific ESMP (based on the E&S screening result) before the bidding document preparation. In addition, some substantial risk subprojects may require additional assessments to understand clearly the potential E&S risks and impacts of the subprojects before preparing the site specific ESMP. The Contractor will be required to prepare the Contractors' Environmental and Social Management Plan (C-ESMP), which will define the more detailed measures to address the site specific issues, responsibilities and resources for their implementation, and include the following with the impacts and mitigation measures: (i) location of site office and workers camp with necessary facilities; (ii) location of storage of materials; (iii) transportation of materials; (iv) possible list of machanaries; (v) disposal of waste etc. The document will be reviewed and discussed with the Contractor at the negotiations or inception meeting by PIU/PSIPMU to ensure that the contractor is fully aware of the WB E&S requirements. Based on the review, the Contractor may be required to update the C-ESMP.

The current overall project E&S risk rating is 'Substaintial'. However, if any subproject E&S risk is identified as 'High', as a result of the screening procedure, the PIU/PSIPMU will immediately contact the World Bank for guidance about processing the subproject.

Table 4-3: Mitigation Measures

Mitigation Hierarchy (ESS1)	Measures
Risk of exclusion of vulnerable groups	
Avoid	● Ensure that socially underprivileged groups do not remain unidentified, and ensure their inclusion and active presence in the planning, implementation and operation process ● Do not fail to carry out separate meetings for women and vulnerable groups ● Provision of transportation or transportation costs, particularly for the disabled, marginalized and the elderly, including women ● Engagement of local NGOs and CBOs who work with vulnerable people at the community level to help disseminate information and organize consultations
Minimize	● Consult vulnerable groups, and reflect their concern in the project design, planning and implementation. ● Influence local-level implementers to treat all affected people equally while recruiting in project activities regardless of their administrative attachment, sex, religious identity, and political alignment

Mitigation Hierarchy (ESS1)	Measures
Mitigate	● Labour management procedure (LMP) addressing equity and justice is being prepared, and relevant aspects will be included in the Project Bidding Document; this will ensure that vulnerable groups are not excluded from employment opportunities. ● Prepare a roadmap to involve vulnerable groups in various stages of the project ● Ensure that the plan promises to establish a women-friendly workspace
Compensate/ Offset	● Provide livelihood training to vulnerable groups so they can learn to diversify their livelihoods and learn valuable skills that will empower them ● Provide additional compensation, livelihood restoration and relocation
Working Conditions	
Avoid	● Do not start work without first creating an LMP, based on the overall project LMP ● The LMP must adhere to ESS2 and national regulatory requirements ● Educate the workers on their rights and responsibilities before starting work ● Worker's treatment requirements are part of the bidding document for hiring Contractors
Minimize	● Establish and manage a worker grievance mechanism. ● Place complaint boxes to allow workers to report any concerns ● Have a team in place to monitor and solve worker complaints
Mitigate	● Regular monitoring of the working conditions and reviewing of reports by external supervisors ● Work together with the local authorities to improve worker rights in the region
Compensate/ Offset	● Any unjust treatment of workers must be investigated and compensated based on the severity
Worker Contracted Accommodations	
Avoid	● Inspect worker accommodations and ensure they meet national and international standards before placing workers in them.
Minimize	● Hire cleaners to clean the facilities regularly. ● Create a system for workers who live off-site to request cleaning supplies if they require them.
Mitigate	● Create a penalty system for workers who intentionally damage the property or do not follow regulations. ● Create a method of reporting violations – such as anonymous reporting using complaint boxes or taking to supervisors.
Compensate/ Offset	● N/A
Child Labour	
Avoid	● Do not hire without checking government-issued identification. ●

Mitigation Hierarchy (ESS1)	Measures
Minimize	● Require mitigating child labour measures as part of the bidding document for Contractors. ● Review employee documents and perform employee reviews (quarterly) to ensure compliance.
Mitigate	● Rebuild schools and build new schools for children so that they are engaged in attending classes. ● Work with local authorities to increase child and youth literacy.
Compensate/ Offset	● Employ vulnerable households so that they have earnings to run their families and send their children to school.
Occupational Health and Safety	
Avoid	● Do not allow contractors' work commencement without an approved OHS plan. ● Educate and train the workers on the OHS standards. ● Make OHS Specialist requirements mandatory in contractors' bidding documents and an OHS team.
Minimize	● All contractors must develop an OHS plan per the ESMP requirements, based on the ESMF guidance. ● Identify all hazards and include them in the OHS plan ● Monitor and inspect the work area regularly
Mitigate	● Conduct audits of the sites, identify unsafe conditions and acts and engage leadership to ensure compliance. ● Independent reviewers should do the audits.
Compensate/ Offset	● Appropriate compensation for workers in case of workplace injuries, as per the national regulation and the absence of such, must be included in the contractors' bidding documents.
Volcanic Ash and Debris Cleaning and Disposal	
Avoid	● Avoid cleaning where no infrastructure footprint, river cleaning, and land use are required. ● Avoid existing waste management sites for ash disposal if possible.
Minimize	● Manage the potential response and immediate restoration activities with a minimal clearing of ash, where necessary economically. ● Disposal is a major issue associated with ash clean-up due to large volumes of material requiring management; therefore, assess various options for reusing the ash materials and eventual minimization of disposal requirements.
Mitigate	● Ensure coordinated clean-up of both the street areas and private properties for an efficient clean-up response. ● Use heavy earth-moving machinery to grade tephra to the roadside. ● Ensure careful organisation and management of volunteer groups ● Prevent remobilisation of the ash over the long term by stabilizing them at the disposal site, as ash disposal sites can pose an additional hazard to nearby communities. The most common stabilisation form involves compaction and

Mitigation Hierarchy (ESS1)	Measures
	capping deposits with soil and/or planting vegetation, which helps bind ash together. ● A wide variety of disposal sites should be considered after a technical study, such as old quarries, valleys, fields, and water bodies such as lakes. ● Potential for contamination at industrial sites (e.g., tephra loading damage to industrial storage tank roofs) ● Use a light sprinkling of water to reduce remobilisation. However, too much water will cause the ash to become cement-like and stick to surfaces, which is difficult to remove.
Compensate/ Offset	● Consider the logistical and technical requirements of using ash in cement production, road construction, and manufacturing of agricultural products. ● Potential considerations of usage of ash are the availability of a viable market for the product(s), necessary physical characteristics of ash for the target use, the costs and technical requirements to make the ash a viable product, decontamination/waste separation requirements [particularly important for highly mixed waste streams (e.g., areas with ash and considerable building damage)], and temporary storage requirements.
Slope Stability and Debris Flow	
Avoid	● Avoid rebuilding on unstable slopes without first surveying the area and determining the slope stabilization measures that must be taken to prevent landslides in the future. ● Avoid building structures where lahar flows (hot or cold mixtures of water and rock fragments) accumulate on the slopes.
Minimize	● Minimize building in areas close to slopes, and if possible, utilize the slope for farming. ● Minimize long-term activities along the unstable slope, especially during the rainy season, to avoid land and mudslide.
Mitigate	● Perform surveys of the area, identify unstable slopes, then stabilize them first before any development. Regularly monitor slopes that were stabilized and have human settlements nearby. ● Discourage housing development in topographic lows or unstable hill slopes to reduce the impacts of failure and future eruptions on housing. ● Assessments of heavy sediment flow and water can be incorporated in designing new drains. Check dams on hillsides could be built for lahars, not just soil from erosion. ● Developing household, community, and government planning efforts should consider mutual or cumulative benefits for risk reduction across different hazard scenarios.
Compensate/ Offset	● If landslides or other geological events that result in loss of life or property occur because of failure of slope stabilization mechanisms, the affected person will be compensated using monetary or other forms.
Dust Generation, Vibration, Noise, and Odour	

Mitigation Hierarchy (ESS1)	Measures
Avoid	● Avoid excavation and transport without putting proper measures in place. ● Avoid earthen roads for transporting the construction materials ● Avoid locations for borrow pits, rock crushing facilities, and concrete batching yards near the water bodies and community. ● Avoid storing construction materials from nearby water bodies and community areas. ● Place the dust generation equipment and other powered equipment away from sensitive receptors to avoid complaints.
Minimize	● Determine which areas require excavation for ash removal and transport the material that needs to be removed before working. Minimize transporting ash, noise, and odour-generating material through residential areas. ● Fencing of the project area by drum sheet or mesh nets ● Stocking of construction materials and machinery must be within a limited area. ● Stockpiles of construction materials and ash must be covered to protect them from wind and weathering action. ● Limiting activities for producing fugitive dust particles, e.g., excavated ash and soil, handling of the construction materials etc. ● Transport vehicles must not be overloaded. ● Avoid queueing vehicles adjacent to the site, particularly near sensitive receptors, including housing. ● Switch off / throttle down all site vehicles, water vessels, generators and machinery when not in use. ● The concrete batching and mixing plant should be located downwind of and a minimum of 500m away from residential areas and sensitive receptors and be fitted with a high stack (30m) to allow adequate dispersion of emissions.
Mitigate	● Create a construction management plan that determines the dust, noise, and odour-generating areas and activities. Have mitigating measures for any such activities. ● Vehicle speed restrictions (e.g., 20 km/h) must be enforced to control dust generation. ● Construction materials and ash must be covered to protect from wind action ● Spray water regularly to suppress fugitive dust. ● An appropriate freeboard must be maintained in trucks hauling construction materials ● Introducing pollution free/new technology in construction activities ● Approved pollution control devices to be fitted in equipment and machinery ● Establish grass carpeting in the unpaved area where possible ● Regular air monitoring must be carried out near the sensitive receptors to ensure ambient air quality remains within limits defined by national standards
Compensate/ Offset	● N/A

Mitigation Hierarchy (ESS1)	Measures
Impacts on land and land use	
Avoid	● Land surveys and stakeholder consultations will be performed to learn the previous status of the landscape. The rebuilding efforts will avoid changing land usage drastically. The land will be restored to its previous state or improved.
Minimize	● In cases where changes must be made, minimize the changes. Use proper national and local landscape planning protocols/bylaws. If an area needs to be altered due to new landscape conditions, the land use category should be as similar as possible to the pre-eruption land use.
Mitigate	● Any changes to the landscape that have occurred due to the eruption will be fixed before undertaking rebuilding efforts. For example, filling holes and dents in the earth, removal of debris, stabilizing the land, performing chemical analysis of the new soils and so on. The new landscape must be productive and positively impact the residents. Stakeholder consultation is crucial to rebuilding, ensuring proper planning and rebuilding.
Compensate/ Offset	● Compensation measures should be developed if some areas cannot be restored to their previous or better state. For example, if the land is no longer viable as cropland, alternate cropland must be developed. If it is determined that an area where a house used to be located is better suited for infrastructure, the landowner must be consulted and provided alternate land or monetary compensation. The rebuilding efforts are a chance to improve the landscape, but it must be done in a way that the residents' life and community are improved.
Generation, management, and disposal of hazardous and non-hazardous waste	
Avoid	● Avoid start working without conducting a risk assessment of the construction area to identify the types of waste present and types of waste expected to be generated
Minimize	● Minimize contact with hazardous waste, even with the use of proper PPE ● Store and dispose of waste safely and on time to minimize unexpected contact or accidents. ● Construction wastes must be reused or recycled whenever possible ● Burning of waste materials should be restricted and monitored ● Limit the number of waste-producing activities to the minimum amount required. ● A proper waste disposal system is to be implemented to minimize pollution
Mitigate	● Prepare a waste management plan that outlines the sorting, handling, transport, and discarding/dumping of waste. ● Keep onsite waste collection and disposal facilities ● Provide different coloured waste bins for dumping biodegradable, reusable and recyclable wastes. ● Conduct awareness-building meetings and training for employees.

Mitigation Hierarchy (ESS1)	Measures
	● Quality housekeeping practice must be maintained by regular inspection and checking.
Compensate/ Offset	● N/A
Generation and disposal of sludge and wastewater from civil and sanitation works	
Avoid	● Avoid constructing labour camps close to the water bodies. ● Avoid starting construction work without a proper contractor's waste management plan
Minimize	● Maximize construction material used to minimise construction waste disposal and runoff.
Mitigate	● Wastewater could be accumulated at selected sites and released to the nearby river or water bodies after applying initial treatment such as aeration or chemical coagulants. ● Facilities for disposing of sanitary wastes, slurry, and sewer should be in place and included in the contractor's BoQ. ● Solid wastes should be primarily managed by the workers at the construction site and later dumped into nearby municipal solid waste disposal sites while coordinating with municipal authorities. ● A smaller incineration facility could be installed for solid wastes in case of no scope for appropriate disposal opportunities. ● A waste management plan should be adopted accordingly by the civil works contractor. ● Supervise the implementation of the environmental management plan by engaging a supervision consultant.
Compensate/ Offset	● N/A
Generation, treatment, and disposal of household waste post-rebuilding	
Avoid	N/A
Minimize	● Create a waste management system that is tailored for the post-rebuilding conditions (for example, if there are changes in city layout) ● A proper waste disposal system is to be implemented to minimize pollution.
Mitigate	● Prepare a waste management plan that outlines the sorting, handling, transport, and discarding/dumping of waste. ● Provide households with coloured waste bins for collecting and disposing of biodegradable, reusable and recyclable wastes. ● Educate/train households on how to sort their waste. ● Create a new waste management facility if required.
Compensate/ Offset	● N/A
Poor management of fertilizer and pesticides in agriculture practice	
Avoid	● Avoid the use of harsh pesticides
Minimize	● Educate the farmers on the new regulations.

Mitigation Hierarchy (ESS1)	Measures
	● Regulate the selling of pesticides and fertilizers to farmers. ● Create and enforce penalties for breaking regulations (exceptions to be made if it was done due to lack of knowledge as the goal of the penalties is to act as deterrents rather than punishments).
Mitigate	● Perform soil studies and determine ways to improve soil quality ● Work with the farmers to determine more efficient and sustainable ways of farming
Compensate/ Offset	● Provide training and other farming intelligence to educate farmers on methodologies of high yields
Soil erosion from cropland and degradation of water quality	
Avoid	● Avoid the use of heavy equipment on exposed soil.
Minimize	● Replant crops and vegetation as quickly as possible. ● Use tarps to cover areas prone to erosion.
Mitigate	● Allow vegetation to regenerate quickly, which speeds the re-establishment of biological moderation of erosion. ● Grow crops with longer lifecycle to allow for the soil to stabilize before harvesting must take place.
Compensate/ Offset	● Ensure sufficient riparian buffers along the watercourses to provide important benefits for recreation or as a source of water usage.
Potential decrease or relocation of forested areas	
Avoid	● Avoid building in damaged forested areas ● Stricter protection laws for the remaining forest area ● Prioritize forests when deciding between different uses for a piece of land
Minimize	● If forested areas must be used, build in areas with less biodiversity than others to lessen the damage
Mitigate	● Build infrastructure up instead of out (more floors, so less land is needed)
Compensate/ Offset	● Due to planning decisions, increase forested areas in other places to compensate for any loss of forested land in a given area.
Potential decrease or relocation of forested areas	
Avoid	● Avoid creating laws and regulations that are too restricting (must consider the social and environmental aspects) on forest users (new forest regulations however are not currently planned for under this project).
Minimize	● Work with local authorities to determine the necessary need for resources by locals ● Create resource quota based on the needs of the locals and the state of the forest (must balance both). ● Only allow affected locals to use the resources as needed.
Mitigate	● More sustainable use of resources, including reusing and recycling. ● Educate the locals about the importance of allowing time for the forests to recover.

Mitigation Hierarchy (ESS1)	Measures
Compensate/ Offset	● Import resources as needed from elsewhere for local use
Ash cleaning in slopes and other forestry activities can cause severe soil erosion	
Avoid	● Avoid constructing new roads for forestry interventions ● Planning the route of forest roads to avoid stream crossings as much as possible ● Avoid the disturbance of stream channels by heavy equipment
Minimize	● Deciding to harvest selectively or not to harvest steep sites that are highly vulnerable to erosion. ● Leave strips of uncut forest beside streams, rivers, and canals. These buffer zones will significantly reduce the erosion of streambanks, eliminate temperature increases in the water, maintain riparian (canal- and stream-side) habitats for wildlife, and mitigate some of the aesthetic damage from forest harvesting.
Mitigate	● Install a sufficient number of adequately sized culverts. ● Using log-removal practices that avoid disturbance of the forest floor (such as cable yarding, in which a tall spar anchors cables radiating into the clear-cut, which allows logs to be dragged to a central place without the use of a wheeled skidder). ● Allow vegetation to regenerate quickly, which speeds the re-establishment of biological moderation of erosion.
Compensate/ Offset	● Ensure sufficient riparian buffers along the watercourses to provide important benefits for recreation or as a source of water usage.
Depletion of fish species due to unsustainable fishing practices/ overfishing post-rebuilding	
Avoid	● Fishing should not be allowed without first conducting studies to determine the condition of the resources; fish population surveys
Minimize	● Reduce fishing allotments based upon the fisheries management plan. ● Educate the locals on the necessity of allowing the fish populations to recover ● Increase surveillance to ensure overfishing is not occurring ● Introduce/increase penalties for breaking laws.
Mitigate	● Create a fisheries management plan using the new baseline conditions. ● Increase other jobs so the locals are not as reliant on the fishing industry– for capacity building. ● Ensure safe quality of water for existing fish populations.
Compensate/ Offset	● Compensate fishermen, locals, and anyone else impacted by the reduced allotments. ● Invest in fish nurseries.
Reduced access to fishing due to increased protection	
Avoid	● Avoid restrictions on the fishing of the local community. ● Hold stakeholder consultations to determine the number of impacted individuals and the severity of the impacts.

Mitigation Hierarchy (ESS1)	Measures
	● Determine alternate fishing arrangements such as access to a different fishing area – ensure that this will not conflict with other locals or negatively impact the natural systems.
Minimize	● Limit the daily catch per person so everyone can access the fish resources.
Mitigate	● Enhance fishing in the area by boosting and funding fish nurseries, providing better fishing aids, and funding the training of fishermen.
Compensate/ Offset	● compensation of livelihood loss until an alternate source of income is created. ● Provide livelihood training. ● Work with local authorities to create varied sources of employment.
Damage to existing roads during construction and movement of construction vehicles	
Avoid	● Reduce construction vehicles' access to certain roads.
Minimize	● Manage traffic to avoid the overuse or misuse of roads. ● Limit vehicle weight for roads with poor quality to reduce damages.
Mitigate	● Maximize construction material use through reuse and recycling practices to reduce the number of materials that will need transporting to the sites.
Compensate/ Offset	● Fix damaged roads after construction.
Traffic Management and road safety	
Avoid	● Conduct road condition surveys before starting work ● Rebuild roads to allow access to sites as a good road network will be required for removing the debris from sites and bringing in construction material ● Rehabilitate roads with shoulders for pedestrians to avoid accidents
Minimize	● Control vehicle movement – allow only a certain number of vehicles at a time, avoid peak hours, and transport at night using proper noise mitigation techniques.
Mitigate	● Develop a waste management plan that includes transportation routes and time. ● Maintain roads properly. ● Conduct regular road condition surveys.
Compensate/ Offset	● N/A
Relocation of houses, causing hardships for the residents	
Avoid	● Avoid relocation of houses when rebuilding as much as possible.
Minimize	● Minimize the distance houses will be relocated.
Mitigate	● Consult the residents to find out their concerns and take measures to alleviate them.
Compensate/ Offset	● One-off monetary compensation for grievances. ● Subproject RAPs as needed
The potential outbreak of other diseases and the increased spread of COVID-19	
Avoid	● The robust control of labour movement.

Mitigation Hierarchy (ESS1)	Measures
	● Regular health checkups. ● Regular monitoring of food and water sources. ● Follow COVID-19 restrictions and associated procedures.
Minimize	● Intense monitoring of labourers' health conditions. ● Arrange a medical unit for emergency treatment and health guidelines. ● Training labourers regarding health and hygiene. ● Minimize the exposure of workers in large gatherings.
Mitigate	● Provide health-related equipment such as masks, sanitizers, etc. ● Follow the health-related protocol at the work sites and in accommodation places, especially COVID-19 guidance (e.g., social distancing, washing hands frequently, etc.) ● Provide medicine and consultation for the workers.
Compensate/ Offset	● Health insurance for the labourers. ● Leave the worksite if experiencing symptoms of a pandemic, for example, COVID-19. ● Provide testing equipment to the community to detect infectious diseases.
Direct and indirect impacts from other natural hazards	
Avoid	● Do not let residents return to their houses unless it is deemed safe and capable of withstanding average natural disasters (e.g., hurricane).
Minimize	● Prioritize building/rebuilding of resources necessary for increasing disaster resiliency, such as hospitals, fire stations, safe water sources, and access to food.
Mitigate	● Allocate funds for other disaster use. ● Regularly monitor weather and volcano conditions. ● Create/update hurricane plans to account for the current status of the country and people (as there is a change in the baseline). ● Create/update evacuation plans to reflect the current conditions. ● Ensure the disaster shelters are well-maintained and adequately supplied.
Compensate/ Offset	● At the time of implementation, provide financial support to residents (if any), so they can return to their houses sooner to avoid overcrowding of the disaster shelters in case of future disasters.
Impacts on ecosystems	
Avoid	● Avoid development activities that will further stress the biodiversity, including loss of trees, faunal habitats, spawning and breeding grounds of aquatic habitats.
Minimize	● Perform wildlife survey. ● When replanting, ensure native saplings are selected. ● Determine if any ecologically vulnerable communities have been impacted and take corrective actions.

Mitigation Hierarchy (ESS1)	Measures
	● When cleaning ash from trees, forests, and beeches, ensure the affected flora, fauna, and their habitats are not destroyed.
Mitigate	● Create an ecosystem management plan using the new baseline conditions. ● Improve disaster resilience of ecosystems by increasing biodiversity, decreasing habitat fragmentation and other scientifically proven methods.
Compensate/ Offset	● Allocate funding for ecosystem restoration. ● If an area is no longer biologically viable, replant elsewhere. ● Relocate vulnerable species.
Loss of ecological connectivity	
Avoid	● Build away from main ecological zones.
Minimize	● Build stepping stones for connectedness, such as green tunnels or bridges. ● Leave larger parcels of habits intact. ● Build to minimize habitat fragmentation.
Mitigate	● Manage and plan out a strategic location of roads and infrastructure to reduce the loss of connectivity.
Compensate/ Offset	● Create protected areas (not planned under the Project).
Marine habitat disruption and damage to the aquatic ecosystem due to unsustainable resource usage post-rebuilding	
Avoid	● Marine resource gathering should not be allowed without first conducting studies to determine the condition of the resources, ecosystem monitoring, and coral health assessments.
Minimize	● Educate the locals on the necessity of allowing the ecosystem to recover ● Introduce/increase penalties for breaking laws.
Mitigate	● Create an aquatic ecosystem management plan using the new baseline conditions. ● Increase other job opportunities, so the locals are not reliant on the marine ecosystem – capacity building.
Compensate/ Offset	● Compensate locals and anyone else impacted by the reduced allotments. ● RAPs as needed**.**
Over-harvesting of natural resources	
Avoid	● Harvesting resources (such as wood, fruits, meat and other resources from hunting and gathering) should not be allowed without determining the condition of the resources, population surveys, and vulnerability assessments.
Minimize	● Introduce new regulations that prevent natural resource extraction for a period (determined using scientific studies and evidence). ● Educate the locals on the necessity of allowing the ecosystem to recover. ● Increase surveillance to ensure overharvesting is not occurring. ● Introduce/increase penalties for breaking regulations.

Mitigation Hierarchy (ESS1)	Measures
Mitigate	• Create an ecosystem management plan using the new baseline conditions during subproject implementation. • Increase other jobs so the locals are not as reliant on the natural ecosystem – capacity building.
Compensate/ Offset	• Compensate farmers, locals, and anyone else impacted by the increased protection of resources. • RAPs as needed
Tangible and Intangible Heritage	
Avoid	• Design to avoid impacts on cultural heritage sites or affecting intangible cultural heritage.
Minimize	• Minimize rebuilding activities close to the cultural heritage site
Mitigate	• Churches and other religious installations, graves, etc., that will be physically affected will be resettled and included in the RPF. • Chance Find Procedures (included in Annex 4-1) will be incorporated in the ESMP, and Chance Find Clauses will be incorporated in the contractors' bidding documents. • A CHMP (requirement included in Annex 4-2) will be prepared if it is determined that significant impacts will occur to tangible and/or intangible heritage objects/locations.
Compensate/ Offset	• If it is impossible to avoid or rebuild in the exact location, efforts will be made to rebuild a similar or better facility for the affected community.

4.4 Environmental and Social Considerations for Subcomponent 2.1

Various environmental and social considerations, based on ESSs and the national regulations, should be considered for the technical studies, feasibility studies, and detailed engineering designs of infrastructure interventions and operations, mainly in public facilities, transport infrastructure, water supply systems, agricultural centres, and slope stabilization. The different measures that can be undertaken to improve the project designs to comply with the goals of Subcomponent 2.1 are as follows:

- Energy efficiency
- Assessment of source of material – use local products whenever possible
- Cost efficiency
- Use community/local labours
- Social considerations, such as the social impact of realigning roads

The assessments for increasing efficiency should be done before designs are finalized.

Chapter 5 : OCCUPATIONAL AND COMMUNITY HEALTH AND SAFETY

This Chapter discusses the occupational and community health and safety (OCHS) management system (OCHSMS) during the construction and operation stages. The OCHSMS comprises a framework to be included in the construction stage plan with a List of Processes, Standard Operating Procedures (SOPs) and roles and responsibilities of the important individual in construction work. The relevant List of Processes and SOPs are presented in this Chapter for the Contractors to prepare and plan during construction with the site and operation-specific information.

5.1 Purpose

The guidance provided in this chapter is meant to help the Contractor prepare their own OCHS Plan. Its core purpose is to ensure that all activities are planned, carried out, controlled and directed with consistent, approved health, safety, and security management practices, procedures or standards.
This document is a framework for the Contractor, providing a practical approach to managing OHS and CHS risks as per ESS1, ESS2 and ESS4 requirements, World Bank Group EHSGs, and the country's regulatory framework and requirements (please refer to Chapter 2 for the country's Acts and Regulations). In addition, a few international guidelines are recommended to be followed by the Contractor:

- ILO Code of Practice. 1992, Safety and Health in Construction Industry ISBN 92-2-107104-9
- Safety and Health in Building and Civil Engineering Work, ILO Codes of Practices
- American National Standard Institute (ANSI) for Personal Protective Equipment (PPE). For example, Eye and Face Protection (ANSI Z87.1-1989), Head Protection (ANSI Z89.1-1986), Foot Protection (ANSI Z41.1-1991) or equivalent acceptable to the Engineer.
- Good International Industry Practices (e.g., OSHA)
- ESF/Safeguards Interim Note: COVID-19 Considerations in Construction/Civil Works Projects, April 7, 2020.

5.2 Scope

This framework applies to all operational activities related to the Project. Some of the key high-risk activities may involve the following:

- Vehicles and driving;
- Operation of mobile equipment on site and on community roads, including passenger vehicles, panel transport trucks, cranes, floating vessels, etc.;
- Work at height and dropped objects;
- Work over or near water;
- Material haulage;
- Maintenance and operation of the site camp and other facilities like workshops and first aid centers;
- Use of security forces; and
- Electrical works.

5.3 Objectives and Targets

This framework is developed with the following objectives:

- Safe operation with Zero harm to community members and all site personnel, including Contractor's Staff and visitors.
- Meet or exceed the contractual safety obligations

- Project-specific measurable targets to achieve the above objectives will be established by the Contractor. These targets will be determined based on the Contractor's continual improvement philosophy, external peer group benchmarking and stakeholders' input. The Contractor will establish targets for each project site for every fiscal year. Some examples of these targets are listed below to guide the contractor about the expectation from WAPDA:
- Total Recordable Injury Rate[9] of 1.5 or less (or based on the Contractor's previous yearly trend)
- Lost Time Injury Frequency Rate[10] of 0.5 or less (or based on the Contractor's previous yearly trend)
- Senior Leadership of the Contractor (Project Manager, Construction Manager and Technical Director) will need to be fully committed to achieving the targets mentioned above. The Contractor should establish leading and lagging indicators to drive performance to meet these targets. Following are some leading indicators showing senior management commitment. Complete details of all Key Performance Indicators (KPIs) should be presented in the "Measurement" Process of the Contractor's project-specific OCHS framework (the OCHS processes are discussed later on in the Chapter).
- All Project Managers are to complete [1] Walk-through Inspection per month.
- All ESHS officers must complete at least two (2) Walk-through Inspections per month with their assigned Health and Safety Officer per sub-project.

5.4 Risk Assessment

Risk assessment is a process to identify hazards and risk factors that have the potential to cause harm (hazard identification), analyze and evaluate the risk associated with that hazard (risk analysis and risk evaluation), and determine appropriate ways to eliminate the hazard, or control the risk when the hazard cannot be eliminated (risk control). Risk assessments can help health and safety and technical teams implement corrective measures to protect workers from health and safety threats during construction and operation stages. Performing regular risk assessments can help construction and O/M stakeholders comply with regulations.

5.4.1 Risks Assessment Codes

The principle behind the Risks Assessment System and the assignment of Risks Assessment Codes (RACs) is to identify and control workplace hazards. RACs are based on the hazard severity, probability of occurrence, and the number of people exposed or potentially adversely affected in the event of an accident. While all hazards should be resolved as soon as possible, the Hazard Risks Assessment System is a safety risk ranking method to assist in making informed decisions concerning hazard control while providing decision-makers with a consistent and defensible approach for prioritizing safety hazard abatement efforts based on available resources and with consideration towards competing demands and priorities.

5.4.2 Likelihood and Consequence of Hazards

RACs require categorising the likelihood or probability of an outcome occurring in qualitative terms and the consequence or severity of a potential outcome. Based on these assigned categories, a matrix

[9] A rate of injuries and illnesses computed from the following formula: (Number of injuries and illnesses X 200,000) / Employee hours worked.
[10] A rate of lost time computed by: ([Number of lost time injuries in the reporting period] x 1,000,000) / (Total hours worked in the reporting period).

format is used to place the hazard within a specific matrix location. This location can then be used to determine a RAC for that hazard activity.

The Likelihood or probability is considered in qualitative terms, and these are presented in Table 5-1

Table 5-1: Likelihood Ratings

Sl.	Likelihood	Definition
1	Possible	Likely to occur once or more during construction/ organization; probability 1%-40%
2	Likely	Occurs more than once or twice per year, is continuous or certain to occur; probability 40%-80%
3	Frequent	Multiple occurrences have happened frequently in the industry; probability >80% and above

Next is the Consequence or Severity Code, presented in Table 5-2.

Table 5-2: Consequence Ratings

Sl.	Consequence	Definition
1	Minor	First aid injuries (e.g., minor cuts and bruises, eye irritation from dust) or very minor health effect.
2	Moderate	Lost Time/ Non-Lost Time injury (e.g., sprains, fracture, cut, lacerations, burns or bruises) or health effect (i.e., deafness or dermatitis)
3	Major	Fatalities, amputations, major fractures, multiple injuries, or health effects: severely life-shortening disease, occupational illness, Single Fatality (drowning)

5.4.3 Risks Assessment Matrix

The risks assessment matrix is presented in Table 5-3. This matrix helps the OCHS team to prioritize workplace hazards by identifying them as substantial, moderate, and low. Those hazards identified as high will require the most stringent controls available as well as immediate attention. They may even demand that such activities be cancelled from the Project. Specific workplace controls can be applied so that the associated hazards are more effectively controlled, resulting in a revised assessment category to a more acceptable level. Note that the box at the bottom indicates that if we can eliminate the hazard (such as eliminating the task that subjects the worker to the hazard or allowing an outside specialized contractor to complete the task for the worker), the hazard no longer exists and therefore can be removed from a project's control process – this is the ultimate hazard control.

Table 5-3: Risk Matrix

Likelihood / Severity	Possible	Likely	Frequent
Minor	Low	Low	Moderate
Moderate	Low	Moderate	High
Major	Moderate	High	High

5.4.4 Summary of Assessed Risk

The project's potential risks and significance will need to be assessed using the methods stated in Sections 5.4.1, 5.4.2, and 5.4.3. A summary matrix can be prepared during subproject ESMP preparation using all identified hazards and risks.

A few of the high risks that could be part of this project and its subprojects are:

- working with ash and fine particles
- working at the height including in slopes (removal of ash and debris in mountain slopes)
- movement of large construction vehicles
- excavation work for pipelines, roads, and other foundation works

5.5 Management System Processes

Management System Process forms a vital component of the Contractor OCHS management plan (OCHS Plan), and these should be the Contractor's second-tier documents after policies. The contractor will need to develop the following health and safety Management System Processes based on the project and site requirements:

- Induction and Training Process
- Job Hazard Analysis
- Work Observation Process
- Personal Protective Equipment (PPE)
- Incident Investigation
- Measurement - Leading and Lagging Indicators
- Pandemic Action Plan (COVID-19)

5.6 Standard Operating Procedures (SOP), Work Instructions and Forms

Standard Operating Procedures and Work Instructions are primarily technical and are third-tier documents in the overall risk management approach. Forms and checklists provide support for implementing the controls mentioned in these SOPs. The following SOPs need to be developed by the contractor based on subproject-specific risk assessment and be part of the OCHS Plan (this is a non-exhaustive list, and additional SOPs may need to be developed for the project as appropriate/needed):

- Work at Height (including ladder, scaffold, stairs, roofs, towers etc.)
- Vehicle and Mobile Equipment (including barricading and signs, safe driving, loading and unloading, traffic and pedestrian interface, equipment inspection & maintenance, etc.)
- Working Near or Over Water
- Electrical Works (including stringing operation etc.)
- Hazardous Material Management
- Project Worker Welfare Facilities (including camp, first aid)
- Emergency Response Plan
- Others

5.7 Project Organization for Construction Management

This section provides a generic project organization for construction related occupational health and safety issues. It is recommended or aspirational measures, but not necessarily a requirements for the bidding process.

5.7.1 Contractor Organization Chart

A typical Contractor's organogram is presented in Figure 5-1. Efforts should be made to maintain an organogram like this, especially to link directly between health and safety and the Project Manager (senior leadership).

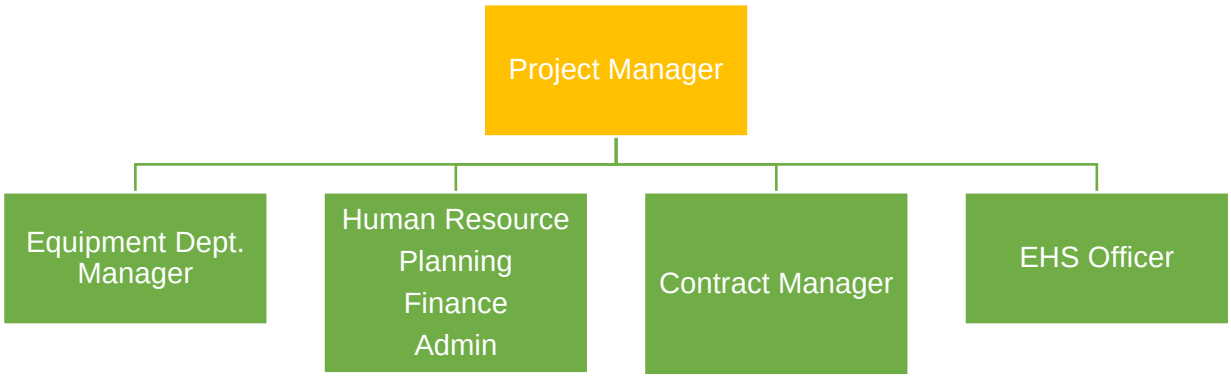


Figure 5-1: Contractor Organization Chart

5.7.2 Occupational and Community Health and Safety (OCHS) Organogram

The Contractor's typical health and safety organization should look as presented in Figure 5-2.

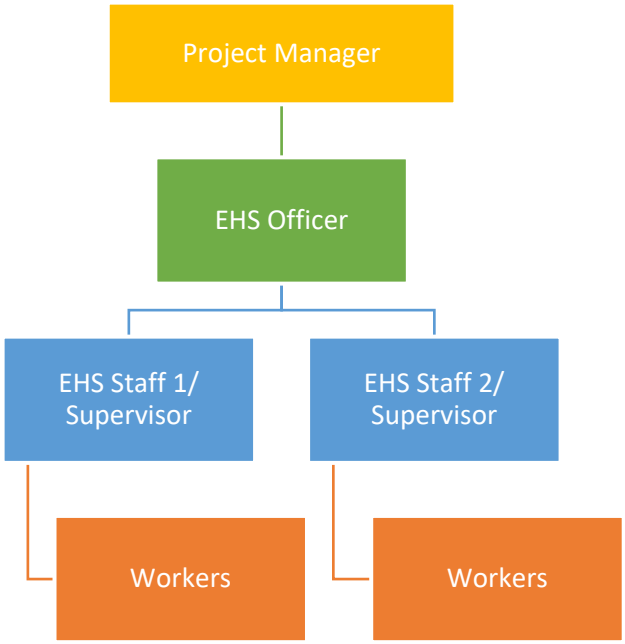


Figure 5-2: Contractor's OCHS Organization Chart

5.7.3 Roles and responsibilities

These typical roles and responsibilities give a holistic understanding of the implementation of the OCHS Plan, which comprises multiple processes and SOPs. However, each process and SOP may also have additional specific requirements pertaining to a specific role. Since most of the contracts will be smaller, the Contractors might consider combining the multiple processes and SOPs to make a simplified version of the OCHS Plan.

Project Manager

- Overall accountability for developing, implementing and maintaining the Health and Safety Plan.
- Accountable for the allocation of sufficient resources for the execution of the plan.
- Ensure that empowered and competent personnel are available to execute this plan.

- Make sure that Senior Leadership (all directors, Construction Managers, and other line management personnel) are fully aware of their responsibilities as per the Processes and SOPs of the Health and Safety Plan.
- Demonstrate visible leadership walk-to-talk behaviour to reinforce the implementation of the Health and Safety Plan.
- Attend monthly Health and Safety Committee/Progress Review Meetings and monitor the performance through leading and lagging indicators.
- Discourage achievement of operational results at the cost of safety violations
- Develop a conducive culture where Personnel are authorized to *STOP unsafe work without fear of retribution
- Develop a culture where it is safe to speak up and provide the time, people, and resources to respond to their workers' health and safety concerns.
- Ensure that the Work Observation Program is utilized and that all incidents are thoroughly investigated.
- Review the Executive Summary of incidents and ensure that the root causes are identified, and resources are provided for the closure of preventive and corrective actions.
- Encourage reward and recognition where personnel demonstrate safe behaviour or identify hazards and fairly apply disciplinary process when personnel fall short.

**ILO COP 2.2.12. Where there is an imminent danger to the safety of workers, the employer should take immediate steps to stop the operation.*

EHS Officer

- Be a Subject Matter Expert on the Environmental, Health and Safety Plans. Provide training and awareness regarding implementing the Health and Safety Plan that includes multiple Processes and SOPs.
- To be familiar with all local, national, and international laws that apply to the Operations.
- Raise concern in the monthly Health and Safety Committee/Progress Review meeting regarding implementing controls stipulated in the Health and Safety Plan.
- Provide training to staff on the Environmental, Health and Safety Plan. Conduct regularsessions for all project team members to inculcate the requirements of the Health and Safety Plan and daily toolbox talks with workers.
- To report to the Contractor’s Management Team on implementation progress and monthly Key Performance Indicators (KPIs).
- To ensure that sufficient training and induction of all personnel are being provided and maintained.
- To ensure that visit induction is given to all visitors before they are allowed to visit the site.
- To ensure Health and Safety awareness of all personnel employed on the project and their participation in all aspects of the health and Health and Safety program.
- Guide the purchase of personal protective equipment.
- Regular inspection of construction safety and security as per the Work Observation Process.
- Guide employees regarding their emergency response responsibilities.
- Decide whether a potential rescue service or team is adequately trained and equipped to perform permit space rescues of the kind needed at the facility and whether such rescuers can respond promptly and organize drills.
- Review of Health and Safety management plan annually.

ESHS Staff/ Supervisor

- Perform the assigned inspections and discuss the findings with ESHS Officer
- Ensure communication procedure and system to communicate emergency events to site technical supervisor and emergency authorities (e.g., Incident Response Center (IRC) and/or Police, health centers)
- Communicate with construction site personnel to help them understand the site's hazards and the operating personnel's demands regarding Health and Safety matters.

Workers

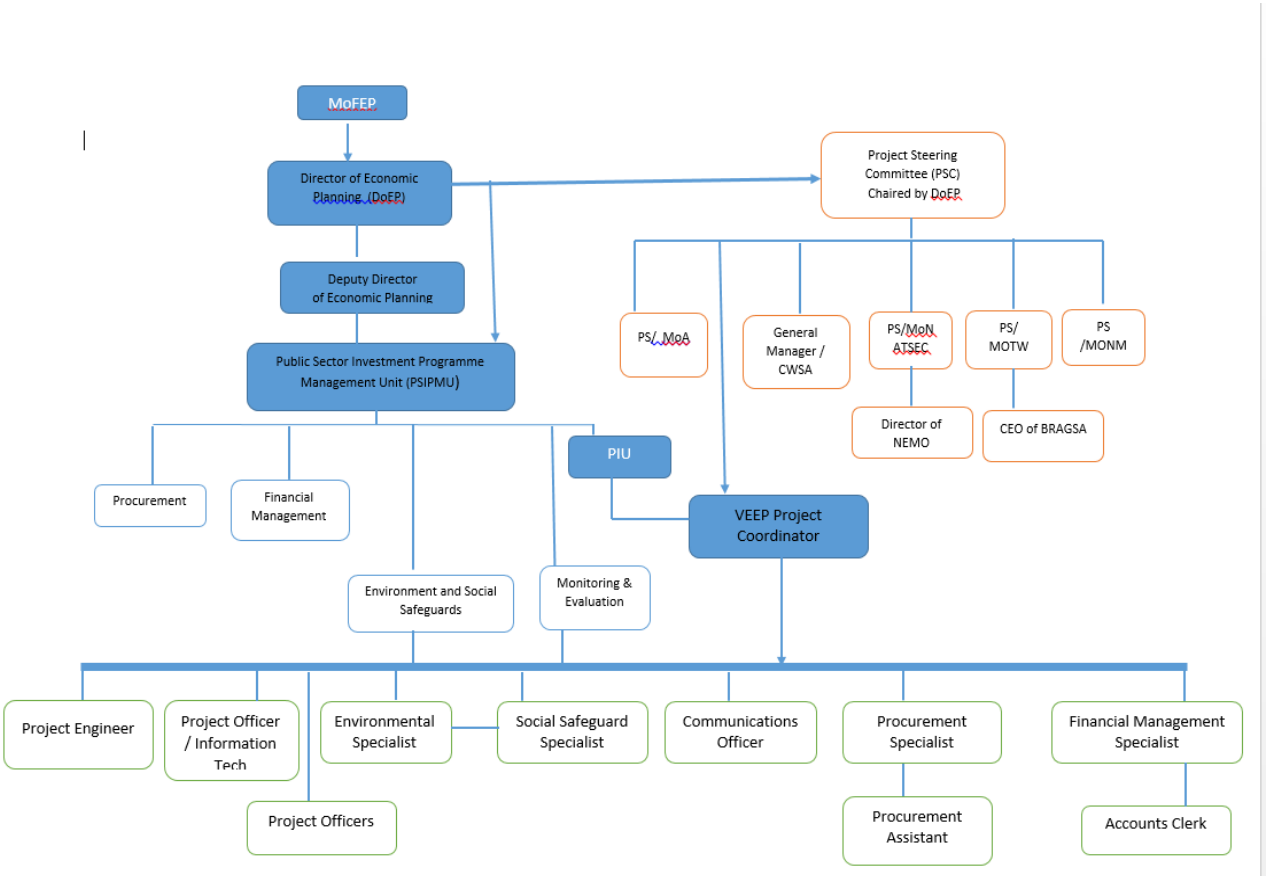
- Conduct Personal Risk Assessment Take 5 (Stop, Look, Assess, Control, and Monitor) and do not proceed to work if unsafe to do.
- Use authority to STOP work if a fellow worker or Safe System of Work (SSW) observes unsafe work.
- Report hazards and at-risk behaviour to help the Contractor management team to develop a conducive safety culture.
- Use PPE as provided.
- Ensure that equipment is de-energized before working on them and conduct a visual inspection of equipment at the beginning of its operation.
- Ensure that they wear appropriate PPE for the activity that they undertake.
- Be aware and mindful of hazards related to any work activity; do not undertake a job or task if physically or mentally not fit.
- Seek clarification with the Supervisor for uncertainty relating to a task.
- Do not undertake a job if one is not competent to do so.
- Raise improvement opportunities.
- Report near misses and actual incidents immediately to the supervisor.

Chapter 6 : INSTITUTIONAL FRAMEWORK

This chapter of the report describes the roles of those responsible for ensuring that the mitigation measures are carried out and explains the capacity of the implementation agencies and any strengthening needs.

6.1 Key agencies Involved in the Implementation of the ESMF

The Ministry of Finance, Economic Planning, and Information Technology (MoFEP) is responsible for the overall project implementation through the Public Sector Investment Program Management Unit (PSIPMU). Government agencies such as the Ministry of National Mobilization (MoNM), Ministry of Agriculture (MoA), and Roads, Buildings and General Services Authority (BRAGSA) are responsible for the implementation of different project activities. Figure 6-1 presents the structure of the project implementation team..



Note: PS/ Permanent Secretary

Figure 6-1: Implementation Arrangements of PSIPMU and PIU

6.1.1 Intergovernmental Project Steering Committee

The Project Steering Committee (PSC) will be the principal coordinating body for the Project; however, it will not be a decision-making body. The PSC will be chaired by the Director of Economic Planning of the MoFEP. This committee will provide oversight for Project implementation and central policy guidance as required periodically. The frequency of the PSC meetings will be determined in the POM. Memorandums of understanding are not required across government ministries. Also, at least one focal point for the Project will be appointed in each implementing agency that will work closely with the Project Coordinator at the MoFEP.

6.1.2 Public Sector Investment Program Management Unit (PSIPMU) and Project Implementation Unit (PIU)

The Project Officer and the Environmental Resource Analyst of the PSIPMU have been assigned as the Social Focal Point and Environmental Focal Point, respectively, for the Project. The Focal Points are familiar with the ESF requirements through participating in ESF training organized by the Bank and supporting other ESF projects under implementation and preparation. They have also been involved in the formulation of ESF instruments.

The E&S Focal Points will perform the following tasks, among others:

- Be informed of the E&S requirements of the project, including those outlined in ESMF and specific ESMPs developed for specific project activities as well as GRM, citizen engagement and gender-based violence.
- Understand the responsibilities of the dedicated E&S Specialist and monitor that he or she is executing them to fulfill project requirements.
- Review the initial stage subproject environmentaland social screening forms and ESMSPs for all suprojects and continue to review only substantial risk subprojects environmental and social screening forms and ESMPs
- Review the quarterly monitoring reports on the environmental, social, health and safety (ESHS) performance of the Project prepared by the project E&S Specialist
- Carryout periodic site visits on E&S issues
- Understand and convey the E&S project requirements to key stakeholders through their liaison role to eliminate delays and obstacles to compliance
- If the E&S Specialists require additional support or expertise, the E&S Focal Points shall facilitate the request for additional support.
- If the dedicated E&S Specialists should leave their positions, then the E&S Focal Points would attend to the needed duties until replacements are found.
- Provide technical guidance in their areas of expertise to the E&S specialists as needed.

Error! Reference source not found. presents the organisational structure of the PSIPMU. The Project Implementation Unit (PIU) is under the umbrella of the PSIPMU and headed by a Project Coordinator. The PIU also includes (as core staff): 3 project officers and specialists in procurement, M&E, social

protection, E&S risk management (provided by 1 environmental specialist and 1 social specialist), and engineering.

The duties/responsibilities of the Environmental Specialist include, but are not limited to:

1. Monitor the implementation of the ESCP, and ensure the application of the Environmental and Social Management Framework (ESMF) and the Environmental and Social Management Plans (ESMPs).
2. Conduct screening as described in the ESMF, and prepare and/or update the ESMF and ESMPs of the project as needed.
3. Develop Environment, Social, Health and Safety (ESHS) measures for bidding and procurement documents, including measures to mitigate the spread of COVID19, for project activities according to the ESMF and relevant ESMPs. Support with monitoring, to ensure that the consultants/contractors comply with the ESHS specifications of their respective contracts.
4. Give technical assistance so that all terms of reference for studies, capacity building, training and any technical assistance activities carried out under the Project duly incorporate and take into consideration, the requirements (as applicable) of the Environmental and Social Standards of the Environmental and Social Framework (ESF) of the Bank and the provisions of the ESCP, ESMF, and ESMPs.
5. Provide orientation to contractors and workers on application of ESMPs, Code of Conduct, Occupational Health and Safety Guidelines, and Labor Management Procedures, Stakeholder Engagement Plan and supervise their compliance with same.
6. Work closely with key agencies including line ministries and beneficiary agencies, with aspects of infrastructure, transport, water resources, health, solid waste management, and others.
7. In collaboration with the Social Specialist, and as indicated in the ESCP, prepare and/or support subprojects/contractors with reports on incidents or accident and propose measures to prevent their recurrence.
8. Prepare necessary documents, such as environmental guidelines and tools in consultation with stakeholders and help the client in commissioning and managing additional and/ or special studies/ assessments, if necessary.
9. Assist the project team in preparing the technical aspects of reports relevant to civil works.
10. Work closely with the Social Safeguards Specialist and support preparation and/or updating of management plans such as the LMP with its WGM, SEP with its GRM, and others as relevant.
11. Perform any other tasks assigned by the Project Manager consistent with the project's objectives, expected results and in line with this ToR.

The duties/responsibilities of the Social specialist include, but are not limited to:

1. The Implementation of the Environmental and Social Commitment Plan (ESCP) of the project, and the Environmental and Social Standards instruments: Labor Management Procedures (LMP), Resettlement Policy Framework, Resettlement Action Plans (RAP)/Abbreviated RAP (ARAP), Stakeholder Engagement Plan (SEP), Grievance Mechanisms (GM), including Workers Grievance Mechanism (WGM)

2. Preparation and/or updating of the social and environmental instruments such as the Labor Management Procedures (LMP) with its WGM, Stakeholder Engagement Plan (SE) with its GM;

RPF, RAP, ARAPs with their respective GMs. Review them on a regular basis and keep regular updates.

3. As part of the LMP, develop and implement a code of conduct detailing measures, including but not limited to sexual exploitation and abuse, sexual harassment, and violence against children.
4. Contribute to the design and delivery of learning programs on social inclusion and sustainability.
5. Advise and instruct Project staff, consultants and other stakeholders on various social issues associated with project implementation to ensure that these issues are addressed.
6. Conduct social risk assessments and enforce preventative or mitigation measures.
7. Contribute to the design and delivery of social advice to support relevant stakeholders.
8. As part of the implementation of the SEP, develop and implement activities and measures to ensure the social inclusion of the disadvantaged or vulnerable people in the mainstream consultation process and in project's benefits.
9. Systematically document all community consultations and meetings held with project beneficiaries, local communities, stakeholders, and any PAPs in the form of minutes of the meetings.
10. Assist with development and implementation of the grievance mechanisms (GM) of the SEP and of the LMP.
11. Ensure that the GM of the SEP and the LMP are adapted to address complaints on Sexual Exploitation, Abuse and Harassment.
12. Record, investigate and report on grievances and give follow up for the timely resolution of these.
13. Support with the organization and implementation of training to Project workers on Environmental and Social Standards, Citizen engagement, stakeholder engagement, GRM, Closing the Gender Gap, and how these relates to Monitoring and Evaluation.
14. Perform any other tasks assigned by the Project Manager consistent with the project's objectives, expected results and in line with this ToR.

Together with the E&S Focal points, the E&S Specialists will also support:

1. As indicated in the ESCP, prepare quarterly regular monitoring reports on the environmental, social, health and safety (ESHS) performance of the Project; on the implementation of the ESCP; and on the status of preparation and implementation of ESS documents required under the ESCP.
2. Ensure the application of the Environmental and Social Management Framework (ESMF) and the Environmental and Social Management Plans.
3. Prepare and/or update the ESMF and ESMPs of the project, as required.
4. Review the Contractor's Environmental and Social Management Plans (C-ESMPs).

5. Ensure monitoring the implementation of the ESCP, ESMF, ESMPs and C-ESMPs. Carry out routine site visit and suggest corrective action plans as required.

6. Conduct consultations with the relevant project beneficiaries and any Project-affected parties (PAP) on a regular basis to ensure that Environmental and Social issues are addressed in a timely manner and that project beneficiaries are kept abreast of developments.

7. In collaboration with the project coordinator, monitor and evaluation officer, and other team members, support the implementation and monitoring of Feedback Mechanism to determine the level of Citizen Engagement (CE) in the projects and its subprojects, and monitoring to track progress toward closing the identified gender gaps of the project.

8. Provide technical assistance so that all terms of reference for studies, capacity building, training and any technical assistance activities carried out under the Project duly incorporate and take into consideration, the requirements (as applicable) of the Environmental and Social Standards of the Environmental and Social Framework (ESF) of the Bank; the provisions of the ESCP, ESMF, ESMPs, LMP, RPF, RAP, ARAPs, and SEP.

9. Review and ensure that relevant aspects of the ESCP and ESS documents are incorporated into the ESHS specifications of the procurement documents with consultants. Support with monitoring, to ensure that the consultants/contractors comply with the ESHS specifications of their respective contracts.

10. As indicated in the ESCP, prepare and/or support subprojects/contractors with reports on incidents or accident and propose measures to prevent its recurrence.

6.1.3 E&S Roles and Responsibility of the Implementing Agencies

The different roles and responsibilities of the different implementing agencies are as follows:

i. The implementing agencies in charge of a subproject, with the inputs of the Environmental and Social Specialists, will prepare the screening (and if required, prepare ESIA) and ESMP of the subproject and carry out consultation;
   a) The Environmental and Social Focal Points will review the documents and seek World Bank clearance for any subprojects where high risk may exist based on the nature of the subproject and World Bank requirements;
   b) The World Bank may delegate the review and clearance functions to the Environmental and Social Focal Points, depending on the nature and scope of the subproject;
ii. Implementing agencies will ensure the inclusion of the environmental and social requirements in the bidding process;
iii. The implementing agencies will monitor the Contractors in preparing the C-ESMP, OHSP and Community Health and Safety Plan (as applicable);
iv. The contractors plan to be reviewed by the supervision consultant (if applicable for the subproject) and PSIPMU E&S Specialists;
v. Provide orientation to the technical staff especially site engineer about the E&S issues so that they can also monitor these during their technical monitoring;

vi. Regular supervision of E&S issues by supervision consultants and periodic supervision by PSIPMU E&S Specialists and Focal Points;
vii. Inclusion of E&S issues in contractor and supervision consultants' regular reporting;
viii. Quarterly ESHS reports by PSIPMU throughout project implementation;
ix. Sending notification via the Project Coordinator to the Bank within 48 hours after learning of the incident or accident as per Bank guidelines.

6.1.4 Construction Supervision Consultant

The Construction Supervision Consultant (CSC) team will supervise and monitor the ESMP and C-ESMP implementation. The CSC should consist of the following members:

- Environmental Health and Safety (EHS) Specialist
- Social Specialist (including Gender and SEA/SH)
- Communication Expert

Depending on the scope of the subprojects, one member having relevant experience on other topics can serve the other specialit or expert role. The EHS and Social Specialists will have qualifications and experience satisfactory to PSIPMU and resources to support the management of E&S risks, including environmental, health, safety, labour; physical and/or economic displacement due to land acquisition (resettlement); cultural heritage; and stakeholder engagement, among other relevant aspects. They will be responsible for day-to-day work on project E&S issues. Other key tasks associated with supporting, supervision, enforcement, contractor management, monitoring and reporting, training; stakeholder participation, gender, citizen engagement and feedback; and Information disclosure related to the Environmental and Social Standards (ESSs) of the World Bank.

6.1.5 Contractors

Contractors will be responsible for the following:

- Preparation of Contractor's Environmental and Social Management Plan (C-ESMP) and Occupational Health and Safety Plan based on risk assessment, construction methods, site-specific hazards.
- Responsible for the implementation of mitigation and monitoring measures and controls (OHS Processes and SOPs) proposed in the C-ESMP
- Prepare separate monthly reports for addressing environmental and social impacts and OHS issues

The following are the major personnel required in the contractor's environmental, social, health and safety team:

- ESHS Officer
- ESHS Staff/Supervisors

The Contractor shall appoint one (1) ESHS Officer to ensure that the Environmental, Health and Safety Management adheres to the approved OHSMP. The ESHS Officer will preferably be a graduate with at least a Bachelor's Degree in OHS/Engineering/Environmental Management and have experience of more than five (5) years of environmental, health and safety works in infrastructure construction. The individual should be suitably qualified, experienced and acceptably fluent in English. The ESHS Officer or his/her designates (equally or better qualified) shall be available at the Site on a 24h/day basis (in shifts) and shall carry out regular and random checks of all parts of the Site where work is taking place.

6.1.6 Interactions and Arrangements between the Key Institutions

The MoFEP will be responsible for the overall Project implementation through the PSIPMU. The main ministries that will work for/with the MoFEP are MoNM, MoA, and BRAGSA, and they will be responsible for implementing different project activities. MoFEP will liaise with all line ministries and persuade them to complete all subprojects quickly.

6.2 Results Monitoring and Evaluation Arrangements

Monitoring and Evaluation (M&E) will be carried out by the PSIPMU, based on the indicators included in the Results Framework of the Project. Accordingly, the PSIPMU will (a) collect, consolidate, and report on Project performance data, including physical and financial progress and E&S monitoring and (b) provide periodic information on intermediate Project results and progress toward higher-level outcomes (according to the Results Framework). The reports will also include data on grievances and resolutions to enable timely corrective action. Throughout Project implementation, the implementing agency will prepare biannual progress reports. The Project will finance the gathering of baseline data to assess the social, environmental, and economic impacts of key activities. The Project outcomes and impacts will be evaluated through outcomes and intermediate-level indicators defined in the Project's Results Framework. The PSIPMU will contract independent consultant(s) (listed above) to prepare the Implementation Completion and Results Report (ICR) and ICR will include a chapter with the performance of the E&S management in different subprojects, key challenges, capacity building initiative, monitoring and evaluation and performance of different key stakeholders including CSC.

At the project level, each implementing agency must submit a progress report on the project activities to the MoFEP, which will then consolidate and submit to the World Bank; this will be done quarterly during the first two years of the Project and semi-annually during the final three years of the Project. This support for the line ministries will help strengthen institutional capacity in analytics.

6.3 Orientation, Training and Capacity Building

The Project will support interventions to strengthen the M&E capacity of the implementing agencies, and the MoFEP will coordinate regular reporting. The Project will finance M&E-related training as part of capacity-building exercises, including capacity building in data analysis to improve monitoring and reporting. Development of the MIS for the implementing agencies will also facilitate improved monitoring of service delivery to the Project beneficiaries.

It is recommended to conduct a training program on ESS2 and OHS Management system for the staff (including EHS, procurement and technical) to understand the requirements of ESS2 and linkages with other ESSs and to manage construction projects. A brief description of the training is included below: Introduction: An occupational health and safety (OHS) program is a proven way to plan, implement and manage an organization's efforts to prevent injuries and illnesses in the workplace. When developing an OHS program, people often ask: "Where do we start?" This training can guide where to start and how to build an effective program. Staff will discover whom to involve in implementing and continuously improving an OHS program.

What this Training can cover: This training is for anyone who is just starting to develop an OHS program or wishes to improve an existing one. Staff will learn about the basic elements that every organization

should have in its program and will receive tips on promoting a health and safety culture. It is also helpful for people on a program planning team.

Objectives: After the training, staff will be able to:

- Describe at least four benefits of an effective OHS program.
- List the basic elements of an OHS program.
- Take the essential first steps in developing a program.
- Explain how managers, supervisors, and front-line employees participate in the program.
- Create an action plan to maintain an ongoing OHS program.

Chapter 7: ENVIRONMENTAL AND SOCIAL MANAGEMENT (ESM) PROCEDURES

7.1 Subproject-specific document review process

Based on the environmental and social impact and risk, an Environmental and Social Management Plan (ESMP) will be developed during the subproject assessment and updated later when the subproject design is finalized for both construction and operation phases of the sustainability of the subprojects. The ESMP will include the general mitigation measures included in this ESMF and specific mitigation measures developed to respond to the E&S impacts and risks of the site-specific activities of the subproject.

The PIU Environmental Specialist and Social Specialist will be responsible for the subproject level E&S screening and management plan preparation. The PSIPMU Environmental Analyst and Social Officer (E&S Focal Points for the Project) will initially review all the subprojects E&S screening and management plan. After the initial stage of the subprojects, the low risk subprojects will not require further review by the E&S Focal points and they will focus only the moderate and substantial risk subprojects. The Bank will review initially all the subproject screening and management plan and will gradually handover this responsibility to PSIPMU. This will be documented in the mission aide memoire. Any subproject identified as high risk will be notifed to the Bank for review and further guidance. In addition, the C-ESMP will be prepared by the selected contractor after contract award and submitted to PSIPMU for review and approval prior to mobilization or commencement of works.

7.2 Contractors' Certifications and Compliances

It is recommended that during the bidding process, the environmental and social sustainability of the contractors are given preferences. Preference will be given to those contractors who comply with ISO 9001 Quality Management, ISO 14001 Environmental Management and ISO45001 Occupational Health and Safety Management. In the case of local contractors, these requirements may also be substituted by the contractors having previous experiences in similar projects and the supervising ministry's digression. All Contractors will also comply with the World Bank's Procurement Guidelines of January 2021.

7.3 Required Documents

Documents that are the responsibility of the Contractors are as follows:

- Occupational and Community Health and Safety Plan
    - Job Hazard Analysis
    - Sexual exploitation and abuse/Sexual Harassment plans
- Contractors' Environmental and Social Management Plan (C-ESMP)
- Code of Conduct

The PIU will prepare the following plans at the project level and apply with necessary adjustments at the subproject level:

- Labour Management Plan
- Chance Find Procedure
- Cultural Heritage Plan
- Environmental and Social Training Plan

At the subproject level the PIU will prepre the following:

- Screening for each sub-project
- Environmental and Social Management Plan (ESMP), which will have 2 parts: for standard environmental and social risks and impact, use relevant ESCoPs and for site specific issues, prepare site specific ESMP
- As applicable, any other managementplans that would be required based on the outcome of the screening

The selected contractor will prepare the C-ESMP. Descriptions of the various documents and what should be included in them can be found in Table 0-1. Table 0-1 has been prepared to guide the potential bidders/contractors in preparing the preliminary outline for C-ESMP, particularly community health and safety, occupational health, campsite management, GRC and SEA/SH action plan for project construction.

Table 0-1: General guidelines of the required documents

	Type of plan	Task and general contents
1	Occupational and Community Health and Safety Plan	The Contractor will prepare an Occupational and Community Health and Safety (OCHS) plan based on the guidance presented in Chapter 5 of this ESMF, ESS2, and ESS4, and the ESCoPs. OCHS plan will be built on the following objectives: • Conduct Job Hazard Analysis for jobs with the highest injury or illness rates, with the potential to cause severe or disabling injuries or illness, in which one simple human error could lead to a severe accident or injury that is new or complex to the construction or have undergone changes in construction processes and procedures, and complex enough to require written instructions. • Present actions required to implement the construction-related management and preventive measures outlined in the Environment and Social documents and required by the World Bank's Environmental and Social Standards 2 and 4 (ESS2 and ESS4), Occupational Health and Safety and Guidance Note 2, and Community Health and Safety and Guidance Note 4 (Community Health and Safety). • Elaborate on the processes and standard operating procedures required to conduct subproject activities. • State additional measures required to implement Good International Industry Practice (GIIP) • Facilitate the addition and/or modification of control measures as new data become available via monitoring activities, health centers and community-based sources. • Establish a reporting format for all incidents in consultation with the Supervision Consultant. The provisions of the Bank's Environment and Social Incident Reporting Toolkit (ESIRT), as it relates to road safety, should also be adhered to by the PSIPMU—particularly when road safety or traffic management issues arise at

	Type of plan	Task and general contents
		the civil works site or within facilities or sites associated with the project. To achieve this, the supervision consultant should have their reporting requirements to the PSIPMU (based on ESIRT). • Outline the roles and responsibilities of the positions in charge of implementing the OCHS Plan, including monitoring and evaluation. • Devise a training plan for all workforces and community members who are directly exposed to the health and safety hazards of the Project. • Define the processes for recording and reporting non-conformances, as well as measurement and reporting of key performance indicators (KPI). • Include a SEA/SH Action Plan in the OCHS Plan - Outline measures to deal with any potential gender-based sexual exploitation and coercive sexual relations by local/migrant workers with local community members, particularly minors in exchange for goods or money; develop a SEA/SH Action Plan as part of their CHS Plan with clear guidelines regarding prohibitions against any illegal sexual activity, a sample code of conduct (CoC) to be followed, and extensive training for awareness raising, which explains how workers and local communities will be sensitized to SEA and SH risks, and the worker's responsibilities under the CoC. Consider the risks to construction workers/site visitors and the population near the construction site. The construction workers will be exposed to several (i) biophysical health risk factors (e.g. noise, dust, chemicals, construction material, solid waste water, vector transmitted diseases etc.), (ii) risk factors resulting from human behaviour (e.g. STD, HIV etc.) and (iii) road accidents from construction traffic and accordingly submit mitigation outlines and plan. The bidder/contractor may outline measures to be undertaken as part of the occupational and community health and safety plan, including measures to prevent access to any blasting/quarry site as well as site operation safety e.g. fencing around the cut faces of the quarry, notification of the public before blasting, posting of warning signage along all roads leading to the blasting site, prevent unauthorized entry before and during blasting e.g. warning signal, blasting signal and all clear signal, limiting the quarry activities to daytime, prevention of surface water and groundwater pollution e.g. from explosives residues and quarry activities, use of blasting mats to reduce noise, dust and fly rock, measures taken for safe transportation of explosives and monitoring of noise, water quality, air quality and vibration during quarrying activities.
2	Contractors' Environmental and	The Contractor will prepare a 'Contractor Environmental and Social Management Plan' (C-ESMP) that describes the detailed site specific

	Type of plan	Task and general contents
	Social Management Plan	mitigation measures to be performed, including requirements of any Site Specific Management Plans, ESCoPs, and any other measures. The C-ESMP will be submitted prior to the Contractor's mobilization and be approved by the supervision Engineer and PSIPMU. The C-ESMP will form part of the contract documents and be used as a monitoring tool for compliance. Violation of the compliance requirements will be treated as non-compliance leading to corrections or imposing a penalty on the contractor.
3	Campsite Management	Outline principles leading to siting/location of construction camps and operations; consider the location of construction camps away from communities in order to avoid social conflict in using natural resources such as water or to avoid the possible adverse impacts of the construction camps on the surrounding communities; provide a preliminary construction camp management plan ensuring labour influx management acceptable from an environmental, cultural or social point of view.
4	Chance Finds Procedures	Outline how the bidder/contractor will address chance finds (unexpected finds of important scientific, cultural or social structures or artifacts that could be considered national, cultural or historical valuable) during project implementation, including rehabilitation due to damages from the volcanic eruption, and/ or upgrading and reconstruction. The content must list the basic and standard steps to be followed, such as stopping all activities in and nearby the findings, contacting relevant local/national agencies according to national laws, placing barriers and security to guard and protect from vandalism, and awaiting instructions and clearance from authorities before proceeding and continuation of works.

7.4 Environmental and Social Training Plan

As per the ESCP, an Environmental and Social Training Plan (ESTP) acceptable to the Bank to ensure the required capacity for environmental and social implementation of the Project will be prepared by the PSIMPU and implemented. The plan shall include a schedule, budget, goals, and indicators. The training shall be focused on project workers, contractors, and community-based organizations. Table 0-2 contains an estimated training budget.

- The plan may include, in particular, the following:
- Environmental and social management instruments for the Project
- Integrated waste management for hazardous and non-hazardous waste
- Occupation and Community Health and safety for the workforce
- Infectious Disease Prevention and Response
- Participatory Monitoring and Evaluation
- Climate change resilience
- Gender-Based Violence (GBV) Risk Mitigation

- Prevention and Response Measures and the development and implementation of GBV measures (including among contractors, workers and civil servants involved in the Project)
- Inclusion training to ensure non-discrimination of socially vulnerable populations, including poor, illiterate, persons with disabilities, sexual and gender minorities
- Grievance Management

Table 0-2: Estimated Training budget

Sl.	Items	Unit	Quantity	Unit Rate ($)	Amount ($)
1	Preparation of training materials	day	44	800	35,200
2	Conduct the Training	day	24	800	19,200
3	Daily Allowance				
4	Participants (300)	day	720	20	14,400
	Trainers (2)	day	24	150	3,600
5	Meals, Tea and Coffee	No	744	20	14,880
6	Logistics (Venue, audio and visual, handouts)	LS	1	5,000	5,000
				Total	**92,280**

7.5 Objectives of ESM Procedures

The basic objective of the ESM Procedure is to screen adverse impacts and risks of subprojects and devise mitigation and controls to minimise the impact and risk on the environment, workers, and community during the construction and operation stages of the project. The specific objectives of the ESM Procedure is to:

- Screen the subprojects' environmental impacts and social risks using the Screening Form in Annex-A. A separate E&S screeenign format has been included in the Annex-A to review the E&S risks and impacts associated with the procurement, installation and operations of equipments. The screening form may be revised based on the subproject settings and interventions.
- Facilitate the implementation of the mitigation measures, and preventive controls discussed earlier in the document.
- Maximize potential project benefits, mitigate negative impacts and control risks;
- Address occupational and community health and safety hazards and corresponding control measures during construction and operation stages;
- Draw responsibilities for implementing agencies (MoFEP), contractors, supervision consultants, and other members of the project team for the environmental, health, safety, and social management of the Project;
- Define a monitoring and supervision mechanism and identify monitoring and inspection parameters in order to:
  - Ensure the complete implementation of all mitigation measures and preventive controls,
  - Ensure the effectiveness of the mitigation measures and preventive controls;
- Assess various stakeholders' environmental, health, and safety training requirements at various levels.

7.6 Environmental and Social Codes of Practices for Construction

The environmental and social codes of practice (ESCoPs) are generic, non-site-specific mitigation measures and corresponding guidelines for the construction phase. The ESCoPs form the backbone of a generic ESMP and are intended to be adapted for standard environmental and social management plan for general construction related activities of subproject irrespective of the site specific issues. The ESCoPs consist of environmental and social management guidelines and OHS practices to be followed by the contractors for sustainable management of all environmental, social, health and safety issues. The ESCoPs are listed below, and details are presented in Annex-B (included at the end of this document).

- ESCoP 1: Waste Management
- ESCoP 2: Fuels and Hazardous Goods Management
- ESCoP 3: Water Resources Management
- ESCoP 4: Drainage Management
- ESCoP 5: Soil Quality Management
- ESCoP 6: Erosion and Sediment Control
- ESCoP 7: Top Soil Management
- ESCoP 8: Topography and Landscaping
- ESCoP 9: Quarry Areas Development and Operation
- ESCoP 10: Air Quality Management
- ESCoP 11: Noise and Vibration Management
- ESCoP 12: Protection of Flora
- ESCoP 13: Protection of Fauna
- ESCoP 14: Road Transport and Road Traffic Management
- ESCoP 15: Construction Camp Management
- ESCoP 16: Cultural and Religious Issues
- ESCoP 17: Construction Site Security
- ESCoP 18: Employment and Labour Rights
- ESCoP 19: Grievance Redress Mechanism

The purpose of the ESCoPs is to help PIU and contractors create and follow standardized guidelines. During the creation of OHS, CHS, C-ESMP and any other environmental or social documents that PIU and Contractors may be required to create, they can use the information provided in the ESCoPs to supplement their plans. This will allow for plans that are up to international standards and good for the environment and society.

7.7 Field Engineer's ESHS Oversight

There will be limited supervision staff available in ESHS to cover all project sites and project shifts for the project. Therefore, it will become impossible to supervise and monitor ESHS parameters at every site continuously. Therefore, site engineers can be delegated certain ESHS oversight. The Engineers monitoring forms, including RFI and Daily Monitoring Forms (DMF) and checklists, will be designed to include ESHS aspects. ESHS should also be made a key responsibility of site engineers.

Poor temporary structures such as scaffolds, stairs, and ladders are one of the major causes of accidents in the construction industry. For technical verifications of the temporary structures,

specifications in the bidding documents define the material, stability, strength and deflections of each temporary structure. However, this clause is often ignored in the construction industry as the main focus is the permanent structures. Therefore, a Request for Inspection (RFI) for temporary structures will be required as a prerequisite for site readiness. Along with the technical requirements (e.g., complete drawings and calculations relating to stability, strength, and deflections), health and safety parameters will also be inspected for all temporary structures. During these RFI, both technical and ESHS personnel of the PSIPMU will inspect the requirements and certify the technical quality and readiness of the site to commence the work.

A training program will be devised by PSIPMU on engineers' oversight in ESHS and will be offered by the E&S Specialists of PSIPMU to address ESHS immediately when identified and raise it to EHS specialists if further action is required. The training on engineers' oversight should convey the following messages:

- Engineers would assume greater responsibility for overseeing the ESHS as part of their daily routine work,
- Engineers would review and approve each site's readiness to commence the work as per the design specifications, certifying whether Contractors are meeting the requirements of the Method Statements and withholding funds from them that are not complied with.
- Engineers would impose financial penalties on the Contractor with nonexistent or non-compliant ESHS matters; and
- Engineers will assist workers in recognizing environment-friendly and safe work measures and procedures necessary to protect workers' natural environment and occupational health and safety and prevent illnesses, injuries and fatalities during construction.

7.8 Inclusion of Relevant Components of ESMF in Contract Documents

The ESMF of the Project, along with the ESCoPs and occupational hazards and risks, will be referenced in the contractors' bid documents. The technical specifications of the bid documents will clearly state that the contractor must comply with the mitigation and control measures provided in the ESMF, ESCoPs, OHS Plan, World Bank Group EHS General Guidelines and Environmental Quality Standards (EQS).

7.8.1 Information to be included in the bidding documents

1. The contractor will prepare the C-ESMP, OCHS Plan and SOPs. The contractor will submit these plans to the supervision consultant for approval prior to the commencement of work.
2. List of EHS BOQs, including the list of PPEs with specifications
3. The Contractor's organization policies (mentioned in Chapter 1)
4. Payment Milestones

7.8.2 Example of ESHS BOQs in Bidding Documents

The following items are examples of what could be included in the Bill of Quantities (BOQs), which itemize the materials, parts, and labour (and their costs):

- After the award of the contract and before mobilization, the Contractor will prepare and submit two separate plans, C-ESMP and OHS Plan in compliance with ESMF, WBG EHS - Guidelines and EQS. The preparation and their revisions and updates will also be quantified and presented as line items in the Contract.

- Quantities of Personal Protective Equipment (PPE), first-aid boxes, ambulance, and health care facility with Saint Vincent and Grenadines Medical Association licensed doctors and nurses.
- Provision of Environmental and OHS Staff for the entire construction period.
- Providing and maintenance of Dust Measurement Meters for spot measurements (5 number).
- Quarterly 24-hour Air Quality Monitoring of PM_{10}, $PM_{2.4}$, NO_2, SO_2, and CO.
- Fifteen (15) minutes of continuous noise monitoring at four (4) pilot sites in close proximity to the settlements during the construction work.

It should be noted that compliance with ESHS requirements such as those in the ESCoPs and C-ESMP is not considered a special or extra cost, rather this is a routine expense associated with good practice; however, extraordinary or costly additional measures may be identified and separated in the BOQs.

7.8.3 Payment Milestones

Contract payments will be linked to environmental, health and safety performance, measured by completing the prescribed environmental and social mitigation measures in the C-ESMP and control measures described in the OHS plan. In addition, for any non-compliance causing damages or material harm to the natural environment, workers, public or private property or resources, the contractor will be required to either remediate/rectify any such damages in a timeframe specified by and agreed with the engineer (PSIPMU), or pay IAs for the cost (as assessed by IAs) of contracting a third party to carry out the remediation work. For repeated non-compliance, the Contractor will be penalized. The penalty for non-compliance with the requirements of the C-ESMP and OHS Plan will be 3% of the total Civil Works in the Instruction of Payment Certificate (IPC). The penalty will be imposed after all contractual instruments are applied, and a Non-compliance Report (NCR) is issued by the Engineer.

7.9 Monitoring Program

Monitoring is one of the key elements of the C-ESMP. It is a two-tier program that comprises compliance and effects monitoring. The main purpose of this monitoring program is to ensure that the various tasks detailed in the C-ESMP, particularly the mitigation measures, are implemented in an effective manner and also to evaluate subproject impacts on the key environmental and social parameters. Table 0-3 presents typical monitoring parameters that must be included at the implementation stage.

7.10 C-ESMP Implementation Cost

Implementation costs of the C-ESMP are considered part of the contract, and should be included in the bid costs. These include necessary and routine items to be part of the Civil Works, monitoring costs, PPE costs, and costs of E&S staff of contractor and consultant and E&S enhancement costs. Additional or special costs can be broken out separately in the BOQs.

7.11 Project Reports

7.11.1 Monthly Report

The contractor and consultant will submit monthly progress reports at the beginning of each following month to PIU/PSIPMU, presenting the records and issues for each month in question. The contents of the Report shall include, but not limited to, the following items and details:

- Record of major ESHS events in the execution of the Works, including Temporary Works, together with progress quantities of ESHS items, inspection records, monitoring records, incident records, and monthly construction progress photographs.
- The Contractor's latest organization and change from the previous month in E&S, if any.
- Schedule of the current number of all ESHS staff on Site for each category, showing the increase and decrease from the previous month.
- List of PPE currently owned on site showing the increase and decrease from the previous month.
- Principal PPE distributed, ordered and stocked on Site.
- Delivery or removal plan of equipment during the following month.
- Daily records of weather and river water level.

7.11.1.1 Completion Report

In addition, all contractors will submit a subproject completion Report to PIU/PSIPMU highlighting the parameters like cleaning of sites, restoring lands and camps to their original state (or other form agreed by the PIU/PSIPMU), electronic storage devices handed over to the implementing agencies, resolving any grievances etc. The parameters to be adopted based on the nature, scope and site of the projects and to be agreed among PIU/PSIPMU, CSC and contractors.

Table 0-3: Suggested Monitoring parameters

Parameter	Means of Monitoring	Frequency of Monitoring	Responsible Agency	
			Implementation	Supervision
Waste Management				
Household waste disposal	Audits of waste management facilities	Quarterly	PIU/PSIPMU with help from local waste management facilities	PIU/PSIPMU
Waste Management	Visual inspection of spoil disposal	Monthly	Contractor	CSC, PIU/PSIPMU
	Visual inspection that solid waste is disposed of at designated sites	Monthly	Contractor	CSC, PIU/PSIPMU
Agriculture				
Top Soil	Visual inspection on stripping, storage and reuse of topsoil	Monthly	Contractor	CSC, PIU/PSIPMU
Pesticide and fertilizer use	Sales of fertilizer and pesticide	Quarterly	PIU/PSIPMU with help from Agricultural office	PIU/PSIPMU
Forestry				
Landslides	Visual Inspection on the stability of landslide areas	Monthly	Contractor	CSC, PIU/PSIPMU
Wildlife (including	Surveys for wildlife and migratory birds	Half-yearly	PIU/PSIPMU through	CSC, PSIPMU

migratory birds)			nationally recognized institute	
Plantation	Visual inspection to ensure plantations are growing well.	Monthly	District Forest Office with support of civil society	PIU/PSIPMU External Monitor (if required)
Fishery				
Fish	Surveys for catch and diversity	Half-yearly	PIU/PSIPMU through nationally recognized institute	CSC, PIU/PSIPMU
	Surveys for fish (in the river upstream and downstream of the dam, reservoir, and tributaries)	Half-yearly	PIU/PSIPMU through nationally recognized institute	PIU/PSIPMU, External Monitor (if required)
	Monthly data on fish catches	Monthly	Fisheries Contractor	PIU/PSIPMU
River				
Surface water quality	Sampling and analysis of surface water quality (Turbidity, TSS, pH, TDS, TSS, EC, Cl, NH3-N, Fe, As, DO, BOD, COD, TC, FC, Oil, and Grease) and wastewater discharges for nearby water sources	Quarterly	Contractor	CSC, PIU/PSIPMU
		Annually	External Monitor (through a nationally recognized Laboratory)	PIU/PSIPMU through external monitor
	Spot measurements of pH, conductivity, and turbidity. Visual inspection of the presence of petroleum products.	Monthly	PIU/PSIPMU	CSC, PIU/ PSIPMU
Erosion	Visual inspection of erosion prevention measures and occurrence of erosion	Monthly	Contractor	CSC, PIU/ PSIPMU
Drinking water and sanitation	Ensure the construction workers are provided with safe water and sanitation facilities on the site	Weekly	Contractor	CSC, PIU/ PSIPMU
Road				
Noise and vibration	15-minutes noise monitoring	Quarterly	Contractor	CSC, PIU/ PSIPMU

	(at/near construction sites, campsites, offices, colonies, communities, quarry areas, and transportation routes)			
	15-minutes Spot measurements	Monthly	PIU/PSIPMU	CSC, PIU/ PSIPMU
Traffic Safety	Visual inspection to see whether Traffic Management Plan is implemented; record of accidents and near misses	Monthly	Contractor	CSC, PIU/ PSIPMU
Local Roads	Visual inspection to ensure local roads are not damaged	Monthly	Contractor	CSC, PIU/PSIPMU
Health & Environment				
Safety of workers	Usage of Personal Protective Equipment	Monthly	Contractor	CSC, PIU/, PSIPMU
	Unsafe acts and conditions	Daily	Contractor	CSC, PIU/ PSIPMU
	Accidents Reporting during Construction	Monthly	Contractor	CSC, PIU/ PSIPMU
Excavation sites	Visual inspection of the sites	Monthly	Contractor	CSC, PIU/ PSIPMU
Reinstatement of Work Sites	Visual Inspection	After completion of all works	Contractor	CSC, PIU/ PSIPMU
Air Quality (dust, smoke)	Visual inspection to ensure good standard equipment is in use and dust suppression measures (spraying of waters) are in place.	Weekly	Contractor	CSC, PIU/ PSIPMU
	Visual inspection to ensure the dust suppression work plan is being implemented	Weekly	Contractor	CSC, PIU/ PSIPMU
Air Quality (PM2.5, PM_{10}, NO_2, SO2, CO_2, CO)	Air quality monitoring for 24 hours for the parameters specified in the national air quality standards (at/near construction sites, campsites, offices, colonies, communities, quarry areas, and transportation routes)	Quarterly	Contractor	CSC, PIU/ PSIPMU
		Annually	External Monitor (through a nationally recognized laboratory)	CSC, PIU/ PSIPMU
Emissions from equipment	Visual Inspection	Monthly	Contractor	CSC, PIU/ PSIPMU

Fire hazards	Visual inspection for fuel (dry combustible debris, paper, wood etc.) buildups and sources of ignition	Monthly	Contractor	CSC, PIU/ PSIPMU
Spills from hydrocarbon and chemical storage	Visual Inspection for leaks and spills	Monthly	Contractor	CSC, PIU/ PSIPMU
Cultural and archeological Sites	Visual observation for Physical Cultural Resources	Monthly	Contractor	PIU/PSIPMU, External Monitor (if required)

Chapter 8 : STAKEHOLDER ENGAGEMENT AND DISCLOSURE

8.1 Stakeholders Engagement Plan

The GoSVG places great importance on involving stakeholders in determining and mitigating any environmental and social impacts associated with project implementation. The SEP process will be inclusive and meaningful throughout the project cycle. In doing so, the Project Team(s) will follow and be guided by ESS10 for open and transparent engagement to improve the environmental and social sustainability of projects, enhance project acceptance, and establish good practices and rapport during project implementation.

Since the SEP is considered a 'living' document, it will be revised continuously based on project/subproject implementation experiences. Accordingly, a separate Stakeholder Engagement Plan/SEP has already been prepared. A final version is in progress that will be the primary guiding document for sub-projects implementation. The following is a summary of the main contents of the SEP.

8.1.1 Stakeholder Consultations and Disclosure

Stakeholders were consulted during the baseline and shared with the project objectives and potential subprojects and impacts to understand their perceptions and responses and to design mitigation measures. The SEP provides a full description of the consultations held. The local communities remain an integral part of this social engagement process. A two-step approach was undertaken:

1. A collaborative approach amongst the relevant sectors, government agencies and users in the project area was applied to identify the input from key stakeholders. These include (i) Relevant Government Ministries/agencies or departments; (ii) Relevant NGOs and CBOs; and (iii) Research of secondary data was also important
2. Analysis of the level of impact the Project has on each stakeholder group, their level of interest, influence and importance, to identify the level of engagement required for each group; and Identify engagement strategy with each stakeholder group and assign responsibility to team members

Consultations held were inclusive that included project-affected groups/communities, civil society groups, and vulnerable/disadvantaged stakeholder groups such the indigenous groups, the poor, women, young girls, youth at risk, LGBTI+ people, people with disabilities and the elderly, among others. Instruments to disseminate information included leaflets/flyers, social media, radio, text blasts, posters etc.; the Project also received feedback via phone, e-mail, suggestion boxes, interviews and questionnaire surveys. Additional steps, such as household visits to vulnerable groups, were undertaken to share project information with all groups and people. The concerns expressed by stakeholders were used to prepare post-disaster mitigation measures, particularly compensation and rehabilitation resulting from the eruption and agricultural and crop losses experienced by the local farmers.

8.2 Strategies for Future Consultations

Consultations are to be carried out throughout the lifecycle of the project. In addition, the following strategies will be adopted to enhance stakeholders' participation and engagement during project/subprojects preparation (including design, procurement of contractors and supplies), construction, and operation and maintenance. The methods and strategies to be used may vary

according to the target audience and would include: (i) Public/community meetings, separate meetings for women and vulnerable groups; (ii) Face-to-face meetings; (iii) Focus Group Discussions; (iv) Workshop by experts; (v) periodic surveys/interviews with stakeholders; (vi) Disclosure of written information: brochures, posters, flyers, website Information boards or desks at various sites where project work to be undertaken.

8.3 Grievance Redress Mechanism (ESS10)

A Grievance Redress Mechanism (GRM) using the world bank ESS10 protocols has already been established. The GRM will enable the Project Authorities to address any grievances against the Project. Grievances that relate to project workers will be handled by a separate mechanism which is included as part of the project's Labour Management Procedures (LMP).

A grievance refers to an issue, concern, problem or claim, whether actual or perceived, that affects the physical, social and economic conditions of individuals and or communities in the project area of influence. They can occur at different stages of the project cycle. The project activity often determines the nature of the grievance at various stages of the project cycle. A key objective of GRM is to bolster the relationship and trust between the project staff and the affected parties. The Project Manager and the Environmental and Social Specialist/Social Specialist assigned to the project will be designated as the key officers in charge of grievances resolution.

The grievances processes are also laid out in the SEP, including phone numbers and contact e-mails/addresses of responsible officials for submitting grievances. Grievances will be registered, reviewed, deliberated and resolved between 15 and 30 days, depending on the type and levels required for resolution.

In addition to the project-established GRM, the stakeholders are also aware of the WB Grievance Redress Service (GRS) as an alternative avenue for individuals and communities should they need to submit complaints directly to the World Bank.

8.3.1 Addressing Gender-Based Violence

The GRM will specify an individual responsible for dealing with gender-based violence (GBV) issues, should they arise. A list of GBV service providers will be kept available by the project. The GRM will assist GBV survivors by referring them to GBV Services Provider(s) for support immediately after receiving a complaint directly from a survivor.

If a GBV-related incident occurs, it will be reported through the GRM, as appropriate and keeping the survivor information confidential. The GRM will also immediately notify both the Implementing Agency and the World Bank of any GBV complaints with the consent of the survivor.

8.3.2 Building GRM Awareness and Monitoring

The Project Manager or Social Specialist will initially brief all project staff, including consultants the Grievance Redressal Mechanism of the Project and explain to them the procedures and formats to be used, including the reporting procedures. The Project Manager or Environmental/Social Specialist will brief all project stakeholders on the GRM of the project and explain the procedures and formats to be used, including reporting procedures. Awareness campaigns will be conducted targeting project stakeholders to inform them of the availability of the mechanism; various mediums will be used- as detailed in previous sections of the SEP. The GRM will also be published on the Government websites

and/or Facebook page if available. Contact information for the GRM will be posted/disseminated within beneficiary communities. Monthly and Quarterly Reports on the GRM report will be prepared for review by Grievance Redress Committee. The Grievance Redressal Committee may review the nature of grievances that have been represented and recommend suitable changes if grievances are repeated.

8.4 Communication and Consultation Strategy (ESS10)

8.4.1 Information Disclosure (ESS10)

The SEP will be periodically revised and updated as necessary during project implementation. The Environmental and Social team will prepare Quarterly Reports on stakeholder engagement activities, including the Grievance Redressal issues of the Project. These reports will be used to provide input into the semi-annual reporting to the World Bank.

8.4.2 Information disclosure

As a standard practice, the project materials (ESCP, ESMF, ESMPs, SEP, RPF/RAP, GAP, LMP) will be made available to the public through the project office and dedicated Public Information Centres (PICs) to the established project sites. There will be a comments register book for comments and suggestions from the public that will be subsequently documented by the PIU/PSIPMU in a formal manner. The PIU/PSIPMU will continue applying a similar approach to disclosure for any additional E&S appraisal materials that will be prepared as part of the project development.

The ESCP, ESMF, ESMPs, and SEP will be made available in English for public review. The SEP will be released in the public domain simultaneously with the ESMF and ESMP reports. Further, all project materials, particularly safeguard documents, will be available to the public with unhindered access. Free printed booklet, project summary/brief copies of the ESMF/ESMPs and the SEP in English (with Creole English and French patois versions if the written forms are drastically different) will be made accessible to the general public.

Electronic copies of the ESCP, ESMF, ESMPs, RPF, RAP and SEP will be placed on the project website (http://veep.gov.vc/veep/index.php/publications). This will allow stakeholders with access to the Internet to view information about the planned development and to initiate their involvement in the public consultation process. The website will be equipped with an online feedback feature that will enable readers to leave their comments about the disclosed materials.

8.4.3 Access to Information

The Project Manager[11] will prepare monthly summaries and internal reports on public grievances, enquiries and related incidents, together with the status of implementation of associated corrective/preventative actions. The Project Manager will conduct local workshops annually to share activities of the project and summarize progress, particularly related to social, resettlement, and SEA-SH issues. A comprehensive report will be prepared following the annual workshops to record the outcomes and comments by stakeholders. If necessary, implementation strategies and modalities will be modified to enhance performance. The annual workshop report will be shared with the Bank and other stakeholders.

[11] The Social Specialist will prepare the the accidents and incidents logs as well as the monthly grievance report.

Annex-A: Sample Environmental and Social Screening Form

INTRODUCTION

The screening form is to be used by the PIU to identify the potential environmental and social risks and impacts for different types of project activities. It will help the PIU in identifying the relevant Environmental and Social Standards (ESSs), establishing an appropriate E&S risk rating for these subprojects or activities, and specifying the type of environmental and social assessment required, including specific instruments/plans. Use of this form will allow the PIU to create an initial view of the potential risks and impacts of a subproject. *It is not a substitute for project-specific E&S assessments or specific mitigation plans, if needed for different kinds of activities.*

The PIU E&S Specialist will fill out the screening forms for each main type of activity, which will be further reviewed by the E&S Focal Point. It has been agreed that the PIU will share the initial filled-up forms with the World Bank for review and clearance. Once completed, the E&S Specialist and the E&S Focal Point should sign the forms and include them in the quarterly E&S reports, including any activities that are "screened out" as a result of the analysis.

Project Name: Volcanic Eruption Emergency Project
Project Number: P176943
Sub-project Name:
Sub-Project Details in Brief: [Provide some details of the subproject objective, activities, location and other important information]
Sub-Project location/s:
Implementing Agency:

Section A. Project Details		
Sl. no	**Components**	**Details**
1	Subproject description	
2	Details of Alignment / Components (main components including construction activities) of subproject	
3	Location of the Sub-project Sites & Current Land use (Provide information for all sites involved in the sub-project), any historic land use (related to heritage or contamination)	

	Site Survey No:/s (with ownership), Geographical co-ordinates of the site			
Section B. Proposed Resource Use				
Sl. no	**Proposed Resources**	**Area/ Quantity**	**Unit**	**Details**
(i).	Land Area proposed to be used: Location-wise (in sq km / sq m)			
(ii).	Estimated energy consumption for the project activities – Source wise			
(iii).	Estimated usage of water quantity for the project: Ground Water and Surface water?			

Section C. Baseline Environmental Conditions				
Sl. no	**Environmental Aspects**	**Yes**	**No**	**Details**
1	Is the project site located on or adjacent to any of the following (Provide information for all sites and alignment of the project components/subcomponents, associated activities; mention distance to these features in meters/kilometres)			
i)	Critically Vulnerable Coastal Areas, Eco-sensitive Areas			
ii)	Cultural Heritage sites, Protected monuments			
iii)	Natural Forests / Protected Areas Is the project in an eco-sensitive or adjoining an eco-sensitive area? If Yes, provide details.			
iv)	Any other Wetlands/ Mangrove/ Estuarine Region?			
v)	Any Natural Habitat areas, areas with natural features?			
vi)	Any other Sensitive Environmental Components?			

vii)	Any Residences, schools, hospitals, sensitive receptors?			
viii)	Any culturally – socially important paths, areas/religious occupancies, burial grounds, tourist or pilgrim congregation areas, borders, etc?			
ix)	Any Drinking water source, upstream and downstream uses of rivers, etc?			
x)	Any Low-lying areas prone to flooding/areas of Tidal Influence?			
xi)	Details of Surface water quality at the intake point			
xii)	Any areas affected by other disasters?			
2	Is the site in Critical / Over Exploited condition?			
3	Is the area disaster-prone? If yes; list all disaster zone categories applicable			
4	Describe the soil and vegetation on site			
5	Is the site area and condition suitable for the proposed development?			
6	Describe existing pollution or degradation in the site(s)			
7	Any other remark on baseline condition?			

Section D. Anticipated Environmental Impacts: Impacts on Land, Geology and Soils						
Sl. no	**Impacts**	**No**	**Yes/ May create**	**Expected Risk Rating**	**Details**	**Risk Rating**
8	Will the proposed project cause the following on Land / Soil?					
i)	Impact on Surrounding Environmental Conditions, including Occupation on Low lying lands/flood plains					
ii)	Substantial removal of Top Soil (mention area in sqm)					
iii)	Any degradation of land/ecosystems expected due to the project?					

iv)	Loss or impacts on Cultural/heritage properties					
v)	Does the project activity involve cutting and filling/ blasting etc?					
vi)	Will the project cause physical changes in the project area (e.g., changes to the topography) due to earth filling, excavation, earthwork or any other activity?					
vii)	Will the project involve any quarrying/ mining etc?					
viii	Will the project / any of its components contaminate or pollute the Land?					
Section E. Impacts on Water Environment						
Sl. no	**Impacts**	**No**	**Yes/ May create**	**Expected Risk Rating**	**Details**	**Risk Rating**
9	Will the subproject or its components cause any of the following impacts on Water sources (Quantity or Quality):					
i)	Will the activities have proposed at the site(s) impact water quality (surface or underground) and water resource availability and use? Will this sub-project involve the dredging of water bodies, sea, canals, etc.					
ii)	Impacts on Water Resources					

iii)	Pollution of Water bodies/groundwater nearby or downstream					
iv)	Will the project affect the River /cannel flow pattern, stream pattern or any other irrigation canal?					
v)	Will the project result in the stagnation of water flow or ponding or weed growth					
Section F. Impacts on Biodiversity and Host Communities						
Sl. no	**Impacts**	**No**	**Yes/ May create**	**Expected Risk Rating**	**Details**	**Risk Rating**
10	Will the subproject or its components cause any of the following impacts on Biodiversity or the neighbourhood?					
i)	Will the project necessitate the cutting of Trees / Loss of Vegetation?					
ii)	Will the project result in Health & Safety Risks in the neighbourhood, including releasing toxic gases and accident risks?					
iii)	Potential risk of habitat fragmentation due to the clearing activities? (e.g. Hindrance to the local biodiversity like disturbing the migratory path of animals/ birds etc.)					

iv)	Potential Noise and Light Pollution or disturbance to surrounding habitats/communities.					
v)	Potential disruption to common property, accessibility, traffic disruptions, conflicts or disruption to the local community within the subproject area?					
Section G. Impacts due to Storage and Wastes: Pollution and Hazards						
Sl. no	**Impacts**	**No**	**Yes/ May create**	**Expected Risk Rating**	**Details**	**Risk Rating**
11	Will the subproject or its components cause any impact due to the storage of materials, wastes or pollution due to releases during various project activities					
i)	Will the project use or store dangerous substances (e.g., large quantities of hazardous chemicals/ materials like Chlorine, Diesel, Petroleum products; any other?					
ii)	Will the project produce solid or liquid wastes, including construction/demolition wastes (including dredging, de-weeding wastes, muck/silt, dust); polluted liquids?					

iii)	Will the project cause or increase air pollution or odour nuisance?					
iv)	Will the project generate or increase noise levels which will impact surrounding biodiversity or communities?					
v)	Will the project generate or increase visual blight or light pollution?					
vi)	Will the project cause water pollution? (of waterbodies/ groundwater)?					
vii)	Will the project involve dangerous construction activities which may be a safety concern to workers/ host communities					
viii	Is there a potential for the release of toxic gases or accident risks (e.g. potential fire outbreaks)					
12	Describe any other features of the project that could influence the ambient environment					

Section H. Suggested Environmental Enhancement Measures				
Sl. no	**Components**	**Yes**	**No**	**Details**
13	Has the subproject design considered the:			
i)	Energy conservation measures/ energy recovery options incorporated in subproject design			

ii)	Considered waste minimization or waste reuse/recycle options			
iii)	Rainwater harvesting, water recycling and other water resource enhancement measures			
iv)	Considerations for extreme events, drought, flood, other			
vi)	NOC for water withdrawal from the surface water source			
vii)	Mining Permit (for dredging)			
viii)	NOC for transportation and storage of diesel, oil and lubricants, etc.			
ix)	Others (Mention)			

Section I. Land Use, Resettlement, and/or Land Acquisition						
Sl. no	**Impacts**	**No**	**Yes/ May create**	**Expected Risk Rating**	**Details**	**Risk Rating**
1	Does the project involve the acquisition of private land?					
2	Alienation of any type of Government land, including that owned by Urban Local Body?					
3	Clearance of encroachment from Government/ Local body Land?					

4	Clearance of squatters/hawkers from Government/ Local Body Land?					
5	Number of structures, both authorized and/or unauthorized to be acquired/ cleared/					
6	The number of households to be displaced?					
7	Village common properties to be alienated Pasture Land (acres) Acquisition/burial ground and others specify?					
8	Existing land uses on and around the project area (e.g., community facilities, agriculture, tourism, private property) will be affected?					
9	Will the project result in construction workers or other people moving into or having access to the area (for a long-time period and in large numbers compared to permanent residents)?					
10	Are financial compensation measures expected to be needed?					
Section J. Loss of Crops, Fruit Trees, Household Infrastructure and livelihood						
Sl. no	**Impacts**	**No**	**Yes/ May create**	**Expected Risk Rating**	**Details**	**Risk Rating**

11	Will the project result in the permanent or temporary loss of the following?					
11.1	Crops?					
11.2	Fruit trees? Specify with numbers					
11.3	Petty Shops					
11.4	Vegetable/Fish/Meat vending					
11.5	Cycle repair shop					
11.6	Garage					
11.7	Tea stalls					
11.8	Grazing					
11.9	Loss of access to forest produce					
	Any others - specify					

Section K. Welfare, Employment, and Gender				
Sl.no	**Components**	**Yes**	**No**	**Details**
12	Is the project likely to provide local employment opportunities, including employment opportunities for women?			
13	Is the project being planned with sufficient attention to local poverty alleviation			

14	Is the project being designed with sufficient local participation (including the participation of women) in the planning, design, and implementation process?					
Section L. Historical, Archaeological, or Cultural Heritage Sites						
Sl. no	**Impacts**	**No**	**Yes/ May create**	**Expected Risk Rating**	**Details**	**Risk Rating**
15	Historical heritage site(s) require excavation near the same?					
16	Archaeological heritage site(s) require excavation near the same?					
17	Cultural heritage site(s) require excavation near the same?					
18	Graves or sacred locations require excavations near the same?					
Section M. Tribal Population/Indigenous People						
Sl. no	**Impacts**	**No**	**Yes/ May create**	**Expected Risk Rating**	**Details**	**Risk Rating**
19	Does this project involve the acquisition of any land belonging to Tribal people?					
Section N. Beneficiaries						
Sl. no	**Components**	**Approx. no.**			**Details**	
20	Population proposed to be benefitting from the proposed project					

21	No. of Females proposed to be benefitting from the proposed project		
22	Vulnerable households /population to benefit		
23	No. of Families to benefit		

This Screening sheet must be completed for each proposed subproject and forwarded to the Environment and Social Specialist and in Respective PIU/PSIPMU along with the following enclosures.

Enclosures:

1. Provide maps with the geographical location of the project;
2. An appropriately scaled map clearly showing the project area and project sites with land use, existing buildings, infrastructure, vegetation, adjacent land use, utility lines, access roads and any planned construction, and
3. Any other information to describe the project, locations and possible impact as required.
4. Land details for the project sites, location, survey numbers,
5. Extent available and required, land use classification, current use of the site,
6. Land ownership, alienation/acquisition status, as required along with a certificate giving availability of sites required for the project by the borrower

Project Categorization and Need for Standards Instruments, Oversight

Project Category	□ Low □ Moderate □ Substantial □ High
Key Reasons	
Environmental and Social Instruments Required	□ *Detailed E&S Documents* □ *ESMF* □ *RAP* □ *RF* □ *Site-specific* ESMP

Status	*Agency / Official*	*Name, Signature with Date and Seal*
Prepared by	EHS Specialist	

	Social Specialist	
Checked and Categorized as (low, moderate, substantial, high) by	PMU	
	EHS Specialist	
	Social Specialist	
Reviewed & accepted by	PMU	
	EHS Specialist	
	Social Specialist	

Instructions for how to fill out the form are as follows:

- Section A. Project Description - Provide a description of the overarching project and outline where the subproject fits into the overall project. Provide a description of the subproject, the components of it, and the AOI. The type of information to include is shown using this hypothetical example: the VEEP project is for the recovery of St. Vincent and Grenadines following the 2021 La Soufriere volcanic eruption. One of the subprojects as part of this larger project is to repair and improve the road network. This will be done in two phases – i) repair of existing damaged roads and ii) building new roads where necessary to improve the road network. The AOI is all roads that will require repair along with a 50 meter extended area for the dust and noise. The example is written in paragraph format. However, the actual information should be entered in the appropriate boxes of the form.
- Section B. Proposed Resource Use – in this section, list the area of the project location, the amount of energy that is estimated to be required, and the estimated amount of water usage. For example, two roads will need to be worked on; one 2km and another 3km. The main sources of energy will be fossil fuel for construction vehicles, hydro for running electrical equipment etc. (as part of the source analysis, the amount of energy used for each should be included). A similar source analysis should be performed for water usage.
- Section C. Baseline Environmental Conditions – in this section, fill out as much of the baseline information as possible. The baseline information should be related to the subproject, the baseline condition in the AOI.
- Section D – G – these sections should be treated as a checklist. If any impact is anticipated, then details on the type and degree of impact should be provided. The risk rating provided in Table 4-1 can be used to provide the rating for each of the impacts. The risks listed Table 4-2 can also be used to guide the rationale and rating. The 'Expected Risk Rating' should be based on information from Section C. and professional judgement. The 'Risk Rating' will be based on the information listed in the detailed column. For impacts with an 'Expected Risk Rating' of substantial or higher, detailed baseline information must be provided in the 'Details' section or a link to a more detailed

document can be included there. Note: if an impact is given an expected risk rating of moderate but while providing the details, it is deemed the rating will be substantial or higher, then the ratings should be adjusted accordingly and vice versa.

- Section H. Suggested Environmental Enhancement Measures – the components listed here are suggested measures that are meant to improve the project process by outlining the different components that can improve the mitigation measures. This section is also similar to a checklist; certain components will be more relevant for certain subprojects, and more details should be provided for those. By identifying these in the screening process, it will be easier to determine which components should be included in the project lifecycle.
- Section I. Land Use, Resettlement, and/or Land Acquisitions – this section will build on the baseline section (Section C). The baseline section should outline the landowner, the presence of settlers, and the types of land use in the AOI. If based on that information, it is determined that any form of land-use change, resettlement or land acquisition is necessary, then this section will require on-the field survey and research to fill out. All relevant national and ESF requirements should be met when engaging with stakeholders.
- Section J. Loss of Crops, Fruit Trees, Household Infrastructure and livelihood – similar to Section I, to fill out this section, it will be important to hold consultations with stakeholders and rely on baseline data.
- Section K. Welfare, Employment, and Gender – the components listed in this section are recommended components that should be part of the project. If any of these cannot be included in the project, the rationale for why should be provided.
- Section L – M – similar to Sections D – G, these sections are also a checklist. If impacts are anticipated, then details must be provided.
- Section N. Beneficiaries – the purpose of this section is to identify the beneficiaries from the completion of the specific subproject. In the case of the hypothetical road example, the beneficiaries will be the people living in the area and those who use the roads to travel to and from their destination.
- Project Categorization and Need for Environmental and Social Instruments, Oversight – Based on Bank's ESF, all projects are classified (including projects involving Financial Intermediaries (FIs)) into one of four classifications: High Risk, Substantial Risk, Moderate Risk or Low Risk. In determining the appropriate risk classification, the Bank takes into account relevant issues, such as the type, location, sensitivity, and scale of the project; the nature and magnitude of the potential environmental and social risks and impacts; and the capacity and commitment of the Borrower (including any other entity responsible for the implementation of the project) to manage the environmental and social risks and impacts in a manner consistent with the ESSs. Based on the risk ratings assigned for each of the different impacts, assign an overall risk rating for the subproject. The key reasons section will provide the rationale for the overall rating, making sure to outline all substantial and higher risks. Based on the overall risk rating, different E&S instruments may be required. For example, if the risk rating for resettlement is moderate or higher, but the overall project is considered moderate, only a RAP may be required. If the risk rating of the subproject is substantial or higher, detailed E&S documents, including ESMP, LMP, and SEP, will be required.

Detailed baseline information should be provided for the components of the subprojects that are expected to have a risk rating of substantial and higher.

Sample Environmental and Social Screening Form for Equipments

This form is to be used by the Project Implementation Unit (PIU) to screen for the potential environmental and social risks and impacts for project activities that involve the procurement, installation, disposal, and/or operation of various types of supplies and equipment. It will help the PIU in identifying the relevant Environmental and Social Standards (ESS), establishing an appropriate E&S risk rating for these activities, and specifying the type of environmental and social assessment required, including specific instruments/plans. Use of this form will allow the PIU to form an initial view of the potential risks and impacts of a subproject*. It is not a substitute for project-specific E&S assessments or specific mitigation plans, if needed for different kinds of activities.* The screening form will be used for sub-project procurement activities with potential E&S impacts (e.g., equipment installation, upgrading, disposal, etc.).

Subproject/Activity Name	
Location	
Line Ministry	
Estimated Investment	
Start/Completion Date	

Questions	Answer		ESS relevance	Due diligence / Actions
	Yes	no		
Does the subproject involve installation of equipment with on-site workers, contract workers, transporters, or other workers?			ESS1	ESIA/ESMP, SEP
Does the subproject involve rehabilitation or upgrading of facilities or space for the equipment, or other activity with physical footprints, which could create dust, noise, odours, or other possible impacts?			ESS1	ESIA/ESMP, SEP
Is there a sound regulatory framework and institutional capacity in place to accommodate, train, and operate the equipment safely? Will it require Standard Operating Procedures to be developed?			ESS1	ESIA/ESMP, SEP
Does the subproject involve recruitment of workers including direct, contracted, primary supply, and/or community workers?			ESS2	LMP, SEP
Does the subproject have appropriate OHS procedures in place, and an adequate supply of PPE (where necessary)?			ESS2, ESS3	ESIA/ESMP, LMP
Does the equipment have any hazardous or dangerous elements that pose community or worker risk during transportation or installation?			ESS4	ESIA/ESMP, TMP, CHSP

Questions	Answer		ESS relevance	Due diligence / Actions
	Yes	no		
If the equipment will replace old equipment, is there an adequate system in place (capacity, processes and management) to address demolition debris, e-waste, or hazardous waste (as relevant)?			ESS3	ESIA/ESMP, WMP
Does the subproject have a GM in place, to which all workers have access, designed to respond quickly and effectively?			ESS10	SEP, GM
Does the subproject involve use of security or military personnel during delivery, installation, or operation?			ESS4, ESS2	ESIA/ESMP, LMP
Is the subproject located within or in the vicinity of any ecologically sensitive areas?			ESS6	ESIA/ESMP
Is the subproject located within or in the vicinity of any known cultural heritage sites?			ESS8	ESIA/ESMP
Does the project area present considerable Gender-Based Violence (GBV) and Sexual Exploitation and Abuse (SEA) risk?			ESS1	ESIA/ESMP, SEP
Does the subproject carry risk that disadvantaged and vulnerable groups may have unequitable access to project benefits?			ESS1	ESIA/ESMP, SEP

Conclusions:

1. **Proposed Environmental and Social Risk Ratings (High, Substantial, Moderate or Low). Provide Justifications.**

2. **Proposed E&S Management Plans/ Instruments.**

Prepared by:

_____

Project E&S Specialist

Reviewed by:

_____

Project E&S Focal Point

Annex-B: Environmental and Social Code of Practices

Introduction

The objective of the Environmental and Social Code of Practices (ESCoPs) is to address all potential and general construction-related impacts and risks during the implementation of the Project. The ESCoPs consist of environmental management guidelines to be followed by the contractors for sustainable management of all environmental and social issues. These ESCoPs shall be in an appendix to the general conditions of all the contracts, including subcontracts, carried out under the Project.

The list of ESCoPs prepared for the Project is given below.

- ESCoP 1: Waste Management
- ESCoP 2: Fuels and Hazardous Goods Management
- ESCoP 3: Water Resources Management
- ESCoP 4: Drainage Management
- ESCoP 5: Soil Quality Management
- ESCoP 6: Erosion and Sediment Control
- ESCoP 7: Top Soil Management
- ESCoP 8: Topography and Landscaping
- ESCoP 9: Quarry Areas Development and Operation
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- ESCoP 10: Air and Dust Quality Management
- ESCoP 11: Noise and Vibration Management
- ESCoP 12: Protection of Flora
- ESCoP 13: Protection of Fauna
- ESCoP 14: Road Transport and Road Traffic Management
- ESCoP 15: Construction Camp Management
- ESCoP 16: Cultural and Religious Issues
- ESCoP 17: Construction Site Security
- ESCoP 18: Employment and Labour Rights
- ESCoP 19: Grievance Redress Mechanism

Contractors will prepare Construction Environmental and Social Management Plan (C-ESMP) and Occupational Health and Safety Plan (OHS Plan), in compliance with World Bank and Government Regulations and guidelines and based on the guidance given in the ESCoPs. The C-ESMP and OHS Plan will form part of the contract documents and will be used as a monitoring tool for compliance. It is mandatory for the main contractors procured directly by the project to include these ESCoPs in their subcontracts. Violation of the compliance requirements will be treated as non-compliance leading to corrections or penalties on the contractors.

ESCoP 1: Waste Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
General Waste	Soil and water pollution from the improper management of wastes and excess materials from the construction sites.	The Contractor shall • Develop a site-specific waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food waste etc.) prior to commencing construction and submit it to the supervision consultant for approval. • Organize disposal of all wastes generated during construction in the designated disposal sites approved by the Project. • Minimize the production of waste materials by 3R (Reduce, Recycle and Reuse) approach. • Segregate and reuse or recycle all the wastes, wherever practical. • Vehicles transporting solid waste shall be covered with tarps or nets to prevent spilling waste along the route. • Train and instruct all personnel in waste management practices and procedures as a component of the environmental induction process. • Provide refuse containers at each worksite. • Request suppliers to minimize packaging where practicable. • Place a high emphasis on good housekeeping practices. • Maintain all construction sites in a cleaner, tidy and safe condition and provide and maintain appropriate facilities as temporary storage of all wastes before transportation and final disposal. • Potable water should be supplied in bulk containers to reduce the quantity of plastic waste (plastic bottles). Plastic bag use should be avoided.
Hazardous Waste	Health hazards and environmental impacts due to improper waste management practices	The Contractor shall • Collect chemical wastes in 200 liter drums (or similar sealed containers), appropriately labelled for safe transport to an approved chemical waste depot. • Store, transport, and handle all chemicals, avoiding potential environmental pollution. • Store all hazardous wastes appropriately in bunded areas away from water courses. • Make available Material Safety Data Sheets (MSDS) for hazardous materials on-site during construction. • Collect hydrocarbon wastes, including lube oils, for safe transport off-site for reuse, recycling, treatment or disposal at approved locations. • Construct concrete or other impermeable floorings to prevent seepage in case of spills.

ESCoP 2: Fuels and Hazardous Goods Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Fuels and hazardous goods.	Materials used in construction have the potential to be a source of contamination. Improper storage and handling of fuels, lubricants, chemicals and hazardous goods/materials on-site and potential spills from these goods may harm the environment or health of construction workers.	The Contractor shall • Prepare spill control procedures and submit them for supervision consultant approval. • Train the relevant construction personnel in the handling of fuels and spill control procedures. • Store dangerous goods in bunded areas on top of a sealed plastic sheet away from watercourses. • Refuelling shall occur only within bunded areas. • Store and use fuels in accordance with material safety data sheets (MSDS). Make available MSDS for chemicals and dangerous goods on-site. • Transport waste of dangerous goods, which cannot be recycled, to a designated disposal site. • Provide absorbent and containment material (e.g., absorbent matting) where hazardous materials are used and stored, and ensure personnel are trained in their correct use. • Provide protective clothing, safety boots, helmets, masks, gloves, and goggles, to the construction personnel, appropriate to the materials in use. • Make sure all containers, drums, and tanks that are used for storage are in good condition and are labelled with the expiry date. Any container, drum, or tank that is dented, cracked, or rusted might eventually leak. Check for leakage regularly to identify potential problems before they occur. • Store and use fuels in accordance with material safety data sheets (MSDSs). • Store all liquid fuels in fully bunded storage containers with appropriate volumes, a roof, a collection point and an appropriate filling/decanting point. • Store hazardous materials above flood level considered for construction purposes • Put containers and drums in temporary storage in clearly marked areas where they will not be run over by vehicles or heavy machinery. The area shall preferably slope or drain to a safe collection area in the event of a spill. • Take all precautionary measures when handling and storing fuels and lubricants, avoiding environmental pollution. • Avoid the use of materials with greater potential for contamination by substituting them with more environmentally friendly materials.

ESCoP 3: Water Resources Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Hazardous material and Waste	Water pollution from the storage, handling and disposal of hazardous materials and general construction waste and accidental spillage	The Contractor shall • Follow the management guidelines proposed in ESCoPs 1 and 2. • Minimize the generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes). These substances must not enter waterways or stormwater systems.
Discharge from construction sites	Construction activities and sewerage from construction sites and work camps may affect the surface water quality. The construction works will modify the ground cover and topography changing the surface water drainage patterns of the area. These changes in the hydrological regime lead to an increased rate of runoff, increase in sediment and contaminant loading, increased flooding, and affect the habitat of fish and other aquatic biology.	The Contractor shall • Install temporary drainage works (channels and bunds) in areas required for sediment and erosion control and around storage areas for construction materials. • Install temporary sediment basins, where appropriate, to capture sediment-laden run-off from the site. • Divert runoff from undisturbed areas around the construction site. • Stockpile materials away from drainage lines • Prevent all solid and liquid wastes from entering waterways by collecting solid waste, oils, chemicals, bitumen spray waste and wastewater from brick, concrete and asphalt cutting where possible and transport to an approved waste disposal site or recycling depot. • Wash out ready-mix concrete agitators and concrete handling equipment at washing facilities off-site or into approved bunded areas on site. Ensure that the tires of construction vehicles are cleaned in the washing bay (constructed at the entrance of the construction site) to remove the mud from the wheels. This should be done at every exit of each construction vehicle to ensure the local roads are kept clean.
Soil erosion and siltation	Soil erosion and dust from the material stockpiles will increase the sediment and contaminant loading of surface water bodies.	The Contractor shall • Stabilize the cleared areas not used for construction activities with vegetation or appropriate surface water treatments as soon as practicable following earthwork to minimize erosion. • Ensure that roads used by construction vehicles are swept regularly to remove dust and sediment.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		• Water the loose material stockpiles, access roads and bare soils on an as required basis to minimize dust. Increase the watering frequency during periods of high risk (e.g., high winds).
Construction activities in water bodies	Construction works in the water bodies will increase sediment and contaminant loading and affect the habitat of fish and other aquatic biology.	The Contractor Shall • Dewater sites by pumping water to a sediment basin prior to release off site – do not pump directly off-site. • Monitor the water quality in the runoff from the site or areas affected by dredge/excavation plumes and improve work practices as necessary. • Protect water bodies from sediment loads by silt screens or other barriers. • Minimize the generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes). These substances must not enter waterways or stormwater systems. • Do not discharge cement and water curing used for cement concrete directly into water courses and drainage inlets.
Drinking water	Untreated surface water is not suitable for drinking purposes due to the presence of suspended solids and E.coli.	The Contractor Shall • Provide drinking water that meets NEQS standards. Drinking water is to be chlorinated at the source and ensure the presence of residual chlorine 0.1 ~ 0.25 ppm as the minimum after 30 minutes of chlorine contact time.

ESCoP 4: Drainage Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Excavation and earth works, and construction yards	Lack of proper drainage for rainwater/liquid waste or wastewater owing to the construction activities harms the environment in terms of water and soil contamination and mosquito growth.	The Contractor shall • Prepare drainage management procedures and submit them for supervision consultant approval. • Prepare a program to prevent/avoid standing waters, which the supervision consultant will verify in advance and confirm during implementation. • Provide alternative drainage for rainwater if the construction works/earth-fillings cut the established drainage line. • Establish a local drainage line with an appropriate silt collector and silt screen for rainwater or wastewater connecting to the existing established drainage lines already there.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		• Rehabilitate road drainage structures immediately if damaged by contractors' road transports. • Build new drainage lines as appropriate and required for wastewater from construction yards connecting to the available nearby recipient water bodies. Ensure wastewater quality conforms to NEQS, before it is discharged into the recipient water bodies. • Ensure that there will be no water stagnation at the construction sites and camps. • Provide appropriate silt collector and silt screen at the inlet and manholes and periodically clean the drainage system to avoid drainage congestion. • Protect natural slopes of drainage channels to ensure adequate stormwater drains. • Regularly inspect and maintain all drainage channels to assess and alleviate any drainage congestion problem.
Ponding of water	Health hazards due to mosquito breeding	• Do not allow ponding of water, especially near the waste storage areas and construction camps. • Discard all the storage containers that are capable of storing water after use or store them in an inverted position.

ESCoP 5: Soil Quality Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Storage of hazardous and toxic chemicals	Spillage of hazardous and toxic chemicals will contaminate the soils	The Contractor shall • Strictly manage the waste management plans proposed in ESCoP1 and storage of materials in ESCoP2. • Construct appropriate spill contaminant facilities for all fuel storage areas. • Establish and maintain a hazardous material register detailing the location and quantities of hazardous substances, including their storage and their disposal. • Train personnel and implement safe work practices to minimize the risk of spillage. • Identify the cause of contamination, if it is reported, and contain the area of contamination. The impact may be contained by isolating the source or implementing controls around the affected site. • Remediate the contaminated land using the most appropriate available method.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction material stockpiles	Erosion from construction material stockpiles may contaminate the soils	The Contractor shall • Protect the toe of all stockpiles, where erosion is likely to occur, with silt fences, straw bales or bunds.

ESCoP 6: Erosion and Sediment Control

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Clearing of construction sites	Cleared areas and slopes are susceptible for the erosion of top soils, which affects the growth of vegetation and causes ecological imbalance.	The Contractor shall • Prepare site-specific erosion and sediment control measures and submit them for supervision consultant approval. • Reinstate and protect cleared areas as soon as possible. • Cover the unused area of disturbed or exposed surfaces immediately with mulch/grass turf/tree plantations.
Construction activities and material stockpiles	The impact of soil erosion are (i) Increased run off and sedimentation causing a greater flood hazard downstream, and (ii) destruction of the aquatic environment by erosion and/or deposition of sediment damaging the spawning grounds of fish	The Contractor shall • Locate stockpiles away from drainage lines. • Protect the toe of all stockpiles, where erosion is likely to occur, with silt fences, straw bales or bunds. • Remove debris from drainage paths and sediment control structures. • Cover the loose sediments of construction material and water them if required. • Divert natural runoff around construction areas prior to any site disturbance. • Install protective measures on site prior to construction, for example, sediment traps. • Install 'cut off drains' on large cut/fill batter slopes to control water runoff speed and hence erosion. • Observe the performance of drainage structures and erosion controls during rain and modify them as required.
Soil erosion and siltation	Soil erosion and dust from the material stockpiles will increase the sediment and contaminant loading of surface water bodies.	The Contractor shall • Stabilize the cleared areas not used for construction activities with vegetation or appropriate surface water treatments as soon as practicable following earthwork to minimize erosion. • Ensure that roads used by construction vehicles are swept regularly to remove sediment.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		• Water the material stockpiles, access roads and bare soils on an as required basis to minimize dust. Increase the watering frequency during periods of high risk (e.g. high winds).

ESCoP 7: Top Soil Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Land clearing and earth works	Earthworks will impact the fertile top soils that are enriched with nutrients required for plant growth or agricultural development.	The Contractor shall • Strip the topsoil to a depth of 15 cm and store in stockpiles of height not exceeding 2m. • Remove unwanted materials from topsoil like grass, roots of trees and similar others. • The stockpiles will be done in slopes of 2:1 to reduce surface runoff and enhance percolation through the mass of stored soil. • Locate topsoil stockpiles in areas outside drainage lines and protect them from erosion. • Construct diversion channels and silt fences around the topsoil stockpiles to prevent erosion and loss of topsoil. • Spread the topsoil to maintain the physico-chemical and biological activity of the soil. The stored topsoil will be utilized for covering all disturbed areas and along the proposed plantation sites. • Prior to the re-spreading of topsoil, the ground surface will be ripped to assist the bunding of the soil layers, water penetration and revegetation
Transport	Vehicular movement outside ROW or temporary access roads will affect the soil fertility of the agricultural lands	• Limit equipment and vehicular movements to within the approved construction zone. • Plan construction access to make use, if possible, of the final road alignment.

ESCoP 8: Topography and Landscaping

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Land clearing and earth works	Construction activities, especially earthworks, will change topography	The Contractor shall

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	and disturb the natural rainwater/floodwater drainage, as well as will change the local landscape.	• Prepare the landscaping and plantation plan and submit the plan for supervision consultant approval. • Ensure the topography of the final surface of all raised lands (construction yards, approach roads and rails, access roads, etc.) are conducive to enhancing the natural draining of rainwater/flood water. • Keep the final or finished surface of all the raised lands free from any kind of depression that causes waterlogging. • Undertake mitigation measures for erosion control/prevention by grass-turfing and tree plantation, where there is a possibility of rain-cut that will change the shape of topography. • Cover immediately the uncovered open surface that has no use of construction activities with grass-cover and tree plantation to prevent soil erosion and bring improved landscaping. • Reinstate the natural landscape of the ancillary construction sites after completion of works.

ESCoP 9: Quarry Areas Development and Operation

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Development and operation of borrow areas	Borrow areas will have impacts on local topography, landscaping and natural drainage.	The Contractor shall • Prepare a quarry area management plan and submit the plan for supervision consultant approval. • Use only approved quarries and borrow sites • Identify new borrow and quarry areas in consultation with Project Director, if required. • The contractor shall ensure that no forced or child labour is used in borrow areas • Reuse excavated or disposed of material available in the project to the maximum extent possible. • Store topsoil for reinstatement and landscaping. • Develop surface water collection and drainage systems, anti-erosion measures (berms, revegetation etc.) and retaining walls and gabions where required. Implement mitigation measures in ESCOP 3: Water Resources Management, ESCoP 6: Erosion and Sediment Control • The use of explosives should be used in as much minimum quantity as possible to reduce noise, vibration and dust.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		• Control dust and air quality deterioration by application of watering and implementing mitigation measures proposed in ESCoP 10: Air Quality Management • Noise and vibration control by ESCoP 11: Noise and Vibration Management.

ESCoP 10: Air and Dust Quality Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction vehicular traffic	Air quality can be adversely affected by vehicle exhaust emissions and the combustion of fuels.	The Contractor shall • Prepare an air quality management plan (under the Pollution Prevention Plan) and submit the plan for supervision consultant approval. • Fit vehicles with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition. • Operate the vehicles in a fuel-efficient manner. • Cover hauls vehicles carrying dusty materials moving outside the construction site. • Impose speed limits on all vehicle movement at the worksite to reduce dust emissions. • Control the movement of construction traffic. • Water construction materials prior to loading and transport. • Service all vehicles regularly to minimize emissions. • Limit the idling time of vehicles not more than 2 minutes.
Construction machinery	Air quality can be adversely affected by emissions from machinery and the combustion of fuels.	The Contractor shall • Fit machinery with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition in accordance with the specifications defined by their manufacturers to maximize combustion efficiency and minimize contaminant emissions. Proof or maintenance register shall be required by the equipment suppliers and contractors/subcontractors. • Focus special attention on containing the emissions from generators. • Machinery causing excess pollution (e.g., visible smoke) will be banned from construction sites.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		• Service all equipment regularly to minimize emissions. • Provide filtering systems, duct collectors or humidification or other techniques (as applicable) to the concrete batching and mixing plant to control the particle emissions in all its stages, including unloading, collection, aggregate handling, cement dumping, circulation of trucks and machinery inside the installations.
Construction activities	Dust generation from construction sites, material stockpiles and access roads is a nuisance in the environment and can be a health hazard, and also can affect the local crops;	The Contractor shall • Water the material stockpiles, access roads and bare soils on an as required basis to minimize the potential for environmental nuisance due to dust. Increase the watering frequency during periods of high risk (e.g. high winds). Stored materials such as gravel and sand shall be covered and confined to avoid their being wind-drifted. • Minimize the extent and period of exposure to bare surfaces. • Restore disturbed areas as soon as practicable by vegetation/grass-turfing. • Store the cement in silos and minimize the emissions from silos by equipping them with filters. • Establish adequate locations for storage, mixing and loading of construction materials in a way that dust dispersion is prevented because of such operations. • Not water as dust suppression on potentially contaminated areas so that a liquid waste stream will be generated. • Crushing of rocky and aggregate materials shall be wet-crushed or performed with particle emission control systems. • Not permit the burning of solid waste.

ESCoP 11: Noise and Vibration Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction vehicular traffic	Noise quality will be deteriorated due to vehicular traffic	The Contractor shall • Prepare a noise and vibration management plan (under the Pollution Prevention Plan) and submit the plan for supervision consultant approval. • Maintain all vehicles in order to keep it in good working order in accordance with manufacturers' maintenance procedures. • Make sure all drivers will comply with the traffic codes concerning maximum speed limit, driving hours, etc.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		• Organize the loading and unloading of trucks and handling operations for the purpose of minimizing construction noise on the work site.
Construction machinery	Noise and vibration may have an impact on people, property, fauna, livestock and the natural environment.	The Contractor shall • Appropriately site all noise-generating activities to avoid noise pollution to local residents. • Use the quietest available plant and equipment. • Maintain all equipment in order to keep it in good working order in accordance with manufacturers' maintenance procedures. Equipment suppliers and contractors shall present proof of maintenance register of their equipment. • Install acoustic enclosures around generators to reduce noise levels. • Fit high-efficiency mufflers to appropriate construction equipment. • Avoid the unnecessary use of alarms, horns and sirens.
Construction activity	Noise and vibration may have an impact on people, property, fauna, livestock and the natural environment.	The Contractor shall • Notify adjacent landholders prior to any typical noise events outside of daylight hours. • Educate the operators of construction equipment on potential noise problems and the techniques to minimize noise emissions. • Employ the best available work practices on-site to minimize occupational noise levels. • Install temporary noise control barriers where appropriate. • Notify affected people if major noisy activities will be undertaken, e.g. blasting. • Plan activities on site and deliveries to and from the site to minimize impact. • Monitor and analyze noise and vibration results and adjust construction practices as required. • Avoid undertaking the noisiest activities, where possible, when working at night near residential areas.

ESCoP 12: Protection of Flora

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Vegetation clearance	Local flora is important to provide shelters for the birds, offer fruits and/or timber/firewood, protect soil erosion and	The Contractor shall • Prepare a plan for the protection of flora and submit the plan for supervision consultant approval. • Minimize disturbance to surrounding vegetation. • Use the appropriate type and minimum machine size to avoid disturbance to adjacent vegetation. • Get approval from the supervision consultant for clearance of vegetation.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	overall keep the environment very friendly to human living. As such, damage to flora has a wide range of adverse environmental impacts.	• Make selective and careful pruning of trees where possible to reduce the need for tree removal. • Control noxious weeds by disposing of them at designated dump sites or burn on site. • Clear only the vegetation that needs to be cleared in accordance with the engineering plans and designs. These measures are applicable to both the construction areas as well as to any associated activities such as sites for stockpiles, disposal of fill a, etc. • Not burn off cleared vegetation – where feasible, chip or mulch and reuse it for the rehabilitation of affected areas, temporary access tracks or landscaping. Mulch provides a seed source, can limit embankment erosion, retains soil moisture and nutrients, and encourages re-growth and protection from weeds. • Return topsoil and mulched vegetation (in areas of native vegetation) to approximately the same area of the roadside it came from. • Avoid work within the drip line of trees to prevent damage to the tree roots and to compact the soil. • Minimize the length of time the ground is exposed or excavation left open by clearing and re-vegetate the area at the earliest practically possible. • Ensure excavation works occur progressively and re-vegetation done at the earliest • Provide adequate knowledge to the workers regarding nature protection and the need to avoid felling trees during construction • Supply appropriate fuel in the work camps to prevent fuel wood collection.

ESCoP 13: Protection of Fauna

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction activities	The location of construction activities can result in the loss of wildlife habitat and habitat quality	The Contractor shall • Prepare a plan for the protection of fauna and submit the plan for supervision consultant approval. • Limit the construction works within the designated sites allocated to the contractors. • Check the site for animals trapped in or in danger from site works and use a qualified person to relocate the animal.
	Impact on migratory birds, their habitat and their active nests	The Contractor shall • Not be permitted to destroy active nests or eggs of migratory birds.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		• Minimize tree removal during the bird breeding season. If work must be continued during the bird breeding season, a nest survey will be conducted by a qualified biologist to identify and locate active nests before the commencement of work. • If bird nests are located/ detected within the ledges and roadside embankments, then those areas should be avoided. • Petroleum products should not come in contact with natural and sensitive ecosystems. The contractor must minimize the release of oil, oil wastes or any other substances harmful to migratory birds' habitats, to any waters, wetlands or any areas frequented by migratory birds.
Vegetation clearance	Clearance of vegetation may impact shelter, feeding and/or breeding and/or physical destruction and severing of habitat areas	The Contractor shall • Restrict the tree removal to the minimum numbers required. • Relocate hollows, where appropriate. • Fell the hollow-bearing trees in a manner which reduces the potential for fauna mortality. Felled trees will be inspected after felling for fauna and, if identified and readily accessible, will be removed and relocated or rendered assistance if injured. After felling, hollow-bearing trees will remain unmoved overnight to allow animals to move of their own volition.
Night time lighting	Lighting from construction sites and construction camps may affect the visibility of nighttime migratory birds that use the moon and stars for navigation during their migrations.	The Contractor shall • Use lower-wattage flat lens fixtures that direct light down and reduce glare, thus reducing light pollution, • Avoid flood lights unless they are absolutely required. • Use motion-sensitive lighting to minimize unneeded lighting. • Use, if possible, green lights that are considered as bird's friendly lighting instead of white or red coloured lights. • Install light shades or plan the direction of lights to reduce light spilling outside the construction area.
Construction camps	Illegal poaching	The Contractor shall • Provide adequate knowledge to the workers regarding the protection of flora and fauna and relevant government regulations and punishments for illegal poaching. • Ensure that staff and Subcontractors are trained and empowered to identify, address and report potential environmental problems.

ESCoP 14: Road Transport and Road Traffic Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction vehicular traffic	Increased traffic use of the road by construction vehicles will affect the movement of normal road traffic and the road users' safety.	The Contractor shall • Prepare a traffic management plan and submit the plan for supervision consultant approval. • Strictly follow the Project's 'Traffic Management Plan' and work in close coordination with the Traffic Management Unit. • Prepare and submit an additional traffic plan if any of his traffic routes are not covered in the Project's Traffic Management Plan and requires traffic diversion and management. • Include in the traffic plan to ensure uninterrupted traffic movement during construction: detailed drawings of traffic arrangements showing all detours, temporary roads, temporary bridges, temporary diversions, necessary barricades, warning signs / lights, road signs etc. • Provide signs at strategic locations of the roads complying with the schedules of signs contained in the National Traffic Regulations.
	Accidents and spillage of fuels and chemicals	The Contractor shall • Restrict truck deliveries, where practicable, to daytime working hours. • Restrict the transport of oversize loads. • Operate vehicles, if possible, during non-peak periods to minimize traffic disruptions. • Enforce on-site speed limit. • Report any accident within 12-24 hours.

ESCoP 15: Construction Camp Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Siting and Location of construction camps	Campsites for construction workers are important locations that have significant impacts, such as health and safety hazards on local resources and the	The Contractor shall • Prepare a construction camp management plan ensuring labour influx management and submit the plan to NTDC, WB and supervision consultant for approval. • Locate the construction camps within the designed sites or in areas which are acceptable from an environmental, cultural or social point of view. • Consider the location of construction camps away from communities in order to avoid social conflict in using natural resources such as water or to avoid the possible adverse impacts of the construction camps on the surrounding communities.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	infrastructure of nearby communities.	• Submit to the supervision consultant for approval a detailed layout plan for the development of the construction camp showing the relative locations of all temporary buildings and facilities that are to be constructed together with the location of site roads, fuel storage areas (for use in power supply generators), solid waste management and dumping locations, and drainage facilities, prior to the development of the construction camps. • Local authorities responsible for health, religion, and security shall be duly informed on the set up of camp facilities so as to maintain effective surveillance over public health, social and security matters.
Construction Camp Facilities	Lack of proper infrastructure facilities, such as housing, water supply and sanitation facilities, will increase pressure on the local services and generate substandard living standards and health hazards.	The contractor shall provide the following facilities in the campsites • Consider the impacts of camps on local communities, keep distance and educate workers on the code of conduct. • Adequate housing for all workers. • Safe and reliable water supply, which should meet NEQS. Drinking water is to be chlorinated at the source, and ensure the presence of residual chlorine 0.1 ~ 0.25 ppm at a minimum after 30 minutes of chlorine contact time (WHO guideline). • Hygienic sanitary facilities and sewerage system. The toilets and domestic wastewater will be collected through common sewerage. Provide separate latrines and bathing places for males and females with total isolation by location. The minimum number of toilet facilities required is one toilet for every ten persons. • Treatment facilities for sewerage of toilets and domestic wastes. • Stormwater drainage facilities. • Paved internal roads. • Provide in-house community/common entertainment facilities. Dependence of local entertainment outlets by the construction camps to be discouraged/prohibited to the extent possible.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Disposal of waste	Management of waste is crucial to minimize impacts on the environment	The Contractor shall • Ensure proper collection and disposal of solid wastes within the construction camps. • Insist waste separation by source; organic wastes in one container and inorganic wastes in another container at the household level. • Store inorganic wastes in a safe place within the household and clear organic wastes daily to the waste collector. Establish waste collection, transportation and disposal systems with the manpower and equipment/vehicles needed. • Do not establish site-specific landfill sites. All solid waste will be collected and removed from the work camps and dispose of in approved waste disposal sites.
Fuel supplies for cooking purposes	Illegal sourcing of fuel wood by construction workers will impact the natural flora and fauna	The Contractor shall • Provide fuel to the construction camps for their domestic purpose in order to discourage them from using fuel wood or other biomass. • Made available alternative fuels like natural gas or kerosene on ration to the workforce to prevent them from using biomass for cooking. • Conduct awareness campaigns to educate workers on preserving the protecting biodiversity and wildlife of the project area and relevant government regulations and punishments on wildlife protection.
Health and Hygiene	Increased risk of communicable diseases and burden on local health services to be transmitted, including malaria, exacerbated by	The Contractor shall • Provide adequate health care facilities within construction sites. • Provide first aid facility round the clock. Maintain stock of medicines in the facility and appoint full-time designated first aider or nurse. • Provide an ambulance facility for the labourers to be transported to the nearest hospitals during an emergency.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	inadequate health and safety practices.	• Initial health screening of the labourers coming from outside areas. • Train all construction workers in basic sanitation and health care issues and safety matters and on the specific hazards of their work. • Provide adequate drainage facilities throughout the camps to ensure that disease vectors such as stagnant water bodies and puddles do not form. Regular mosquito repellant sprays during the rainy season in offices and construction camps, and yards. • Do not dispose of food waste openly, as that will attract rats and stray dogs. • Carry out short training sessions on best hygiene practices to be mandatorily participated by all workers. Place display boards at strategic locations within the camps containing messages on best hygienic practices.
Safety	Inadequate safety facilities in the construction camps may create security problems and fire hazards	The Contractor shall • Provide appropriate security personnel (police or private security guards) and enclosures to prevent unauthorized entry into the camp area. • Maintain a register to keep track of a head count of persons present in the camp at any given time. • Encourage the use of flameproof material for the construction of labour housing/site office. Also, ensure that these houses/rooms are of sound construction and capable of withstanding windstorms/cyclones. • Provide the appropriate type of firefighting equipment suitable for the construction camps • Display emergency contact numbers clearly and prominently at strategic places in camps. • Communicate the roles and responsibilities of labourers in case of emergency in the monthly meetings with contractors.
Social and cultural aspects of Camp setup	Labor Influx in the project area will have the risk of social conflict, illicit behaviour and crime burden on and	The Contractor will • The Contractor will schedule construction time, particularly near the settlements, to cause the least disturbance to the local population, particularly women.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	competition for public service provision	• The contractor will take due care of the local community and observe the sanctity of local customs and traditions of his staff. The contractor will warn the staff strictly not to involve in any unethical activities and to obey the local norms and cultural restrictions. • The Contractor will carry out the construction activities in such a way that the open defecation timings by the local community should not be affected. The normal defecation timings are early in the morning and late in the evening. So, the Contractor will have to take care of these timings. • During construction activities, if the privacy of the nearby households is affected, the Contractor will inform the house owner to make some arrangements. Similarly, the Contractor will take care as much as possible that the construction activities should not affect privacy. • The Contractor will also ensure that noise and light pollution from the labour camp is kept at minimal levels, especially at night. • Ensure an operational Grievance Mechanism accessible to the public is available.
Site Restoration	Restoration of the construction camps to their original condition requires the demolition of construction camps.	The Contractor shall • Dismantle and remove from the site all facilities established within the construction camp, including the perimeter fence and lockable gates at the completion of the construction work. • Dismantle camps in phases and as the work gets decreased and not wait for the entire work to be completed. • Give prior notice to the labourers before demolishing their camps/units. • Maintain the noise levels within the national standards during demolition activities. • Different contractors should be hired to demolish different structures to promote the recycling or reuse of demolished material. • Reuse the demolition debris to a maximum extent. Dispose of remaining debris at the designated waste disposal site. • Hand over the construction camps with all built facilities as it is if the agreement between both parties (contactor and land-owner) has been made so.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		• Restore the site to its condition prior to commencement of the works or to an agreed condition with the landowner.

ESCoP 16: Cultural and Religious Issues

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction activities near religious and cultural sites	Disturbance from construction works to the cultural and religious sites, and contractors' lack of knowledge of cultural issues cause social disturbances.	The Contractor shall • Communicate to the public through community consultation regarding the scope and schedule of construction, as well as certain construction activities causing disruptions or access restrictions. • Not block access to cultural and religious sites, wherever possible. • Restrict all construction activities within the footprints of the construction sites. • Stop construction works that produce noise (particularly during prayer time) should there be any mosque/religious/educational institutions close to the construction sites, and users make objections. • Take special care and use appropriate equipment when working next to a cultural/religious institution. • Stop work immediately and notify the site manager if, during construction, an archaeological or burial site is discovered. It is an offence to recommence work in the vicinity of the site until approval to continue is given. • Provide separate prayer facilities to the construction workers. • Show appropriate behaviour with all construction workers, especially women and elderly people. • Allow the workers to participate in praying during construction time. • Resolve cultural issues in consultation with local leaders and supervision consultants. • Establish a mechanism that allows local people to raise grievances arising from the construction process. • Inform the local authorities responsible for health, religion and security duly informed before the commencement of civil works so as to maintain effective surveillance over public health, social and security matters.

ESCoP 17: Construction Site Security

Project Activity/ Impact Source	Impacts /Concerns	Mitigation Measures/ Management Guidelines
Construction Phase	Inadequate construction site security poses a significant risk to assets, construction materials and property. Theft/vandalism of assets, materials and property would increase construction costs and cause delays in project completion.	The Contractor shall: • Provide appropriate security personnel (i.e. security guards) to prevent unauthorized entry into the camp area. • Employ a night watchman for periods of significant on-site storage or when the area necessitates. • Ensure all assets (i.e., tools, equipment, etc.) and construction materials at the construction site are identified, inventoried and tracked as closely as possible. All assets should be clearly labelled and marked. Keep records of tool serial numbers and check inventory on a regular basis. • All tools and equipment should have a check out/in the system, and if not in use, should be secured and stored in a proper place to prevent theft or loss. Provide storage sheds for the secure storage of equipment and tools when not in use. • Ensure there is proper fencing around the construction site perimeter. Fencing should be chain-link at least 2.4 m high and secured with a steel chain and lock. If possible, the entire site should be fenced; if this is not possible, make sure the construction trailer and any equipment storage areas are fenced. • Ensure the construction site has controlled access points (one or two entry points at most), allowing for close monitoring of comings and goings from the site. • Workers should be easily identified and have credentials that indicate site access. • No trespassing signs should be posted in conspicuous areas throughout the job site. • A list of employees who have after-hour access to the property should be available to the BWB and local authorities. • Ensure the job site is properly lighted at night. Well-lit areas should include any office trailers and equipment storage trailers. Floodlights operated by sensors should also be installed where appropriate. • Pre-employment screening investigations should be used to verify the applicants relating to their employment, education and criminal history background.

Project Activity/ Impact Source	Impacts /Concerns	Mitigation Measures/ Management Guidelines
	Improper security measures may pose a security risk for construction workers and especially foreign staff on construction sites.	The Contractor shall: • Prepare a site-specific security plan (refer to: https://pubdocs.worldbank.org/en/692931540325377520/2018-ESF-GPN-Security-Personnel.pdf) . • Maintain a register to keep track of the number of persons present in the camp at any given time. • Provide appropriate security personnel at job sites as mentioned above. • Ensure proper fencing as mentioned above. • Ensure controlled access points to the job site as mentioned above. • Ensure works have easily identified credentials as mentioned above. • Ensure job sites are properly lighted at night, as mentioned above.

ESCoP 18: Cultural and Religious Issues

Project Activity/ Impact Source	Impacts/Concerns	Mitigation Measures/ Management Guidelines
Employment and Labour Rights	Employees not being aware of their rights and being able to exercise those rights	The PIU/PSIPMU, CSC and contractors shall • Implement a fair and transparent employment process. • Provide activity workers with clear and understandable information regarding rights via contract documents in local language

ESCoP 19: Cultural and Religious Issues

Project Activity/ Impact Source	Impacts/Concerns	Mitigation Measures/ Management Guidelines
Grievance Redress Mechanism	Employees and community able to voice their concerns or complaints about the project and/or working conditions	The PIU/PSIPMU, CSC and contractors shall • Design and implement a grievance for workers and the community. • Ensure there is staff to manage both project and labor-specific grievance processes