

Initial Environmental Examination

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December 2022

Bangladesh: Climate Resilient Livelihood Improvement and Watershed Management in Chattogram Hill Tracts Sector Project

Village Access Roads Sub-Projects Batch 1

Prepared by the Ministry of Chittagong Hill Tracts Affairs for the Asian Development Bank (ADB).

CURRENCY EQUIVALENTS

(as of 22 December 2022)

Currency unit – Bangladesh Taka (Tk)

Tk1.00 = \$ 0.0094

\$1.00 = Tk 105.91

ABBREVIATIONS

ADB	-	Asian Development Bank
Agri-infra	-	Agriculture – infrastructure
BCCSAP	-	Bangladesh Climate Change Strategy and Action Plan, 2010
BECA	-	Bangladesh Environment Conservation (Amendment) Act
BTMC	-	Bangladesh Textile Mills Cooperation
CAP	-	corrective action plan
CDC	-	Community Development Committee
CHT	-	Chattogram Hill Tracts
CI	-	community infrastructures
CRLIWM-CHT	-	Climate Resilient Livelihood Improvement and Watershed in Chattogram Hill Tracts Sector Project
CHTRC	-	Chittagong Hill Tracts Regional Council
CHTRDP	-	Chittagong Hill Tracts Rural Development Project
DOE	-	Department of Environment
DPD	-	Deputy Project Director
DPHE	-	Department of Public Health and Engineering
DPMO	-	District Project Management Office
EARF	-	Environmental Assessment and Review Framework
ECC	-	environmental clearance certificate
ECR	-	Environmental Conservation Rules
EIA	-	environmental impact assessment
EMP	-	environmental management plan
EMoP	-	environmental monitoring plan
EMR	-	environmental monitoring report
FGD	-	focus group discussion
FHH	-	female headed household
GFS	-	gravity flow system
GOB	-	Government of Bangladesh
GRM	-	Grievance Redress Mechanism
HBB	-	herring bone brick
HDC	-	Hill District Council
HH	-	household
IEE	-	initial environmental evaluation
LGED	-	Local Government Engineering Department
MoCHTA	-	Ministry of Chittagong Hill Tract Affairs
NEMAP	-	National Environmental Management Action Plan
NGO	-	non-governmental organization
NWMP	-	National Water Management Plan

O&M	-	operation and maintenance
PD	-	Project Director
PDC	-	Para development committee
PIC	-	Project implementation consultant
PISC	-	Project Implementation Support Consultant
PIU	-	project implementation unit
PMO	-	project management office
PMU	-	Project management unit
SEC	-	small ethnic communities
SPB	-	Sector Project Batch
SPS	-	Safeguard Policy Statement 2009
TVET	-	Technical and vocational education and training
UNFCC	-	United Nations Framework on Climate Change
UP	-	Union Parishad
USD	-	United States Dollars
VAR	-	village access road
WASH	-	water, sanitation, and hygiene
WHO	-	World Health Organization

GLOSSARY OF BANGLADESH TERMS

jhum	– swidden or shifting cultivation
mouza	– a small administrative area usually composed of a number of villages
para	– similar to term village
union	– administrative division – subdivision an upazila
upazila	– administrative division – subdivision a district

WEIGHTS AND MEASURES

Hectare	–	ha
Kilometer	–	km
Meter	–	m

NOTE

In this report, "\$" refers to United States dollars.

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I. EXECUTIVE SUMMARY

1. The Climate Resilient Livelihood Improvement and Watershed Management in Chattogram Hill Tracts (CRLIWM-CHT) Sector Project will serve communities not covered by the ADB-funded Chittagong Hill Tracts Rural Development Project (CHTRDP) in Bangladesh.¹ The project cost is USD150 million, where ADB will provide USD120 million as a sector project loan. Implementation period is expected to be seven years with five envisioned outputs: (Output 1) community infrastructures development, (Output 2) watershed management, (Output 3) improvement of agricultural production storage, processing and marketing, (Output 4) enhancing rural non-farm skills and capacities strengthening of CHT institutions, (Output 5) upgrading of rural roads. Chapter II goes into these outputs in more details. The initial environmental examination (IEE) is for the Village Access Roads (VAR) under Subproject Batch 1. Batch 1 consists of 28 roads of which one (i.e. Chelachara-Leba Para to Kojoichari Para) has been covered in the Ghagra Community Infrastructure Subproject and the associated IEE. This IEE therefore covers the remaining 27 VARs.

2. Chapter III goes deeper into legislative measures required at the national level, and by ADB and international treaties. For the protection and conservation of environment, the Government of Bangladesh (GoB) has various laws and regulations for the protection and conservation of the natural environment.

3. All projects implemented under ADB financing must comply with the Safeguard Policy Statement (SPS) of 2009. ADB requires environmental assessment of all project loans, program loans, sector loans, sector development program loans, financial intermediation loans and private sector investment operations. Implementation of the environmental safeguards is the responsibility of the client/borrower, while ADB is to monitor compliance. Other requirements of SPS are screening, categorization, developing an environment management plan (EMP), information disclosure, consultation and participation, monitoring and reporting, and grievance redress mechanisms.

4. The Environmental Assessment and Review Framework (EARF) has been prepared to support and provide guidance to the executing agency and implementing agencies to screen, categorize, prepare environmental assessments including environmental management plans, and monitor the implementation of environmental management plans in accordance with the laws of the Government of Bangladesh (GoB), and SPS 2009.

5. Chapter IV, describes the proposed Project, including its background and purpose, implementation arrangements. Project's Output 1, community infrastructure (CI), will involve infrastructure interventions aimed at improving village access, water supply and sanitation, household renewable energy supply, and agriculture productivity. The Project will be implemented

¹ CHTRDP-I was implemented from 2003-2010, and CHTRDP-II from 2011-2021.

over a seven-year period, with a six-month Inception Phase in Project Year 1, and a six-month project closure phase in Project Year 7.

6. The CHT is a unique multi-tiered administrative structure comprising ministry and line department counterparts, district administration, local government institutions, and CHT-specific institutions. These are the (i) Ministry of Chittagong Hill Tracts Affairs (MoCHTA) - responsible for coordinating all development activities in CHT, (ii) Chittagong Hill Tracts Regional Council (CHTRC) - supervises and coordinates all activities, (iii) Hill District Councils (HDCs)² - to implement activities for Outputs 1-4, and (iv) Local Government Engineering Department (LGED) – to implement Output 5.

7. The executing agency (EA) for the project is the MoCHTA. The CHTRC will be the lead implementing agency (IA), where the Project Director (PD) of the Project Management Office (PMO) will manage the subprojects with support from District Project Management Office (DPMO) at the district level. The LGED will create a Project Management Unit (PMU) to manage implementation of rural roads with the support of Project Implementation Units (PIUs) at the district level. A project steering committee (PSC) will be established under the chairmanship of Minister, MoCHTA and be responsible for overall coordination at national level and policy guidance.

8. Chapter V goes deeper into the subproject, explaining its background. Based on the participatory needs assessment and planning process communities under the CI component, the Project will prioritize infrastructure interventions aimed at improving access, water and sanitation and energy, and agriculture productivity. Intervention have been grouped in three categories: (i) small village access roads or VAR, (ii) small-scale water supply, sanitation and hygiene infrastructure (WASH) and renewable energy, (iii) agriculture infrastructure.

9. Under project readiness, there are 28 roads (extending over 60km) for proposed upgrading, of which one was included in the Ghagra Union Cluster feasibility study. The other 27 roads are covered in a separate feasibility study and in this IEE. In the community consultation meetings men and women confirmed that improving the village access roads is an important priority for them to carry agriculture produce from their village to the main road.

10. Alternatives have been analyzed regarding location, VAR routes and VAR design. Chapter VI analyses these alternatives, as well as the “without project” alternative. On the latter, it will mean that current conditions will prevail. For the VARs, this includes poor access leading to longer travel times, higher costs and spoilage of produce, but also higher risks due to longer times required to access medical care, reduced sanitation, poorer water quality and reduced access to, for example, education and other services. Under the without project scenario there will also be less investment in further development the area as basic infrastructure is required to attract entrepreneurs and entrepreneurship from within. Overall, socio-economic conditions will be negatively affected as the project area is relegated to the backwaters of development.

² CHT districts of Rangamati, Bandarban and Khagrachari.

11. Chapter VII describes environmental aspects of the project, like detail explanation of the location, physical environment and socio-economic information. The 28 roads are spread across 25 unions of 18 upazilas of the 3 districts Khagrachari, Rangamati and Bandarban. Most of the roads are situated in mid-hill locations, with a few in valleys or in fringe land.³ The climate in the Chattogram Hill Tracts is tropical monsoon.

12. The 27 subprojects will benefit approximately 50,000 people of over 10,000 households of more than 130 paras, spread across 25 unions of 18 upazilas of the 3 districts. On this population, this IEE surveyed and gathered information on the following socio-economic categories: ethnicity, socio-economic, gender, landownership, housing, moveable assets, social capital (relations with government), livelihoods, agriculture, mechanization and external inputs, and marketing of agricultural produce.

13. Chapter VIII anticipates environmental impacts and mitigation measures, starting with positive impacts and then outlines negative impacts. The following environmental benefits will accrue from the interventions: (i) improved access, especially in the wet season, contributing to improved market access, access to schooling and health facilities, and hence contributing to overall well-being of local community members, (ii) savings on travel time and transportation costs, (iii) employment generation, and (iv) benefit from land valuation, as with better road connectivity, the demand for land will also increase land valuations. Negative impacts have been carefully considered, and categorized on activity, phase (operation/ construction) and type of impact (i.e., magnitude, extend, duration and significance).

14. Chapter IX outlines information disclosure principles, subproject stakeholder consultation and participation. Prioritization of paras had been done in consultation with local authorities and the CHTRC. Consultation meetings with local communities have been held in villages served by the village access roads.

15. Disclosure of safeguards information will occur through public consultation by PMO with support of PISC. The following documents will be submitted to ADB for disclosure on its website: (i) subproject IEE, (ii) environmental review and assessment framework (EARF), and (iii) semi-annual environmental monitoring report.

16. Adaptive mechanisms will be used to address limitations on environmental safeguard activities and consultations due to government restrictions and COVID-19 risks.

17. As explained in Chapter IX, a dedicated multi-tier grievance redress mechanism (GRM) will be established to receive, evaluate, and facilitate the concerns and complaints of the affected people on social and environmental performance. The GRM aims to ensure (i) basic rights and interests of every affected person are protected, and (ii) concerns from poor environmental or social performance of the project are addressed. There will be multiple channels by which grievances can be received by the PMO. To ensure the GRM is in line with the ADB SPS, the

³ Fringe land is the term used for land on the edge of the Kaptai lake, which submerges during the monsoon when the adjacent villages can be easily reached by boat but fall dry during the dry autumn to summer seasons when they are more less accessible as transport by boat become difficult.

GRM will be a time-bound, simple, transparent, gender- and culturally- responsive in addressing feedback, concerns and suggestions, and facilitation of solutions.

18. The GRM has three tiers (i.e., Tier 1: Community Level, Tier 2: Grievance Redress Committee, and Tier 3: Regional Advisory Council). In Tier 1, there are two types: (i) type A refers to the alternative dispute resolution forum at subproject level - addresses land disputes for rural roads component (Output 5), and (ii) type B refers to para development committee or PDC - all other social and environmental safeguards concerns raised across project Outputs 1 - 5. For any unresolved grievances, Tier 2 will resolve complaints and concerns from Tier 1. Complaints that cannot be settled in Tier 2 should be elevated to the Regional Advisory Council. None of the three levels of the GRM possess any legal mandate or authority to resolve land issues, they rather act as an advisory body or facilitator to try to resolve issues between the affected household/person and the CRLIWM-CHT Sector Project.

19. Chapter X lists and outlines the Environmental Management Plan and Monitoring Report. These are to check whether the mitigation measures as mentioned are being implemented properly. For the Environment Safeguard, different institutions are in play: (i) the PMO, (ii) DPMO, (iii) PISC, (iv) Para Development Committees and/or Coordination Development Committees, (v) contractors, (vi) ADB project team. Chapter IX gives a detailed list of tasks of these actors.

20. As conclusion and recommendation, CRLIWM-CHT Sector Project will have minor to moderate negative impacts however the extent of these impacts is expected to be site-specific and localized. With EMPs in place, the potential impacts will either be eliminated or minimized to insignificant levels. The EMP is based on conditions of the area and final designs for the village access roads. In the event of any unanticipated environmental impact(s) during implementation, PMO, with PISC's, support will update the IEE and EMP, or alternatively prepare an environmental due diligence report including EMP for ADB review and disclosure on the ADB website.

II. INTRODUCTION

A. About CRLIWM-CHT Sector Project

1. The proposed Climate Resilient Livelihood Improvement and Watershed Management in Chattogram Hill Tracts Sector Project (“CRLIWM-CHT Sector Project” or “the proposed Project”) will aim to enhance sustainable livelihood opportunities and access to basic services for the rural population of the Chattogram Hill Tracts (CHT) (Figure 1). The indicated project cost of the proposed Project is USD125 million, of which ADB will provide USD120.0 million as a sector project loan. The project implementation period is expected to be seven years.

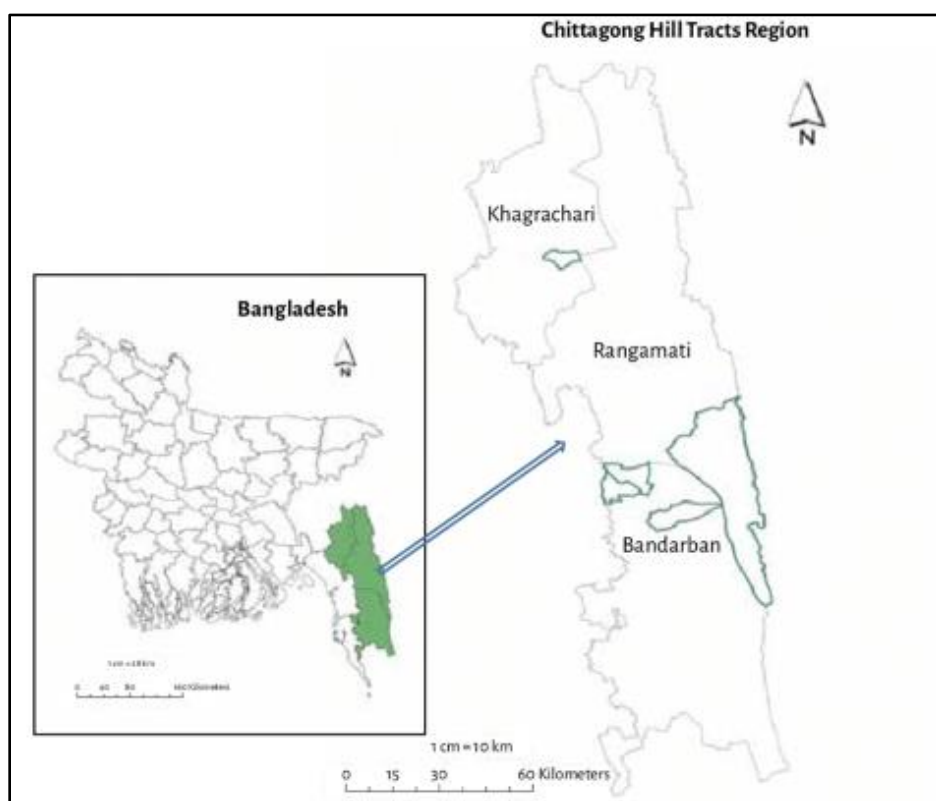


Figure 1. Map of CHT in Bangladesh covering districts of Bandarban, Rangamati and Khagrachari.⁴

2. The proposed Project will serve communities not covered by the ADB-funded Chittagong Hill Tracts Rural Development Project in Bangladesh (CHTRDP), of which CHTRDP-I was implemented from 2003-2010 and CHTRDP-II from 2011-2021.

3. The project is aligned with the following impact: enhanced human health and well-being, reduced vulnerability, and improved food security of the CHT people. The proposed Project will have the following outcome: climate resilient livelihoods and access to basic services for the rural

⁴ Source of map: Ahammad, Ronju & Stacey, Natasha. (2016). Forest and agrarian change in the Chattogram Hill Tracts region of Bangladesh.

population in the CHT including women and small ethnic communities (SEC) enhanced. The proposed Project have five outputs:

4. *Community infrastructure developed.* The community infrastructure component will follow the approach and methodology of the successful CHTRDP-II and includes three main types of village infrastructure interventions, particularly:

- small village roads, footpaths and steps for better access to health services, schools, and markets, and provide increased economic opportunity;
- small-scale water supply, sanitation and hygiene infrastructure (WASH) and renewable energy – small-scale water supply schemes using ring wells, shallow/deep tube wells or gravity flow systems, sanitary latrines at household and community level; and
- agricultural infrastructure, including small weirs, lined channels, power tillers, and lift pumps. For women involved in weaving, weaving sheds are an additional option.

5. *Watershed management strengthened.* Land use pressure coupled with deforestation, landslides, and bamboo and other non-timber forest products (NTFP) extraction decreased the land rotation period from 10-15 years to 2-3 years. Land being worked, with greater intensity, has resulted in soil nutrient depletion and topsoil erosion. Small catchments often remain dry in most of the pre-monsoon and post monsoon periods. Proper conservation and utilization of land, water, crop and vegetation resources in watersheds have become urgent to meet people's daily basic needs for fuelwood, fodder and construction materials. This component will aim at strengthening the functioning of community-based organizations to improve climate resilient livelihoods by:

- promoting appropriate/sustainable land use and regenerative agricultural practices in fulfilling the basic needs for food, fodder, fuelwood, construction materials mainly bamboo and timber, and medicinal plants and rehabilitation of degraded lands enhancing productivity;
- improving proper water resource management, while fulfilling water needs for agriculture and human use; and
- strengthening the local stakeholders/community-based organization in planning, implementation and maintenance of watershed management interventions.

6. *Agriculture production, storage, processing and marketing improved.* Most rural households in CHT are involved in agriculture and agricultural labour. Only small number of households have secondary income outside agriculture, and it can be an important driver for economic development. However, the returns from agriculture in the CHT are low due to a variety of reasons that include: (i) poor accessibility to markets, (ii) prevalence of low value crops, (iii) soil erosion, (iv) reduced soil fertility, (v) watershed degradation, (vi) shortened crop rotation, (vii) use of extreme sloping land, (viii) monoculture, and (ix) overexploitation of forest with no replacement programme. Improving soil health would thus contribute towards increased productivity. This can be achieved through sustainable agricultural practices, such as regenerative agriculture, in close coordination with the watershed management component. Promising value chains will be supported by targeted training programmes and infrastructure support to improve the livelihoods

of farmers cultivating these specific products. Apart from training, measures are likely to include improved collection and storage facilities for perishable produce from the region.

7. *Rural non-farm skills improved and capacities of CHT institutions strengthened.* The proposed sector project will include a stand-alone skills development component focusing on rural non-farm skills. This is meant to strengthen skills in sectors allied to the project's main objectives.⁵ The skills component will specifically target employment opportunities that will arise from implementing this project.⁶ The main direct beneficiaries will be motivated rural youth, both men and women.⁷ Capacity building measures to strengthen implementing agencies and implementing non-government organizations (INGOs) also are included in the component.

8. *Rural roads improved.* The rural roads component aims at upgrading existing roads in the target areas. As implementing agency (IA), Local Government Engineering Department (LGED) will work through its district level offices, with *upazila* officers.⁸ When making the final selection of roads targeted for improvement, elected and non-elected officials at various levels will be consulted by LGED, with the shortlist then to be submitted to the CHTRC for approval. During the implementation phase of the CRLIWM-CHT Sector Project a next batch (SPB-2) of around 50 km would then need to be prepared for implementation and are expected to include unpaved, earthen union and *upazila* roads, and potentially require more land acquisition as they require road widening.

9. The first four components of the proposed Project will be implemented by the Chittagong Hill Tracts Regional Council (CHTRC) and the Hill District Councils (HDCs) – IAs. The last component will be implemented by the LGED. The Ministry of Chittagong Hill Tracts Affairs (MoCHTA) is the executing agency (EA).

B. Purpose of the IEE Report

10. For environment safeguards, the proposed Project is a category "B" based on Safeguards Policy Statement (SPS, 2009) classification system, and IEE is required by ADB for the interventions in Village Access Roads Subprojects Batch 1. This environmental assessment report serves to document potential environmental impacts that may arise due to the proposed interventions. Accordingly, the IEE identifies and recommends mitigation measures against the impacts and/or reduce their magnitude. An environmental management plan (EMP) is produced covering environmental impacts, environmental monitoring plan, and the responsible entities for mitigation and monitoring.

⁵ Examples of skills allied to the project's main objectives are construction related skills, improving available workmanship, agricultural processing techniques, and maintenance skills for agricultural equipment.

⁶ Including latent demand that will become realized once this project is implemented.

⁷ Training under consideration is for motor and pump mechanics, masonry and carpentry, cement ring production (for latrines), food processing (linked to agriculture component), weaving, tailoring, automotive mechanics, electrical installation and maintenance, e-commerce/entrepreneurship, mobile phone servicing, plumbing, and sewing machine operation.

⁸ Responsible for surveys, with designs being prepared by the LGED design office in Dhaka.

11. Further, this IEE report primarily: (i) provides information of the Village Access Roads Subprojects Batch 1 and their requirements to ADB SPS 2009 and government policies (ii) baseline conditions of the physical, ecological, physical cultural and socio-economic environments and/or resources within the subproject's area of influence; (iii) presents information on stakeholder consultations and participation; (iv) identification of monitoring and reporting requirements; and (vii) recommends a mechanism to address grievances on the environmental performance of the project.

C. Scope of the IEE Report

12. The IEE for Village Access Roads Subprojects Batch 1 captures the environmental setting of all the intervention sites including physical, biological, and socioeconomic conditions and the national and local legal setting, as well as international environmental agreements that are relevant to the project. Based on these, the IEE identifies potential environmental impacts to physical, biological, socio-economic (including impacts on livelihood through environmental media, health and safety, vulnerable groups, and gender issues), and physical cultural resources in context to project's area of influence. The IEE is prepared based on findings from on-site visits and investigations, detailed discussions with CHTRC and HDC and other stakeholders such as people in paras (or villages).

III. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

13. CHT was a self-governed independent territory until it was annexed to the province of Bengal in 1860 by the British. In 1900, the Chittagong Hill Tracts Regulation declared the area as an “excluded area” restricting outsiders from purchasing land or settling in the CHT. With independence from the British in 1947, the CHT was included as part of East Pakistan. In 1962, the Government of Pakistan replaced the ‘Excluded Area’ status to ‘tribal area’ with the intention of settling outsiders in the CHT. In 1971, following the Liberation War of Bangladesh, the CHT became part of Bangladesh.

14. The CHT has a unique multi-tiered administrative structure comprising ministry and line department counterparts, district administration, local government institutions, and CHT-specific institutions. These are the Ministry of Chittagong Hill Tracts Affairs (MoCHTA), responsible for coordinating all development activities in CHT; the Chittagong Hill Tracts Regional Council (CHTRC), which supervises and coordinates all activities; and hill district councils (HDCs), which are to implement activities. There are also traditional institutions of circle chiefs, headmen, and karbari.⁹

A. Environmental Legislation

15. The Government of Bangladesh has various laws and regulations for the protection and conservation of the natural environment. A number of these environmental laws and regulations are summarized in the following paragraphs. The concept of environmental protection through national efforts was first recognized and declared in Bangladesh with the 1992 adoptions of Environment Policy and Environment Action Plan. This is followed by Bangladesh Environmental Conservation Act (BECA) of 1995 (as amended in 2002 and 2010) is the umbrella Act that includes laws for (i) conservation of the environment, (ii) improvement of environmental standards, and (iii) control and mitigation of environmental pollution. It is currently the main legislative framework document relating to environmental protection in Bangladesh.¹⁰

16. The Environment Conservation Rules (ECR) 1997 (as amended 2003 and 2010) are the first set of rules, promulgated under the BECA 1995. Among other things, the ECR 1997 sets (i) the National Environmental Quality Standards for ambient air, various types of water, industrial effluent, emission, noise, vehicular exhaust etc., (ii) requirement for and procedures to obtain Environmental Clearance Certificate; and (iii) requirements for IEE and EIA according to categories of industrial and other development interventions.

17. BECA of 1995 provides the Director General (DG) a discretionary authority to grant Environmental Clearance Certificate (ECC) to an applicant by exempting the requirement of site

⁹ This is the village headman. The circle chief, headmen, and karbari were established by CHT Regulations of the year 1900.

¹⁰ ECA of 1995 repealed earlier Environment Pollution Control ordinance of 1977.

or location clearance, provided the DG considers appropriate. Presently, "EIA Guidelines for Industries" published by the Department of Environment (DoE) and the ECR 1997 are the formal documents providing guidance for conducting Environmental Assessment. Any proponent planning to set up or operate an industrial project is required to obtain an ECC from the DoE, under the ECA 1995 amended in 2002.

18. The environmental category of any project is listed in Schedule-1 of ECR. As per Schedule 1 of ECR, interventions under the community infrastructure subproject will not trigger requirement under this rule.

B. Regulatory Requirements for the Proposed Project

19. In respect with environment and social considerations, list of national legal instruments with relevance to the interventions under Village Access Roads Subprojects Batch 1 is shown in the table below.

Table 1. National policies relevant with the subproject.

Act/ Rule/ Law/ Ordinance/SRO	Enforcement Agency – Ministry/ Authority	Key Features
National Environmental Policy 2018	Ministry of Environment, Forests and Climate Change	<p>Ensure sustainable development through environmental conservation, pollution control, conservation of biodiversity and by combating the negative impacts of climate change.</p> <p>With specific objectives:</p> <ul style="list-style-type: none"> maintaining natural balance and ensuring overall development of the country through conservation of environment and sustainable management, expansion of climate change adaptation programs to reduce its negative impacts, introduce and encourage wide-spread use of low-carbon emitting technology, identification control of all types of pollution and degradation of environment, and ensuring environment friendly development in all sectors.
Environment Court Act, 2000 and subsequent amendments in 2002	Ministry of Environment, Forests and Climate Change; and Judiciary	<ul style="list-style-type: none"> Government of Bangladesh has given highest priority to combat environment pollution Passed 'Environment Court Act, 2000 for completing environment related legal proceedings effectively Applicable for completing environmental legal requirements effectively
National Policy of Land Use, 2001	Ministry of Land	<ul style="list-style-type: none"> Prevent the current tendency of gradual and consistent decrease of cultivable land for the production of food to meet the demand of expanding population. Ensure that land use is in harmony with natural environment,

Act/ Rule/ Law/ Ordinance/SRO	Enforcement Agency – Ministry/ Authority	Key Features
		<ul style="list-style-type: none"> • Use land resources in the best possible way and to play supplementary role in controlling the consistent increase in the number of landless people towards the elimination of poverty and the increase of employment, • Protect natural forest areas, prevent river erosion and destruction of hills, • Prevent land pollution, and • Ensure the minimal use of land for construction of both government and nongovernment buildings.
Road Transport Act 2018 The Motor Vehicles Ordinance, 1983 The Bengal Motor Vehicle Rules, 1940	Bangladesh Road Transport Authority	<ul style="list-style-type: none"> • Exhaust emissions • Vehicular air and noise pollution • Road/traffic safety • Vehicle licensing and registration • Fitness of motor vehicles • Parking by-laws.
Water Supply and Sanitation Act, 1996	Ministry of Local Government, Rural Development and Cooperatives	<ul style="list-style-type: none"> • Management and control of water supply and sanitation in urban areas. • Not directly applicable, however, indirectly applicable when considering water usage management and sanitation facilities
The Forest Act, 1927 and subsequent amendments in 1982 and 1989	Ministry of Environment and Forests	<ul style="list-style-type: none"> • Categorization of forests as reserve, protected and village forests • Permission is required for use of forest land for any non-forest purposes • Applicable if the proposed subproject is in the forest land Area (Chattogram Hill Tracts Region)
Bangladesh Wild Life (Preservation) Act, 1974	Ministry of Environment and Forest; Bangladesh Wild Life Advisory Board	<ul style="list-style-type: none"> • Preservation of Wildlife Sanctuaries, Parks, and Reserves • Applicable if the proposed subproject is in the wildlife sanctuaries, parks, and reserves (Chattogram Hill Tracts Region)
National Biodiversity Strategy and Action Plan (2004)	Ministry of Environment and Forest Bangladesh Wild Life Advisory Board	<ul style="list-style-type: none"> • Conserve, and restore the biodiversity of the country for wellbeing of the present and future generations • Maintain and improve environmental stability for ecosystems • Ensure preservation of the unique biological heritage of the nation for the benefit of the present and future generations • Guarantee the safe passage and conservation of globally endangered migratory species, especially birds and mammals in the country • Stop introduction of invasive alien species
National Water Bodies Protection Act, 2000	Town development authority/ Municipalities	The characterization of water bodies as rivers, canals, tanks or flood plains identified in the master plans formulated under the laws establishing municipalities in division and district towns shall not be changed without approval of concerned ministry

Act/ Rule/ Law/ Ordinance/SRO	Enforcement Agency – Ministry/ Authority	Key Features
Antiquities Act, 1968	Ministry of Cultural Affairs	<ul style="list-style-type: none"> • This legislation governs preservation of the national cultural heritage, protects and controls ancient monuments, regulates antiquities as well as the maintenance, conservation and restoration of protected sites and monuments, controls planning, exploration and excavation of archaeological sites • Not applicable as the subproject study areas do not have any likely cultural heritage or ancient monuments of national or international significance. However in case, any such evidence of archaeological findings arise, the subproject will act in consonance to the Act.
Administrative and Regulatory Guidelines and Instructions for Land Acquisition	Ministry of Land	<ul style="list-style-type: none"> • Regulation of land acquisition process by certain administrative instructions and procedural requirements
Ozone Depleting Substances (Control) Rules, 2004	Ministry of Environment and Forests	<ul style="list-style-type: none"> • Ban on the use of Ozone depleting substances • Phasing out of Ozone depleting substances
Noise Pollution (Control) Rules 2006	Ministry of Environment and Forests	<ul style="list-style-type: none"> • Prevention of noise pollution • Standards for noise levels

C. Environmental National Regulatory Standards

20. The ECR, 1997 provides environmental standards applicable to community infrastructures component of CRLIWM-CHT Sector Project. Schedule 2 of the ECR presents the national standards for ambient air quality, while Schedule 4 presents the national standards for ambient noise. Following requirements of ADB SPS 2009, community infrastructure subprojects will apply pollution prevention and control technologies and practices consistent with international good practice, as reflected in World Bank Group's Environment, Health and Safety Guidelines.⁹ When the Government of Bangladesh regulations differ from these levels and measures, subproject will achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific subproject circumstances during implementation, the EA will provide full and detailed justification in environmental monitoring reports for any proposed alternatives that are consistent with the requirements presented in ADB SPS 2009.

21. In view of this, the tables below show the ambient air quality standards and noise level standards with corresponding World Health Organization (WHO) standards.

Table 2. Ambient air quality standards of Bangladesh and WHO air quality guidelines.

Parameter	Bangladesh Ambient Air Quality Standard (µg/m ³) ^a	WHO Air Quality Guidelines (µg/m ³)		Applicable to ADB-funded Projects Per ADB Safeguard Policy Statement ^d (µg/m ³)
		Global Update ^b 2005	Second Edition ^c 2000	
TSP	200 (8-h)		-	200 (8-h)
PM ₁₀	50 (1-year) 150 (24-h)	50 (24-h) 500 (10-min)	-	50 (24-h)
PM _{2.5}	15 (1-year) 65 (24-h)	10 (1-year) 25 (24-h)	-	25 (24-h)
SO ₂	80 (1-year) 365 (24-h)	20 (24-h) 500 (10-min)	-	20 (24-h)
NO ₂	100 (1-year)	40 (1-year) 200 (1-h)	-	40 (1-year) 200 (1-h)
CO	10,000 (8-h) 40,000 (1-h)	-	10,000 (8-h) 100,000 (15-min)	10,000 (8-h)
Lead	0.5 (1-year)	-	-	0.5 (1-year)
Ozone (O ₃)	235 (1-h) 157 (8-h)	100 (8-h)	-	100 (8-h)

ADB = Asian Development Bank, CO = carbon monoxide, h = hour, µg/m³ = microgram per cubic meter, min = minute, NO₂ = nitrogen dioxide, PM_{2.5} = particulate matter 2.5 microns, PM₁₀ = particulate matter 10 microns, SO₂ = sulphur dioxide, TSP = total suspended particle, WHO = World Health Organization.

^a Based on SRO 220-Law 2005 (Amendment of Schedule 2 of ECR, 1997). Air Quality Management Project of Bangladesh

^b IFC World Bank Group. 2007. Environmental, Health and Safety General Guidelines. Washington, D.C.

^c WHO Regional Office for Europe. 2000. Air Quality Guidelines for Europe, Second Edition. Copenhagen.

^d If less stringent levels or measures are appropriate in view of specific project circumstances, the EA will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS

Table 3. Ambient noise level standards of Bangladesh and WHO noise level guidelines.

Receptor/ Source	National Noise Standard Guidelines, 2006 ^a (dB)		WHO Guidelines Value for Noise Levels Measured Out of Doors ^b (One Hour LAq in dBA)		Applicable Per ADB Safeguard Policy Statement ^c (dBA)	
	Day	Night	Day	Night	Day	Night
Industrial area	75	70	70	70	70	70
Commercial area	70	60	70	70	70	60
Mixed area	60	60	55	45	55	45
Residential area	55	45	55	45	55	45
Silent area	50	40	55	45	50	40

^a Schedule 4 of ECR, 1997 (as amended in 2006).

^b WHO. 1999. Guidelines for Community Noise; World Bank Group. 2007. Environmental, Health and Safety General Guidelines. Washington, D.C.

^c If less stringent levels or measures are appropriate in view of specific project circumstances, the executing agency will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

Table 4. Noise Limits for various working environments

Location/ activity	Equivalent Noise LAeq, 8h	Maximum LAmax, fast
Heavy Industry (no demand for oral communication)	85 dB(A)	110 dB(A)
Light Industry (decreasing demand for oral communication)	50 – 65 dB(A)	110 dB(A)
Open offices, control rooms, service counters or similar	45 – 50 dB(A)	--
Individual offices (no disturbing noises)	40 – 45 dB(A)	--
Classrooms, lecture halls	35 – 40 dB(A)	--
Hospitals	30 – 35 dB(A)	40 dB(A)

Note: For acceptable indoor noise levels for residential, institutional, and education settings refer to WHO (1999)

Table 5. Noise exposure Limits for work environment (in dBA)

Noise Levels (dBA)	Permissible Exposure (time)	Noise Levels (dBA)	Permissible Exposure (time)
85	16 hrs	111	26 min
87	12 hrs 6 min.	114	17 min
90	8 hrs	115	15 min
93	5 hrs 18 min	118	10 min
96	3 hrs 30 min	121	6.6 min
99	2 hrs 13 min	124	4 min
102	1 hr 30 min	127	3 min
105	1 hr	130	1 min
108	40 min	-	-

Note: Exposure above or below the 90 dBA limit have been time weighted to give what OSHA believes are equivalent risks to a 90 dBA 8 hr. exposure (Marsh, 1991, p.322).

Table 6. Surface water quality standards

Standard	pH	Ec µS/cm	DO mg/l	BOD ^{5d} mg/l	COD (mg/l)	TSS mg/L	TDS mg/L	Fe mg/l	Mn mg/l	As ppb	Turbidity NTU	NO3-N mg/l	Cl- mg/l	Tota Coliform cfu/100ml
Standard per ECR,1997 (Schedule 3A)	6.5-8.5		5 or above	6 or less	NYS			NYS	NYS	NYS		NYS	NYS	5000 or less
Standard per ECR,1997 (Schedule 10)	6-9		4.5-8	50	200			2	5	20		10	600	NYS

Table 7. Groundwater quality standards

Standard	pH	DO (mg/l)	BOD ^{5d} (mg/l)	COD (mg/l)	EC (µs/Cm)	Fe (mg/l)	Mn (mg/l)	As (ppb)	NO3-N (mg/l)	Chloride (mg/l)	TSS (mg/l)	TDS (mg/l)
Standard per ECR,1997 (Schedule 3B)	6.5-8.5	6.0 or above	0.2	4.0	NYS	0.3-1.0	0.1	50.0	10.0	150-600		1000

D. ADB Safeguard Policy Statement (SPS, 2009)

D.1. ADB SPS 2009 Objective

22. The objective of SPS 2009 is to “ensure the environmental soundness and sustainability of projects and to support the integration of environmental considerations into the project decision-making process.” All projects implemented by ADB are to comply with the SPS 2009. ADB requires environmental assessment of all project loans, program loans, sector loans, sector development program loans, financial intermediation loans and private sector investment operations. Also, implementation of the environmental safeguards is the responsibility of the MoCHTA (or EA), and CHTRC and LGED (IAs), while ADB is to monitor and provide guidance for environmental safeguard compliance.

D.2. Requirements

23. *Screening.* Environmental category is a function of project location, scale, the most sensitive environmental components, and the magnitude of potential environmental impacts (including direct, indirect, cumulative, and induced). Projects are assigned to one of four categories, which are:

- *Category A* – where projects are likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. The impacts may affect an area larger than the sites or facilities subject to physical works. Such projects require an environmental impact assessment (EIA).
- *Category B* – where potential adverse impacts are less than those of Category A. Impacts are generally site specific, few if any are irreversible, and in most cases mitigation measures can be designed more readily than for Category A projects. Such projects require an IEE.
- *Category C* – incurs minimal or no adverse environmental impact and thus does not require environmental assessment, although environmental implications need to be reviewed. Environmental Due Diligence will be adequate for such projects; and
- Category FI refers to projects that involve investment of ADB funds through a financial intermediary and is not applicable to the present Project.

24. *Categorization.* The CI interventions of CRLIWM-CHT Sector Project potentially has low to moderate environmental impacts and classified as *Category B* according to the ADB SPS 2009 and require an IEE. The different interventions under the VAR subprojects may have a range of possible impacts on nearby paras or villages (e.g., due to noise, dust, road disruption, etc.).

25. *Environmental Management Plan (EMP).* To address potential impacts and risks identified by the environmental assessment, an EMP is prepared for the CI interventions. The level of detail and complexity of the EMP and the priority of the identified measures and actions will be commensurate with the subproject’s impact and risks. As one of the commitment of contractors, EMP will be part of bidding documents. The details of EMP are shown in Chapter XI.

26. *Information disclosure.* Information about environmental safeguard issues is to be made available in a timely manner, in an accessible place, and in a form and language(s) understandable to affected people and to other stakeholders, including the public, so they can provide meaningful inputs into project design and implementation. For illiterate people, suitable communication methods are to be used. Specific information and recommendation for information disclosure is discussed in Chapter IX.

27. *Consultation and participation.* Communities, groups, or people affected by proposed projects, and civil society are to be engaged through information disclosure, consultation, and informed participation in a manner commensurate with the risks to and impacts on affected communities. Chapter IX discusses the results of public consultation with stakeholders and beneficiaries.

28. *Monitoring and reporting.* The EA and/or IA will (i) monitor implementation of EMP, verify compliance with safeguard measures and progress toward intended safeguard outcomes; and (ii) prepare and disclose environmental monitoring reports (EMRs). As part of monitoring, EA and IAs will identify necessary corrective actions¹¹, prepare corrective action plan (CAP) and reflect this plan in EMRs. The EA and IAs will implement these corrective actions and ensure effectiveness to put non-compliance back on track.

29. *Grievance Redress Mechanisms (GRM).* Projects are to develop and maintain a GRM to receive and facilitate resolution of affected peoples' concerns and grievances on environmental and social performance. The GRM is to address concerns and complaints promptly, using understandable and transparent processes that are gender responsive, culturally appropriate, readily accessible to all segments of the affected people, and that do not impede access to the national judicial or administrative remedies. Chapter X of the IEE discusses the GRM process common for environment and social safeguards.

D.3. Environmental Assessment and Review Framework (EARF)

30. The EARF has been prepared to support and provide guidance to MoCHTA (or EA), and CHTRC and LGED (or IAs) for screening interventions for subprojects, environmental safeguards categorization, prepare environmental assessments including EMPs, and monitor the implementation of these plans in accordance with the laws of the Government of Bangladesh (GoB) and ADB SPS 2009. The EARF includes an outline of the legal and regulatory setting provided by GOB and ADB and provides an overview of potential environmental and social impacts expected by the sector project. The EARF also sets out what needs to be done, why and how from a sector project cycle perspective. Annexes to the EARF provide formats for various environmental safeguards documents.

¹¹ In case of non-compliance with environmental safeguards during project implementation, CAP will be prepared by the EA/IA.

E. International Treaties.

31. Of the international environmental agreements to which Bangladesh is a party, those potentially relevant to the Project are listed below. Their relevance will depend on whether natural habitats will be affected by the Project and to which degree, and whether potentially affected areas also include wetlands. At present it seems unlikely that Project actions will create the need for invoking these conventions, but this cannot be ruled out.

- Convention on Wetlands of International Importance (also known as the Ramsar Convention, 1971; Bangladesh 1992); this promotes conservation and wise use of all wetlands.
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES Convention, 1975, Bangladesh 1981); this aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival.
- Convention on Biological Diversity (1993, Bangladesh 1994); this addresses two objectives (i) sustainable use of biological diversity components, (ii) fair and equitable sharing of genetic resources utilization benefits.
- Convention on the Conservation of Migratory Species of Wild Animals (also known as CMS or Bonn Convention) (1983; Bangladesh 2005), this addresses conservation of terrestrial, marine, and avian migratory species throughout their ranges, including conservation of migratory species habitats.

IV. DESCRIPTION OF THE PROJECT

A. Project Background and Purpose

32. The proposed Project will contribute to improving livelihoods and sustainable use of natural resources in the CHT while increasing resilience to climate change. It will do so by addressing selected deficiencies in the five forms of capital that are needed to support holistic and sustainable development of livelihoods of communities. Specifically, the project will address physical capital by improving roads and bridges and small-scale water supply and irrigation schemes, and providing agricultural equipment. It will build human capital by improving vocational skills in rural non-farm sector and developing capacity of CHT institutions and stakeholders. Social capital will be improved by strengthening the local government institutions to continue the system of participatory bottom-up planning and implementation of subprojects that has been established under the CHTRDP-II. Natural capital will be improved by supporting the restoration of critical watersheds through village community forest management, improving sustainable agricultural land management practices, and implementing a few pilot projects in rural solid waste management. Finally, financial capital will be enhanced by channeling public funds for infrastructure development and promoting private investment in market links and basic agro-processing facilities.

33. The proposed Project will enhance the climate and disaster resilience of CHT infrastructure and livelihoods. The CRLIWM-HT Sector Project will do so by: (i) scaling up the watershed management pilot projects done under CHTRDP II into a comprehensive component on integrated watershed management along with improved hydro-met monitoring facilities; (ii) introducing more sustainable measures for roadside slope and riverbank protection adopting bioengineering techniques; (iii) incorporating climate proofing measures in the design of infrastructure; (iv) incorporating climate adaptation and disaster risk reduction measures in the agriculture production and processing interventions; and (v) strengthening capacity of the CHT institutions to assess and manage climate risks.

34. *Output 1: Community infrastructure developed.* This output will support infrastructure interventions aimed at improving village access, water supply and sanitation, household renewable energy supply, and agriculture productivity. Intervention have been grouped in three categories: (i) village access roads (VAR) including footpaths and; (ii) WASH and renewable energy, and (iii) agriculture infrastructure (Agri-infra).

35. The first 421 paras to be supported by the proposed Project were selected by the CHTRC in consultation with the respective HDCs. The remaining 579 paras will be selected in a similar manner within the first year of project implementation, ensuring that all ethnic communities in the CHT are represented. The infrastructure interventions are identified through a participatory needs

assessment and planning process involving the communities of selected paras. It is expected that about 85 additional such Union-scale subprojects¹² will be implemented during the project.

36. *Output 2: Watershed management improved.* This output will involve participatory watershed management interventions to improve the CHT's resilience to climate change, mitigate risks from natural disasters and to support sustainable land use and regenerative agricultural practices. These measures will address food security and water security concerns of beneficiary communities. Watersheds are selected based on criteria including the level of degradation. Interventions are selected using resource mapping and participatory planning methods involving Para Development Committees (PDC) and Village Common Forest (VCF) Groups. Interventions will focus on: (i) agriculture land conservation; (ii) forest/shrub land conservation; (iii) degraded land improvement; (iv) stream bank protection; (v) water resources development; and (vi) demonstration of good agricultural practices. Monitoring arrangements combining geographical information system (GIS) and field-based approaches will also be included under this Output. Activities will be implemented by beneficiary communities, facilitated by an NGO. Local contractors will implement more complex civil works. The capacity of community-based organizations in planning, implementation and maintenance of watershed management interventions will also be strengthened. The component will support a total of 9 sub-watersheds, with an average size of 1,350 ha. per watershed, benefiting a total population of around 75,000 people in 180 paras.

37. *Output 3: Agriculture production, storage, processing and marketing improved.* This output will support farmers' (including women farmers) participation in agriculture value chains. The output will: (i) improve farmers skills and knowledge to participate in value chains of locally produced fruits, vegetables, spices, condiments, and livestock; (ii) provide farmers with better skills and knowledge to improve their cultivation practices, add new produce to their mix, and access backward linkages to procure improved inputs and applies these in a judice manner; (iii) coordinate with institutions to identify and address bottlenecks in value chain development; and (iv) link farmers with market through engagement with private sector value chain operators. NGO will support farmers in 9 upazilas to improve cultivation practices and market linkages together with private sector and business service providers. The project will build on work done during CHTRDP-II and focus on high value vegetables, fruits, pond fisheries, spices and medical plants, and poultry as main product groups. Farmers will be organized in common interest groups around one of these categories.

38. *Output 4: Rural non-farm skills improved and capacities of CHT institutions strengthened.* This component will target rural youth (both men and women), especially from small ethnic communities (SEC), to participate in skills training in sectors allied to the project's main objectives. The skills component will specifically target employment opportunities that will arise from implementing this project itself – including the demand that will become realized once this project is implemented. Training will be delivered by specialized technical and vocational education and training (TVET) institutes and NGOs. Skills development will increase the resilience of rural communities by providing new non-farm employment and preparing them to cope with climate

¹² A Union is the lowest administrative tier, coming below the upazila (sub-district).

change impacts. The training will focus on developing rural non-farm skills that are relevant and in demand, enabling skilled youth to remain in the CHT. The component will also strengthen capacities of local government and project implementation entities for climate adaptation and disaster preparedness, especially in relation to the watershed and agriculture value chain components.

39. *Output 5: Rural Roads Improved.* The project will undertake upgrading and improving of around 130 km of rural roads to enhance connectivity and resilience to climate change. Road surfaces will be upgraded to herringbone brick (HBB) surfaces or bituminous coated surfaces. New or improved bridges will be included together with drainage infrastructure which takes into consideration the climate scenarios for the CHT. The first batch of subprojects (SPB-1) – comprising of 15 union and upazila roads with a total length of 94 km – will constitute part of the project readiness requirement.

40. Nature-based, bioengineering techniques will be integrated in road design to protect hill slopes and riverbanks adjacent to roads from erosion and landslides. These interventions will institutionalize bioengineering solutions at a policy/corporate level within LGED.¹³ This will reduce emergency maintenance and losses incurred by road users due to such events. Measures to improve road safety in the hilly CHT region are also being integrated in designs. The LGED will allocate sufficient budget to maintain completed roads in accordance with their standard procedures.

41. The rural roads rehabilitation component of the Sector Project aims at upgrading existing roads in the target areas, which are often in a poor to very poor condition and form a significant barrier to development of rural communities. Poor access not only hampers economic development but also leads to reduced access to health and education facilities and plays a much broader role in overall well-being.

B. Lessons Learned from Previous Projects

42. Two successive Chittagong Hill Tracts Rural Development Projects supported by ADB have significantly improved living conditions and livelihood opportunities of almost 900,000 CHT people in around 1,600 Paras.¹⁴ Together these projects have: (i) improved 445 km of access roads; (ii) developed around 55,000 community infrastructure facilities (e.g. small-scale water supply schemes, irrigation canals, village roads and steps); (iii) provided basic agriculture equipment (power tillers, water pumps) to around 135,000 communities; (iv) supported crop diversification and marketing in around 2,600 communities; and (v) improved capacity of CHT agencies and farmers.

43. The key lessons learned from these projects were: (i) implementing arrangements involving communities and all levels of government through a bottom-up process were essential in ensuring inclusiveness and equity in the delivery of interventions; (ii) improved access and

¹³ This support is provided through TA 9461-REG: Protecting and Investing in Natural Capital in Asia and Pacific.

¹⁴ Chittagong Hill Tracts Rural Development Project I was implemented from October 2002 to February 2010 and Chittagong Hill Tracts Rural Development Project II commenced in December 2011 and was completed in June 2021.

community infrastructure especially, piped water supply schemes were highly valued by communities since they reduced time spent collecting water and reduced water-borne illnesses significantly; (iii) for the rural road component, the risk from climate induced disasters (e.g, erosion and landslides) was a key issue to be addressed to protect investments. Bioengineering solutions will help mitigate these risks to infrastructure; (iv) delays in approval and implementation of Land Acquisitions and Resettlement Plans (LARPs) occurred when District Commissioners did not understand ADB safeguards policies as well as customary land laws applicable in the CHT. These delays will be mitigated by taking advanced action during project preparation.

C. Implementation Arrangements

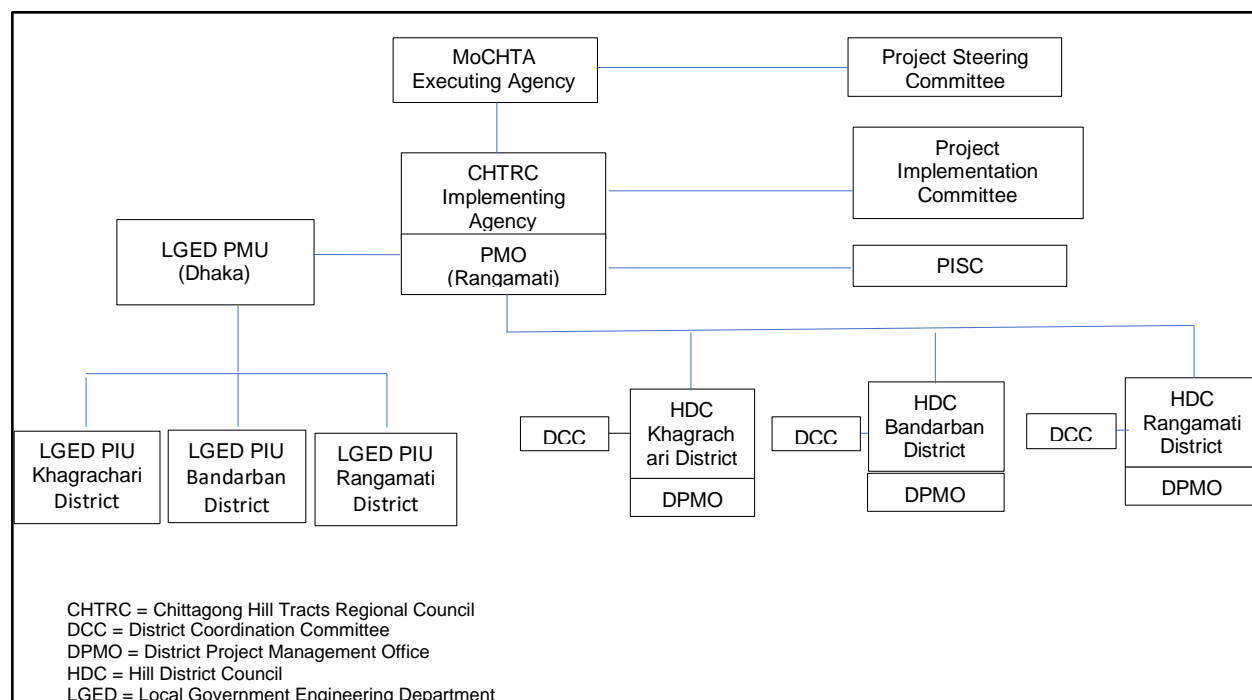
C.1. Project Schedule

44. The implementation period of CRLIWM-CHT Sector Project will be from 2023 to 2029. In the span of seven years, the proposed Project will enhance human health and well-being, reduced vulnerability, and improved food security of the CHT people. By June 2030, all targets under the five components are achieved (Annex 1).

C.2. Institutional Arrangement

45. MoCHTA will be the executing agency and will be responsible for overall project implementation. The CHTRC will be the lead implementing agency and the LGED will be the implementing agency for the rural road component (Output 5). A Project Management Office (PMO) headed by a Project Director (PD-PMO) will be established within the CHTRC, to manage and closely coordinate project activities across all agencies. LGED will establish a Project Management Unit (PMU) headed by a Project Director (PD-LGED), and Project Implementation Unit (PIU) in the three district Executive Engineers' offices to implement rural road component. For purposes of project related monitoring and reporting, the PD-LGED will coordinate through CHTRC. The PD-PMO will consolidate and compile all reports required by the government and ADB. A District Project Management Office (DPMO) will be established in each of the three districts, attached to the Hill District Councils (HDCs) of Bandarban, Khagrachari and Rangamati, and be headed by a Deputy Project Director (DPD). The DPDs will report directly to the PD-PMO.

46. A project steering committee (PSC) will be established under the chairmanship of Minister, MoCHTA and be responsible for overall coordination at national level and policy guidance. One of the members of the steering committee will be the Joint Secretary of the Development Wing of MoCHTA. At the regional level, a Project Implementation Committee will be established and be chaired by the Chairman of the CHTRC. At the district level, District Coordinating Committees will be established and be headed by the Chairman of the respective HDCs.



Source: ADB

Figure 2. Implementation arrangements for BAN:CRLIWM-CHT Sector Project

C.3. Institutional Arrangement at the Community Level

47. For CIs with single-para VARs, the para development committees (PDC) will be responsible for monitoring construction and operation at the community level. For VARs covering more than one para, the PDC will form a joint community development committee (CDC). The PDCs and CDCs¹⁵ will be responsible for supervising implementation all activities related to CI, particularly VARs, WASH, and Agri-infra and renewable energy, with support from CI implementing non-government organization (CI-INGO), DPMO and Project Implementation Support Consultant (PISC) staff.

48. Upon completion of construction and procurement, regular maintenance of CI infrastructure and equipment will be critical to sustain the positive impacts to para communities. The PDC will form an Operation and Maintenance (O&M) committees tasked with maintenance and repair of the CI infrastructure and equipment in the post-completion period. The committee members will receive training from the technical experts of PISC and NGO. The O&M committee will monitor conditions of the interventions, and if there is any damage the committee will ask volunteers for repair.

49. The PMO in Rangamati, with support of the PISC, will provide oversight and support to all community infrastructure activities in the three hill districts. The PISC will include qualified national and international community infrastructure experts.

¹⁵ Each PDC or CDC committee will include a minimum of 30% women.

50. If not yet existing, PDCs will be formed from the households within the community infrastructure paras before the implementation of the interventions. It is desirable that all households within the para join the PDC. However, it will not be mandatory to include all households in the committee before the implementation as some households may take time to be convinced and to become part of the community group. Following its own constitution, each PDC will form its own executive body from the household members of the concerned para.

51. The PDC will be responsible for implementing and managing the interventions in the community area under the guidance and supervision of the community infrastructure subproject team. The DPMO will be responsible for the overall management, backstopping and monitoring of the community infrastructure interventions.

52. Before the PDC is formed, existence and status of any group within the para such as VCF committees will be explored and if possible, such groups will be considered for project implementation with some modification if required.

V. DESCRIPTION OF THE SUBPROJECT

A. Project Background and Purpose

53. Output 1 of the proposed Project, community infrastructure or CI, will support infrastructure interventions aimed at improving village access roads (VARs), water supply and sanitation, household renewable energy supply, and agriculture productivity. VAR connects one or more paras to each other and/or to a union or upazila road. In this way villagers living in the catchment area of the VAR are provided with improved access to markets, health and education facilities, government services, and to their relatives and social relations living elsewhere.

54. Under Output 1 of the proposed CRLIWM-CHT Sector Project, 28 roads were selected for upgrading. These roads have a total distance of together approximately 60 km. One of these roads was included in the Ghagra Union Cluster feasibility study. The other 27 roads are covered in a separate feasibility study and in this IEE. Out of the 27 roads, nine have been selected for detailed feasibility studies and environmental examination. These nine roads, three in each district, are considered to represent all VARs and their different geographical conditions.

55. For all 28 proposed roads, it was confirmed that the communities involved have no other access to main roads than by existing earthen footpaths. In the community consultation meetings, the improved VAR is confirmed as being an important priority for the villagers. The key reason mentioned is the need in transporting agriculture produce from their village to the main road. In addition, especially during the rainy season, there are difficulties for children going to school due to muddy paths.

B. Overview of Village Access Roads (VAR)

56. A total number of 28 Village Access Roads has been shortlisted as subprojects for batch 1. These include 13 roads in Khagrachari district (total 36.23 km), 9 roads in Rangamati district (total 13.45 km), and 6 roads in Bandarban district (total 10.12 km). This IEE covers 27 of the roads, as VAR 18 Leba Para Rastamatha to Kozoichari Para is covered separately in the Ghagra Union Cluster IEE. The average road length is 2.1 km, with respective averages of 2.8 km in Khagrachari, 1.5 km in Rangamati and 1.7 km in Bandarban. The longest road included is the Barmachari Main Road to Guichari Mukh via Tholi Para with 4.2 km, while the shortest one is the Ramhari Para Village Access Road with 0.88 km. Table 8 below provides an overview of the 28 village access roads, and Figure 3 provides a map of the locations.

Table 8. Overview of 28 Village Access Roads

Sl. No.	Name of Village Access Road	Union	Upazila	Length (in km)
Khagrachari				
1	Nilkanta Para Sanjiboni Kutir (Bihar) via 12 No. Prokolpo Gram	4 No. Perachara	Khagrachari Sadar	2.05
2	Bhaibonchara Mukh Govt. Primary School to 2 No Banchara Prakaipa HBB connecting Road via Kukichara vijekijing Boishali Nagor Arunyo Bon Kutir.	5 No. Bhaibonchara	Khagrachari Sadar	3.30
3*	RHD via Machchachara Ananda Mohan Karbari Para to Rabidhan Tripura Karbari Para	1 No. Logang	Panchari	3.20
4	Purba Nalkata Army Camp to Kista Mohan Karbari Para Via Chitta Biplob Chakma's Bagan	4 No. Lotiban	Panchari	2.30
5	Jarulchari to Mongal Bikash Karbari Para	5 No. Babuchara	Dighinala	3.90
6	C&B (Dighinala- Langadu upz road) Road to Rangapanichara Bimol Bihari Karbari Para	1 No. Merung	Dighinala	1.20
7	CHTDB HBB Road to Kengalchari via Khamar Para.	1 No. Mohalchari	Mohalchari	2.80
8	Datkupya Tetultola to stream over with Bridge Lamba Para	3 No. Keyanghat	Mohalchari	2.00
9	DP Dakkhin (South) Muslim Para to Raingkheng Mog Para via 2 No Rubber bagan para.	Matiranga Sadar	Matiranga	2.48
10*	Guimara DP Para Athrowai Marma's Bari via Changdong Para Road Mukh (Nowa Para) to Naikya Para.	1 No. Guimara	Guimara	3.40
11*	Kalapani Mihir's Bari (House) to Nowa Para via Kalapani Keyangghor	3 No. Joggochola	Manikchari	3.50
12	Barmachari Main Road to Guichari Mukh via Tholi Para	3 No. Barmachari	Laxmichari	4.20
13	Gujapara to Nowapara	2 No. Patachara	Ramgarh	1.90
Sub-Total Khagrachari				36.23
Rangamati				
14	Chongrachari Mukh Para to Haji Shaheb (Muslim) Para	Kaptai	Chitmaram	1.20
15*	Ramhari Para Village Access Road	Naniarchar	Ghilachari	0.88
16*	Ramhari Para to Krishnamachara village access road	Naniarchar	Burighat	1.44
17	Manikjor Chara Gram Ratan Chakma's Bari House to Naniarchar Main Road	Longadu	Longadu	1.46
18* ¹⁶	Leba Para Rastamatha to Kozoichari Para	Kawkhali	Ghagra	1.25
19	Betbunia Simana to Hatimara	Kawkhali	Kalampati	2.65
20	Rajsthal main road to Paidong Para	Rajasthali	Gainda	2.03
21	Sakrachari Mukh to Pangkua Para	Belaichari	1 No Belaichari	1.56
22	Maddya Balukhali Jotimoy Chakma's House to Subalong shakha Banbihar	Jurachari	Jurachari	0.99

¹⁶ VAR 18 is not covered in this IEE but is instead part of the Ghagra Community Infrastructure Subproject and the associated IEE. <https://www.adb.org/projects/documents/ban-54047-001-iee-0>

Sl. No.	Name of Village Access Road	Union	Upazila	Length (in km)
Sub-Total Rangamati				13.45
Bandarban				
23*	Kurukpata Poamuhuri to Meringchar Para	Alikadam	3 No. Nayapara	1.31
24	Thanchi Sarak Purba Palong Para via Md. Ali's House to Amtoli Taxi Station	Alikadam	Alikadam Sadar	2.26
25*	Maddhyam Chak Para to Thuihla Aung Para	Naikhyangchari	Baishari	1.96
26	Alikhyang Road to Charabunia Para	Naikhyangchari	Baishari	1.55
27*	Cherarkul to Keichyabunia Linked Road	Naikhyangchari	N/chari Sadar	1.73
28	Ashartali Main Road to Puraba Math	Naikhyangchari	N/chari Sadar	1.31
Sub-Total Bandarban				10.12
Total Length				59.79

* The roads indicated with an asterisk are the nine VARs that have been selected for detailed feasibility studies and environmental examination.

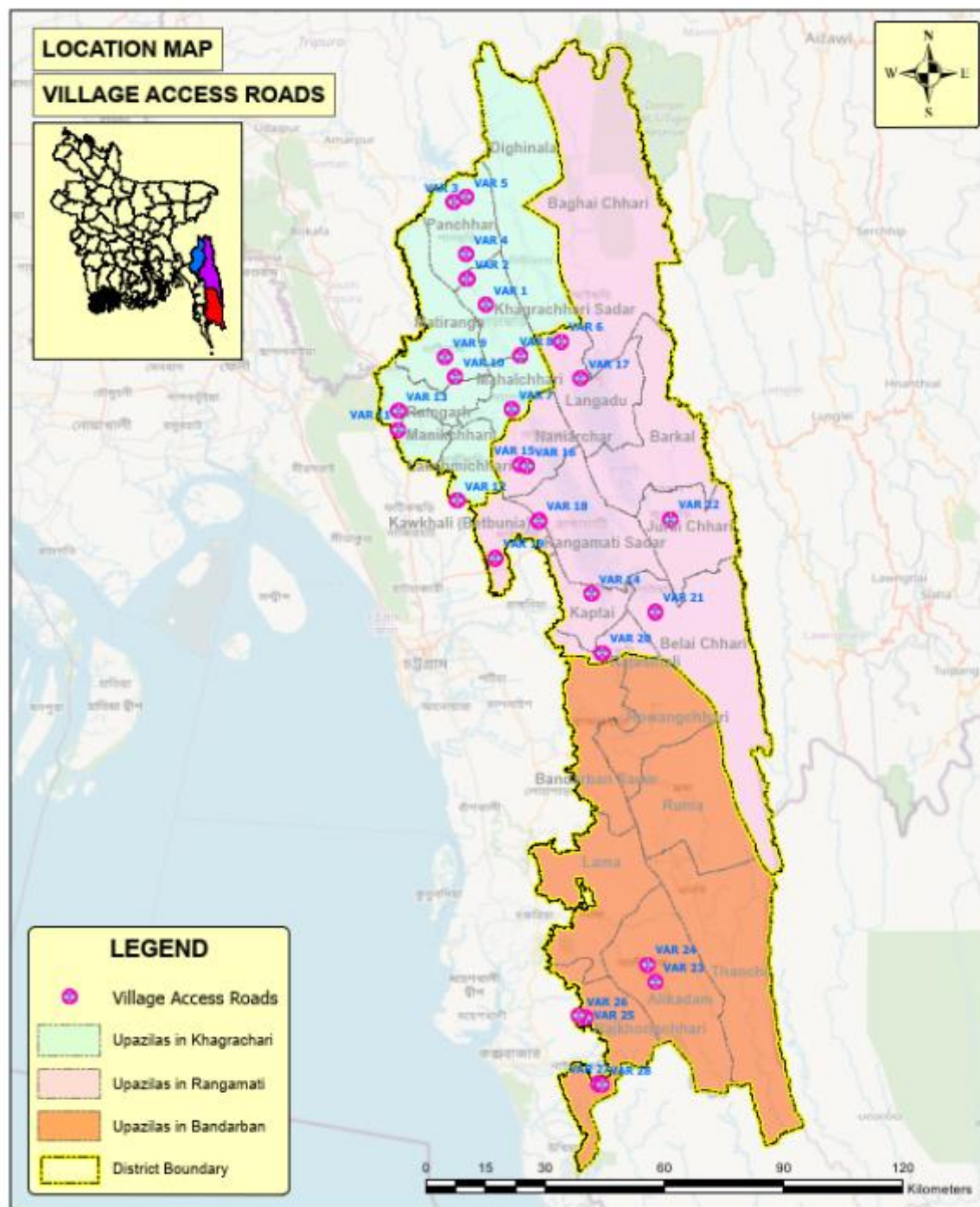


Figure 3. Locations of 28 prioritized Village Access Roads (batch 1)

57. The communities around the 27 roads currently do not have access to main roads, other than by existing earthen footpaths. In the community consultation meetings men and women confirmed that improving the village access roads was an important priority for them. During the long rainy season, the traditional earthen footpaths become muddy and difficult and even dangerous to pass, especially when bulk products need to be transported.



Source: Feasibility study of Village Access Roads

Figure 4. Current footpath condition in Meringchar para (VAR 23, left) and Guimara DP para (VAR 10, right).

58. The 27 subprojects will benefit approximately 50,000 people of over 10,000 households of more than 130 paras, spread across 25 unions of 18 upazilas of the 3 districts. All of these people living along or near the roads will benefit from having improved access to nearby houses, shops, paddy lands, gardens, etc., as well as to main roads which ensures easier access to facilities such as religious institutions, schools, markets, etc.

59. The works to be carried out for the village access roads typically includes preparatory earth work; provide a hard surface of bricks in a herringbone pattern (HBB), concrete surfacing for flood-prone sections, provision of drains, provision of culverts, and road safety provisions mainly consisting of traffic signs indicated sharp curves or junctions with the main road.

C. Technical Specifications

60. The village access roads will be improved by means of providing a hard surface and drainage. To prepare for their designs, the following steps were taken: preparation of village map showing existing road alignment and location of the proposed village access road that were proposed and prioritized by villagers; GPS has been used for recording tracks of the proposed schemes and sub-projects from that data village map and other statistics can be analyzed; an inventory of existing road alignment is carefully noted; and a detailed long profile of proposed village access are prepared.

61. *Earth work:* Proposed earth work of cutting, filling will be required to correct the road alignment and soft shoulder improvement as per proposed road design.

62. *Road surfacing:* a hard surface will be provided for the roads through herring bone brick (HBB) patterns. For some short stretches that are frequently flooded, a concrete surface of reinforced cement concrete (RCC) is proposed. The road widths differ, but for most roads the proposed width is either 2 metres or 3.05 metres. Due to significant elevation differences in a few of the roads, in a few cases RCC stairs are included.

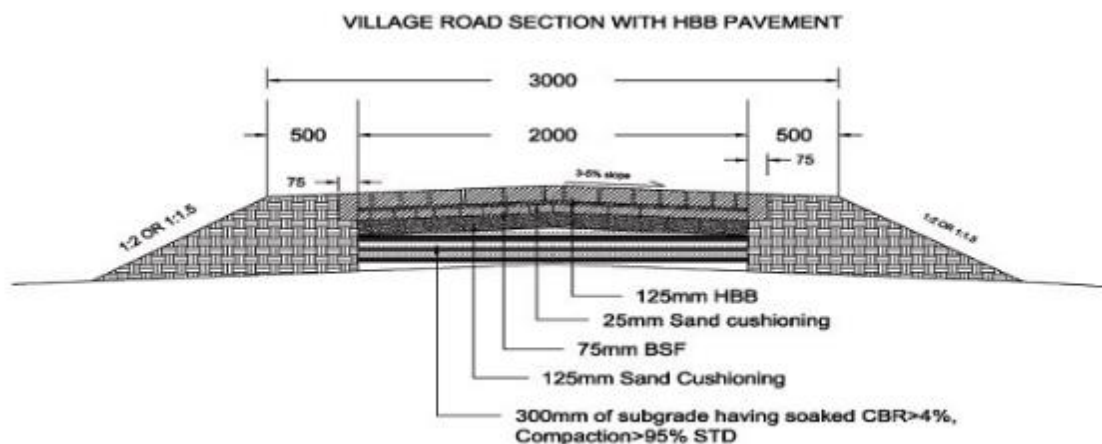


Figure 5. Example cross-section drawing of HBB road design (width 2m)

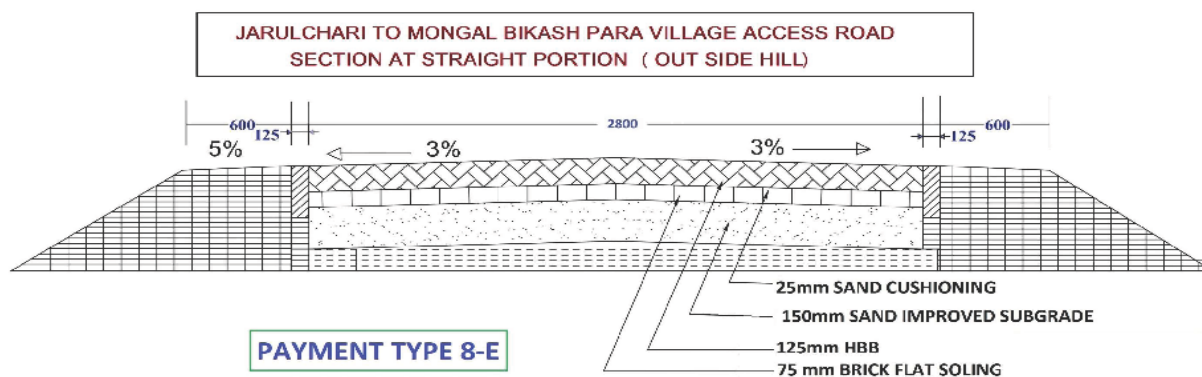


Figure 6. Example cross-section drawing of HBB road design (width 3.05m)

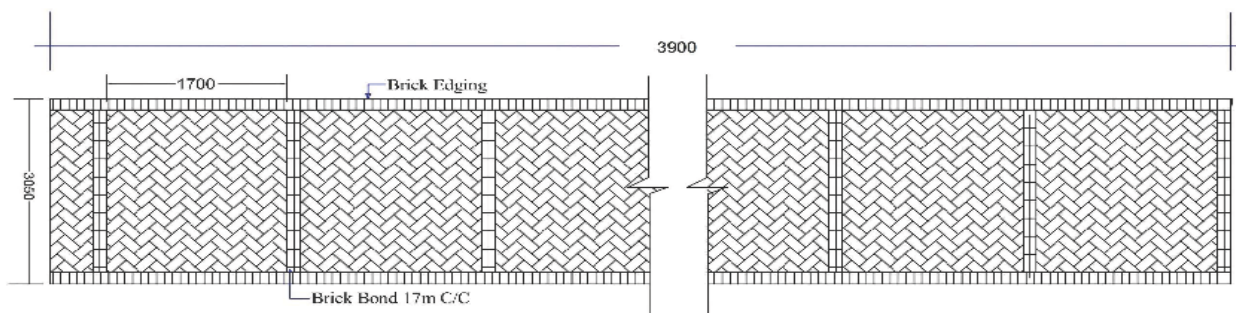


Figure 7. Example top view drawing of HBB road design (width 3.05m)

63. *Drainage*: various types of drains are proposed to drain out flash water in the hilly area to protect the road from water logging and to avoid any damage. These include L-drain, U-drain, X-drain and/or box drain in various combinations in specific sections of the village access roads.

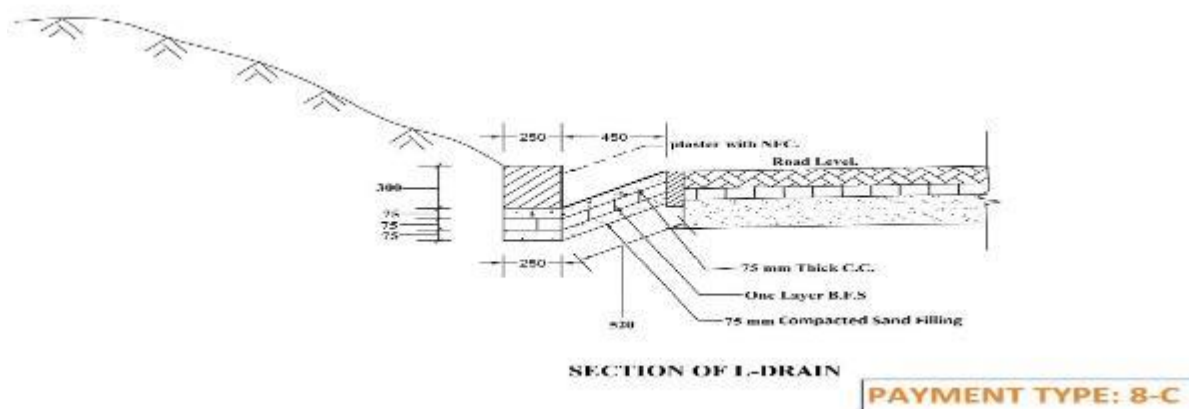


Figure 8. Example of L-drain design drawing

64. *Culverts*: the designs for many of the village access roads include one or more box culverts, including in some cases double-vent box culverts.

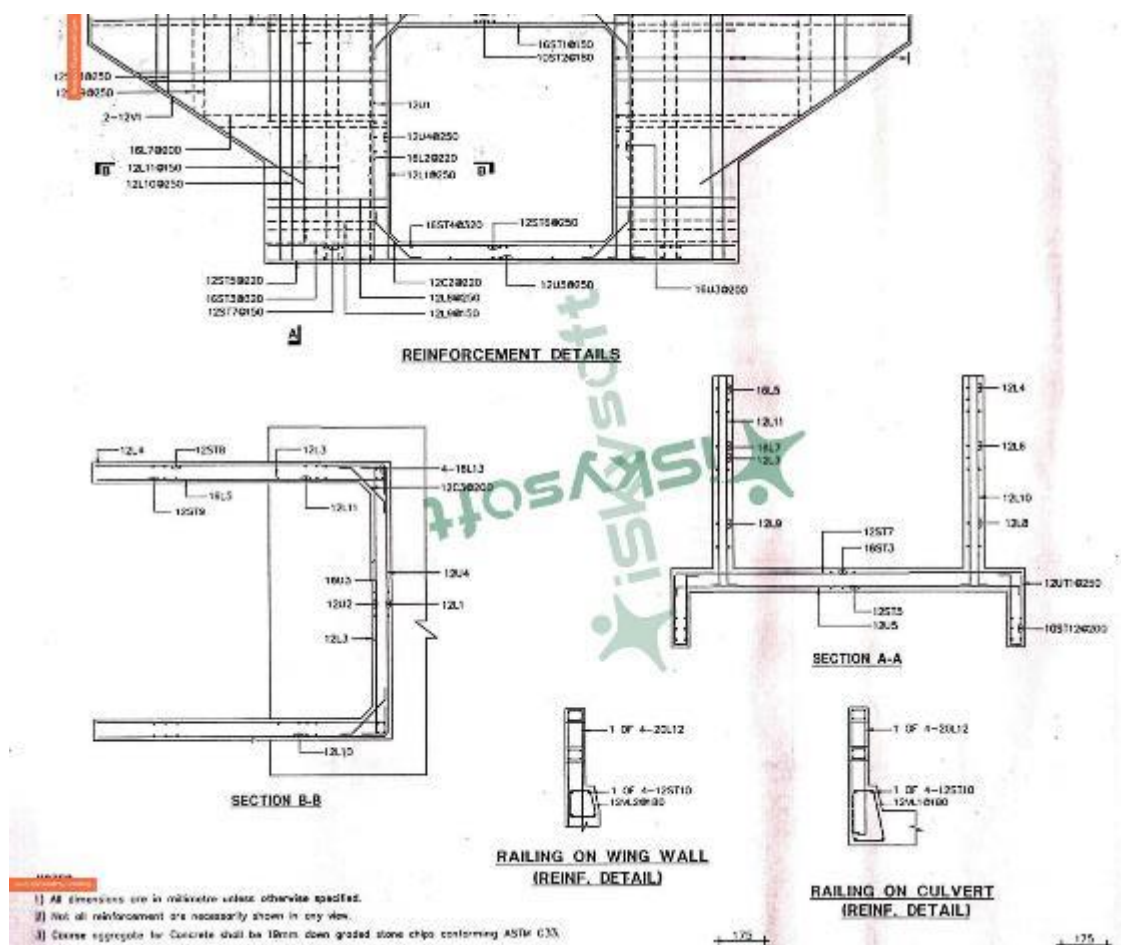


Figure 10. Example of single-vent box culvert design drawing

65. *Earth retaining structures:* In selected places, toe walls and guide walls will be added to prevent slippage, soil spreading and/or erosion. To one of the roads (VAR 6) a short section of palisading is added.



Figure 11. Example of brick masonry toe wall/guide wall design drawing

66. *Road safety measures* mainly consist of traffic signs indicated sharp curves or junctions with the main road. Guideposts are proposed to be installed on the road shoulder on both sides of the approach of culverts and curve points so that vehicles can pass these safely.

67.

D. Construction Material Sourcing

68. The sourcing of construction material is listed below in Table 9. Where possible, materials will be locally sourced, but subject to positive results of lab testing. No borrow pits will be needed.

Table 9. Sources of construction materials

Category	Types, brands & usage	Source
Bricks	KBM, RBM, ABM, MBM, ABC, BBC are used in Rangamati after specified Lab-Test in LGED lab	Rangunia District, Chattogram
Bricks	ABC, JMB, 5-Star, 3-Star are used in Khagrachari after specified Lab-Test in LGED lab	Khagrachari
Bricks	MBM, ABM, BBC, NBM are used in Bandarban after specified Lab-Test in LGED lab	Soalok Union, Bandarban
Cement	King-brand, Premier, Shah, MGS, Confidence, Aramit, Ruby are used in Rangamati after specified test in LGED lab	Chattogram
Cement	Diamond, Aramit, Royal, Premier are used in Khagrachari after specified test- in LGED Lab	Chattogram
Cement	Premier, Confidence, Ruby are used in Bandarban after specified test in LGED Lab.	Chattogram
Stone	Sylhet stone & imported black stone from India are used in concreting in 3-CHT Districts after specified test in LGED Laboratory	Sylhet and India
Local fine sand	Used in Rangamati after specified test in LGED Lab. It is used in road improved subgrade and back filling in foundation work.	Collected from Ichamati River (Rangamati), Sangu River (Raojan)

Category	Types, brands & usage	Source
Local fine sand	Used in Khagrachai after specified test in LGED Laboratory. It is used in road improved subgrade and back filling in foundation work. It is also used in plaster work.	Collected Chengi River (Khagrachari)
Local fine sand	Used in Bandarban after Lab-Test. It is used in road improved subgrade & in back filling of foundation work.	Collected from Silok Khal (Bandarban).
Sylhet coarse sand	Used in concreting of structure & plaster works after specified test in LGED Lab. It is used in 3-CHT Districts	Sylhet
Steel	BSRM, KSRM, RSRM, Baized, AKS (Grade-400W) available in Chattogram are used in 3-CHT Districts after specified Lab-Test in CUET/BUET	Chattogram
Water	After specified test in DPHE Lab of each CHT District, it is used in all types of construction of structure works and drinking purpose.	Locally available in 3-CHT Districts.
Geotextile	It is used in protective works after specified test in BUET Laboratory.	Dhaka

Source: LGED Rangamati District Office

E. Project Schedule

69. The project will be implemented over a seven-year period, with a six-month inception phase in CRLIWM-CHT Sector Project's Year 1, and a six-month project closure phase in year 7. As the 28 VAR subprojects are part of project readiness, additional training and organization of community organizations and mobilization of the contractor should start as soon as procurement of the contractor is completed, and INGO and PISC are mobilized. The interventions normally will take around one year to complete civil works.

70. The village access road subprojects will be prepared as part of CRLIWM-CHT Sector Project readiness. The remaining other 85 union subprojects and 32 VAR will be identified, appraised and designed during the project's year 2 – 7. The EARF will provide guidance on the environmental safeguard requirements for CI and VAR during project implementation.

F. Implementation Arrangements

71. Implementation arrangement for the VAR subprojects batch will follow the CI guidelines prepared for CHTRDP-II and adapted for the CRLIWM-CHT Project. The table below summarizes the institutional arrangement under VAR Subproject.

Table 10. Institutional and implementation arrangement

Name of Committee/ Institute	Major responsibilities
PDC / CDC	There will be a PDC when the VAR concerns only one para, or a CDC when there are several paras. The PDC/CDC will be responsible for supervising all activities, with support from the HDC and Project Implementation Support Consultant.
Implementing SM-NGO	Social mobilization NGO to provide backstopping support to PDC/CDC.
Project Implementation Support Consultant	Provide technical support for enhancing capacity of PDC/CDC.
DPMO	Provide guidance and technical support to the PDC/CDC.
PMO	Approve and guidance these arrangement

Source: Feasibility Study VAR

G. Operation and Maintenance of CI

72. The PDC/CDC will form an O&M group for future maintenance and repair works of all the interventions. The INGO facilitates training on financial management, participatory planning and monitoring and need based training. The DPMO engineer will coordinate and provide on the job training on technical matters.

73. With assistance of the SM-NGO and DPMO junior engineers, an O&M Plan will be prepared for every VAR during the construction phase once the PDC/CDC has been formed. The objectives the O&M plans are to maintain the roads in good condition, which includes periodic grading, filling, if necessary repairing; remove debris; keep diversions and water ways free from debris that may cause water to overflow the structures; and monitor that no earth cutting or earth extracting takes place near the road.

74. A fund will be established for maintenance of the intervention with a monthly fee collected from beneficiary HHs and grants receive in cash from any institution/organizations. The cash will be deposited to the PDC/CDC bank account. For each VAR the concerned PDC/CDC will deposit BDT10,000 as an initial maintenance fund, consisting of BDT5,000 deposited before the start of construction work and BDT5,000 at completion of work. The PDC/CDC will be encouraged to undertake initiatives for fund allocation from various institutions like; HDC, upazila parishad, union parishad, NGO and possibly other development partners active in the CHT for future repairs if required.

VI. ANALYSIS OF ALTERNATIVES

75. *Alternative locations.* There are 28 roads selected for the proposed VAR upgrading. For the 27 proposed roads, it was confirmed that the concern communities have no other access to main roads other than by the existing earthen footpath.

76. *Alternative VAR routes.* In principle, existing road alignments are to be followed to implement VAR improvements of the CI component (Output 1), except for some minor corrections to the road alignment as per proposed road design. Alternative routes will lead to loss of livelihoods, additional costs and delays, as land will need to be provided for major re-alignment; hence, alternative routes are being considered.

77. *Alternative VAR design.* The present design envisages a transition from unpaved to HBB (or brick) surfacing, and installation of improved road-side and cross-drainage. Deviating from this design would either incur significantly higher costs (e.g., upgrading to bitumen carpeting) or will be ineffective (e.g., remaining unpaved, but smoothened and with drainage added).

78. *“Without project” scenario.* For the VARs, this includes poor access leading to longer travel times, higher costs and spoilage of produce, but also higher risks due to longer times required to access medical care, reduced sanitation, poorer water quality and reduced access to, for example, education and other services. Under the “without project” scenario, there will also be less investment in further development the area as basic infrastructure is required to attract entrepreneurs and entrepreneurship from within. Overall, socio-economic conditions will be negatively affected as the project area is relegated to the backwaters of development.

VII. DESCRIPTION OF THE ENVIRONMENT

79. The CHT is a geographically and ethno-culturally distinct region of Bangladesh. Situated in south-east of the country, it is the only extensively hilly area of Bangladesh. The CHT borders Myanmar to the South, the Indian states of Tripura and Mizoram to the North and East and the Chattogram District of Bangladesh to the West. Its land area covers 13,000 square km, of which 90% are sloping lands.

A. Physical Environment

A.1. Topography

80. The three districts Khagrachari, Rangamati and Bandarban have a hilly topography, with parts of the latter being mountainous. The region is bounded by Tripura State (India) to the northwest and north, Mizoram State (India) and Chin State (Myanmar) to the east, Rakhine State (Myanmar) to the south, and the districts of Cox's Bazaar and Chittagong to the west. Notable hill ranges include Golamoon, Chotto Panchari, Karmi Mura, Lutiban, Kuradia, Bhanga Mura, Jopisil, Muranja, Wayla, Chimbook, Batimain, Politai, Saichal-Mowdok, and Saichal. The main rivers of the region are Karnaphuli, Kasalong, Maini, Chengi, Sangu (also known as Sangpo or Shankha), Matamuhuri and Bakkhali. Kaptai Lake, the largest lake of Bangladesh, is a reservoir on the Karnaphuli river.

A.2. Soil

81. The soil in the subproject areas are generally yellowish brown to reddish brown, sandy to sandy clay loam, strongly acidic due to high silica content, and well to excessively drained on steep slopes. The loams generally grade into broken shale or sandstone at a various depth (between 30-120 cm). Soil in most of the areas generally appears to be fertile.



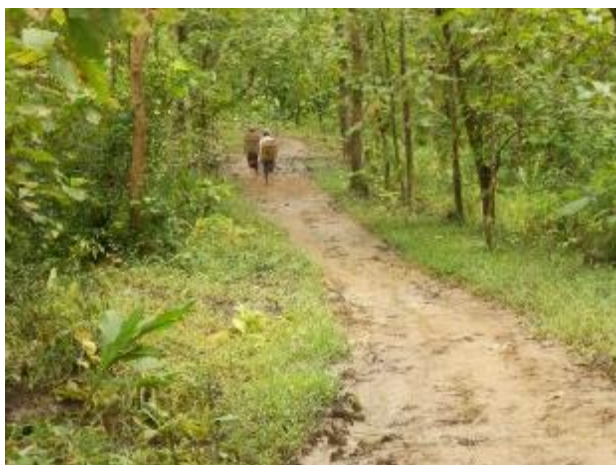
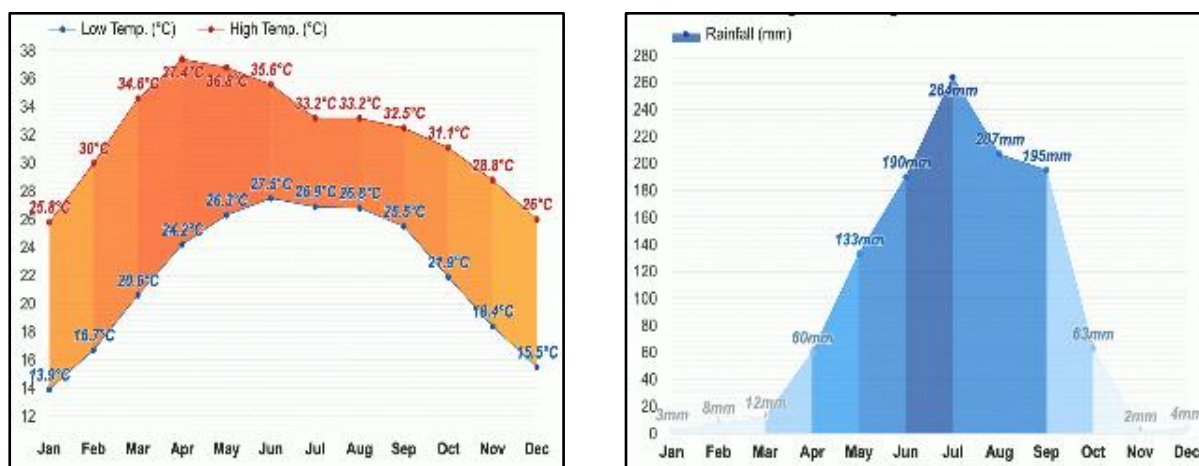


Figure 12. View at existing earthen paths to be improved, showing soil conditions: VAR 2 (top left), VAR 19 (top right), and VAR 16 (bottom left).

A.3. Climate

82. The climate in the CHT is tropical monsoon. The total mean annual rainfall varies from 2,400 – 3,800 mm in the CHT. Wet season rainfall is approximately 70 – 80% of the annual total, and dry season rainfall varies from 18 – 24%. Annual temperatures vary from 10° - 35°C. A mean minimum temperature of 24°C is experienced during the months of December to January, and a maximum temperature of 34°C during March to May. The dry and cool season is from November to March; pre-monsoon season is April-May which is very hot and sunny, and the monsoon season is from June to October, which is warm, cloudy and wet.

83. Based on Rangamati's climatic records, average monthly temperature and rainfall are shown in the figure below.



Source: Feasibility study of Village Access Roads

Figure 13. Graphs showing the average monthly temperature (a) and rainfall (b).¹⁷

¹⁷ Source: [Rangamati, Bangladesh - Climate & Monthly weather forecast \(weather-atlas.com\)](http://Rangamati.Bangladesh - Climate & Monthly weather forecast (weather-atlas.com))

A.4. Climate Change Scenario

84. Bangladesh has already been experiencing adverse effect of global warming. Projected average temperature rises in Bangladesh are broadly in line with the global average for the different emissions pathways. The highest emissions pathway (i.e. RCP8.5) results in a projected rise of 3.6°C by 2080-2099 above the 1986-2005 baseline. Rises in minimum and maximum temperatures are considerably higher than the change in average temperature and are concentrated in the period of December – March. River flooding could be exacerbated by intensified extreme rainfall placing lives, infrastructure and the economy at risk. Without adaptation the number of people exposed to an extreme river flood is expected to grow by 6-12 million by 2035-2044. Food production and the agricultural sector could face reduced yields driven by increase temperature and erratic rainfall in the growing season demanding more water, increased drought frequency, flooding and waterlogging. The risk from combined elements will be high than the risk from each element individually on negative impact on livelihoods and wellbeing of the community (economic, social and environmental wellbeing), and more risk from a climate hazard especially incidents of extreme weather and land degradation.

A.5. Water Resources

85. The main sources of water in the CHT are the surface water from rivers, lakes, canals and springs, and groundwater from both shallow and deep aquifers. The rivers in CHT are mostly secluded and confined in the hilly areas. Safe water is not always available in the CHT, and as a result, the people suffer from water shortage, especially in winter, and from various water-related diseases. Rainfall is the main source of surface water in the CHT. Surface and groundwater resources are reliant on each other. Many streams receive a major portion of their flow from groundwater. On the other hand, surface streams can also be the key sources of groundwater recharge. In general, groundwater flows into the surface water bodies in the dry season and surface water enters into the ground during the monsoon. Therefore, use of one source usually affects water availability from other sources.

86. There are a number of large rivers in the CHT including Karnaphuli, Kasalong, Maini, Chengi, Sangu (also known as Sangpo or Shankha), Matamuhuri and Bakkhali. Kaptai Lake, the largest lake of Bangladesh, is a reservoir on the Karnaphuli river. Around most of the village access roads there are only smaller streams (chara or khal). Some of these are perennial, but many are also dry during the dry season months.



Figure 14. Chengi River (left); The river runs among others through Khangrachari Sadar and Panchari Upazilas, near the locations of VARs 1-5, and Maharump Chara near VAR 16 (right).

A.6. Air Quality and Noise Levels

87. According to the Environmental Monitoring Report of the 2nd Phase Chittagong Hill Tract Rural Development Project¹⁸ air quality was not monitored because rural development project has no significant impact on air quality. Hence, little information is available on baselines, especially on noise and air quality.

A.7. Water Quality

88. Overall, there is little pesticide use in the project area and only a moderate use of fertilizers; on the whole these are used mainly in rice paddies and only a little on other crops. Hence, the impact of agrochemicals on water quality is expected to be low (in upland areas) and moderate (in the lower areas where rice paddies are concentrated). Another main source of contamination of surface waters is human and livestock excrement, which is concentrated in/around villages. While access to sanitary latrines has greatly improved in Bangladesh overall, this still lags behind in the CHT, and especially in more remote villages the level of access to sanitary latrines may be 50% or less.

A.8. Natural hazards

89. The CHT are prone to natural hazards such as heavy downpours (esp. during the monsoon and during tropical cyclones) and associated local flooding and landslides, periodic drought and earthquakes. Climate change is likely to further aggravate the risks of floods and droughts. The village access roads are also subject to these hazards and especially floods, landslides and earthquakes may pose a risk.

¹⁸ CHTRDP II; <https://www.adb.org/projects/42248-013/main>

B. Biological Environment

B.1. Terrestrial Vegetations

90. Generally, target intervention sites of the subproject are in modified habitats¹⁹ with vegetations at homesteads and along roadsides. Many trees are located along both sides of roads and include many introduced ornamentals, fruit-trees and timber species. The trees and vegetations include among others Agar Wood (*Aquilaria malaccensis*), Amluki (*Euphorbia*), Bael (*Aegle marmelos*), Banana (*Musa paradisiacum*), Banyan tree (*Ficus Bengalensis*), Betel Nut (*Areca catechu*), Bhadi (*Juglandaceae*), Chalta (*Dillenia indica*), Coconut (*Cocos nucifera*), Curry tree (*Murraya koenigii*), Dumar Sumi (*Cajanus cajan*), Gamari (*Gmelina arborea*), Gutgutya (*Protium serratum*), Honagula (*Oroxylum indicum*), Jack fruit (*Artocarpus heterophyllus*), Jalpai (*Elaeocarpus spp.*), Jarul (*Lagerstroemia speciosa*), Krishnachura (*Delonix regia*), Lebu (*Citrus grandis*), Lychee (*Litchi chinensis*), Mahogany (*Swietenia mahagoni*), Mango (*Mangifera indica*), Neem (*Azadirachta indica*), Papaya (*Carica papaya*), Pineapple (*Ananas comosus*), Sissu (*Dalbergia sissoo*), Shajina (*Moringa oleifera*), Sloe Berries (*Prunus spinosa*), Tamarind (*Tamarindus indica*), Teak (*Tectona grandis*), Tulsi (*Dcimum sanctum*), as well as rubber, bamboo species, and so on.

91. There are no endangered or rare plants in the subproject area according to the information provided by the Bangladesh Forest Department.

B.2. Freshwater fauna & terrestrial wildlife species

92. The freshwater habitats in the subproject areas mainly include charas. These inland water bodies are for fish and introduced species such as Puti, Guduk, Taki, Shing Mach, Kuchya Mach, Gulsa Mach, Ugal Mach, Gutung Mach, Shrimp and so on. Species in charas are one of the most important sources of protein for village consumption. Local people are used on catching fish for filling protein requirement. Aquatic habitats also provide a refuge for different species of frogs, crabs, reptiles and others. In the larger rivers, also species such as Bowal, Kali Baush, Baing, Tengra, Gulsha and Soal fish are found.

93. Around most of the village access roads, wildlife is relatively limited. Around most roads, wild hens, snakes, wild boar, deer, squirrels, porcupines and/or monitor lizards can be found.

94. There are no species of concern (i.e., endangered and critically endangered species) in the terrestrial and chharas that will be affected by intervention under the subprojects.

C. Human and Economic Development

C.1. Demography

95. The catchment areas of the 27 village access roads extend to more than 130 paras, spread across 25 unions of 18 upazilas of the 3 districts. Together, these paras have a population

¹⁹ As defined in ADB SPS 2009, *In areas of modified habitat, where the natural habitat has apparently been altered, often through the introduction of alien species of plants and animals.*

of approximately 50,000 persons (just over 10,000 households). Each of the roads provides benefits to between one and seven paras. The number of beneficiaries varies from 345 persons for VAR 15 (Ramhari Para VAR) to 5,430 persons for VAR 9, from DP Dakkhin (South) Muslim Para to Raingkheng Mog Para. All these people will benefit from the improved roads.

C.2. Ethnicity

96. Out of the approximately 50,000 beneficiaries of the village access roads, some 82% belong to indigenous people groups, with the remaining 18% belonging to the Bengali community. Indigenous people groups benefitting from the roads include mainly the Chakma (some 49% of total beneficiaries) and Marma (18%). In Khagrachari District, the catchment areas of several of the roads also include Tripura people. The catchment areas of two roads include mainly people from other ethnic groups: for the Sakrachari Mukh to Pangkua Para village access road (VAR 21) in Rangamati District this is the Pangkua or Pankho group, while for the Kurukpata Poamuhuri to Meringchar Para road (VAR 23) in Bandarban District these are the Mro people.

C.3. Socio-economic Status

97. From the sample of 9 VARs, it is found that in the villages near the roads, some 31% are considered 'very poor', 45% 'poor' and 24% 'better off' (see Table 11). The indicators for these three categories are derived from the CHTRDP-II Guidelines.

- *Very Poor*: Household which mainly rely on labour in other's field because they own no cultivable land or only cultivable land sufficient to provide them with food during 2 - 3 months in the year. In Ghagra the female headed households fall in this category.
- *Poor*: Households who only grow food sufficient for 6 - 7 months themselves and take temporary jobs to cover the shortfall. They may have some income from livestock and cash crops.
- *Better off*: Households who grow sufficient food for year-round and also have income from livestock and cash crops. Households with permanent jobs also may fall in this category.

Table 11. Poverty incidence within communities surrounding the village access roads, based on sample

District	Very poor	Poor	Better off
Khagrachari	24%	45%	31%
Rangamati	27%	39%	34%
Bandarban	41%	48%	11%
Total	31%	45%	24%

Source: Feasibility Study VARs

98. Looking at specific roads, it can be noted that for several of the roads the socio-economic status of the local people is still worse than the averages show. In the catchment area of VAR 11 in Khagrachari District, 52% of the people are identified as Very Poor. Around VAR 17 in Rangamati District, 39% are Very Poor and 58% are Poor, which means that only 3% of the local people are considered to be 'better off'.

99. The people stated that they had been living for decades with poor socio-economic condition of majority households of the village with very limited degree of improvement basically after the CHT accord 1997. Across all the roads, the general view is that the people do not earn sufficient income to fulfil their basic needs. The income sources are very limited. They do not have access to additional sources of income such as small business, entrepreneurship, etc. There are so many barriers and difficulties from them and do not overcome and cannot take any initiative. Road connectivity is one of the major barriers for them.

C.4. Gender

100. The subproject is a gender equality theme or GEN category. The subproject will safeguard the interest of women and will ensure additional job opportunities for poor and destitute women in the subproject area. The construction of the rural road will ensure equal wages for both men and women laborers, and appropriate facilities (accommodation, toilets and working hours) for both men and women laborers.

101. In preparation for the subprojects, consultation and participation meetings have been held with the local communities. In order to ensure that the women's perspective would be taken well into account, in addition to the general consultation meetings, also separate meetings for women groups and men groups have been held.



Figure 15. Stakeholder consultation meetings for women groups: VAR 13 (left) and VAR 27 (right).

102. The average sex ratio based on the sample is 95.4 men per 100 women compared to a national ratio of 102.1 men per 100 women for Bangladesh as a whole.

103. Women are involved in economic and social processes, also outside the household. For example, they play an important role almost comparable to that of men in trading jhum agricultural products. However, they are much less involved in trading of higher value crops and livestock as women have less skills in negotiation, and face more language barriers, and they have lack of

information regarding the price of products than men. Many women who have insufficient command over the Bangla language visit groceries and tailoring shops with the help of other women or girls who do speak that language. Women and girls who went to school can speak Bangla though they don't have enough skills in negotiation for selling agricultural products and livestock. Women hardly play a role when community bodies take decisions or when conflicts within the communities need to be settled. Furthermore, women have less participation in community development activities. However, the situation is changing as some para have women karbari and women ward members. The number of women representatives in the customary system at village level has been increased remarkably during the last few years. At present, they participate in different community development activities including decision making level process (especially when this involves violence against women).

104. Both men and women work in jhum fields and paddy land. However, families go to their jhum lands for a whole day as jhum is little far from their habitations. Women wake up very early in the morning and then collect water to be able to work at their jhum areas early. Vegetables are well grown in target villages. Women whose land is far from their houses, prepare food for breakfast and lunch for their household members and then carry the lunch to the fields.

105. Women mentioned that their daily working hours and starting time vary according to their convenience if they work on their own land. However, if women work as day laborers, they work from 7:00 – 7:30 am to 5:00 pm including taking breaks for about two hours at midday. Returning from work, they go to the jhiri, have a bath, fetch water from a dug well and start cooking. According to the women who participated in the community consultations, they are engaged by agricultural work and have time for nothing else except for traditional weaving in Ashwin, Kartik, Agrahayon and Poush (September to January) when there is less work in agriculture. Most female headed households are landless and the women therefore need to carve out a living as day laborers working on the field of other villagers or sometimes also outside their village. Marma women do not work outside their own villages. The few women-headed households who which some land and do not have enough for their themselves the whole year.

C.5. Landownership

106. 12% of households in the main villages of the 27 VARs are classified as landless. Based on the sample, there are no or few landless households in the communities around the VARs in Rangamati District, while the percentage of landless households is approximately 9% around the VARs in Khagrachari and some 22% in the communities around the VARs in Bandarban District.

107. The PSA survey however noted that almost 55% of rural households in their sample drawn from paras prioritized for future interventions by the project (overweighted for smaller IP communities) are landless or functionally landless (owning less than 0.5 acre). This was not investigated in depth during the community consultations for the VARs. However, from the feasibility study conducted for Ghagra Union, it was found that 64% of HHs had both jhum and paddy land, while another 26% had some jhum land, but information on plot size was not collected. When looking at the main villages of the 27 VARs of SPB-1, 39% of the HHs owns plough (paddy) land, either under costumery or title ownership, 21% of HHs jhum land, 47% owns

land planted with timber or fruit trees or other plantation crops, and 10% owns fringe land. As Bandarban is not on the Kaptai Lake, there is no fringe land in this district. 62% of plough land and 35% of fringe are under title ownership, the balance is under the customary system. Surprisingly 47% of jhum land is also under title ownership. This is much lower for plantation land, where only 18% of land is title land, registered with the Land Office.

108. Ownership of jhum land used for shifting cultivation is virtually absent in Khagrachari, but here 61% of households owns land which is under perennial fruit and timber trees or used for other plantation crops. This points in the direction of the shifting cultivation being abandoned and jhum land system being converted into plantations. This is less the case in Rangamati, with 91% of households owning jhum land. In Bandarban the figure is 12%.

109. Almost all (some 87%) of households in the nine main paras of the sample live in *katcha* houses, i.e. house with mud or bamboo floor, bamboo walls and roof of tin or leaves. Some 5% of households have *semi-katcha* houses with brick foundations, concrete or bamboo/wooden floors, possibly lower brick walls and wooden/bamboo upper walls and tin or leave roofs. Only some 1-2% of households are living in *pucca* houses with concrete floors and brick walls.

C.6. Moveable assets

110. TVs and radios are not very common in the nine main villages. Mobile phones, however, are widely owned, with 1206 HHs owning 1201 mobile phones, although some HHs own more than one phone while other don't own any. Other luxury items like motorcycle (63) and fridges (25) are rarely owned and ownership mostly being concentrated in the peri-urban Nilkanta para in Khagrachari. Even bicycles are rare, partly due to the terrain. Only one HHs in the nine main villages owns a computer, while 3 HHs own a three-wheeler taxi, 5 HHs own a jeep or a truck. Ownership of these assets is also unevenly spread over the 9 paras, with 30 motorcycle, 3 three-wheeler and the 2 trucks being from Cherakul para, which is a Bengali community.

111. Livestock is another form of asset HHs own. A majority of families own some form of livestock (cows, goats, and/or pigs), while most HHs own some chicken, which are free roaming. Livestock is mostly meant for savings, but chicken are both for own consumption and savings.

C.7. Livelihoods

112. The economic mainstay of the people in the villages around the VARs is agricultural and horticulture. Based on the sample, 80% of the households are either farmers or agriculture labourers and 20% derives their income from other occupations. Other occupations include mainly government jobs (6%), shopkeeping (3%), and artisanal job, mainly bamboo and woodwork (3%). The remaining 6-7% of people in the villages work mainly as garment workers. This especially applies to workers from Khagrachari, who are active as garment workers in Chittagong and Dhaka.

113. Most of the households in the target paras depend on agriculture. The majority of HHs own both valley plough land where paddy can be cultivated in the rainy season, and jhum land on the hill slopes where they can cultivate fruit trees and cash crops. Based on the sample, some

67% of the households cultivate paddy. Poultry and livestock rearing (69%), vegetable cultivation (34%), and fruit trees (8%) are the other key activities in agriculture. A much smaller percentage of the households is engaged in fish cultivation/catching (3%), growing timber trees (2%), or trade of agriculture products (5%). Note that these sources of livelihoods are not mutually exclusive, one household may engage in more than one of them.

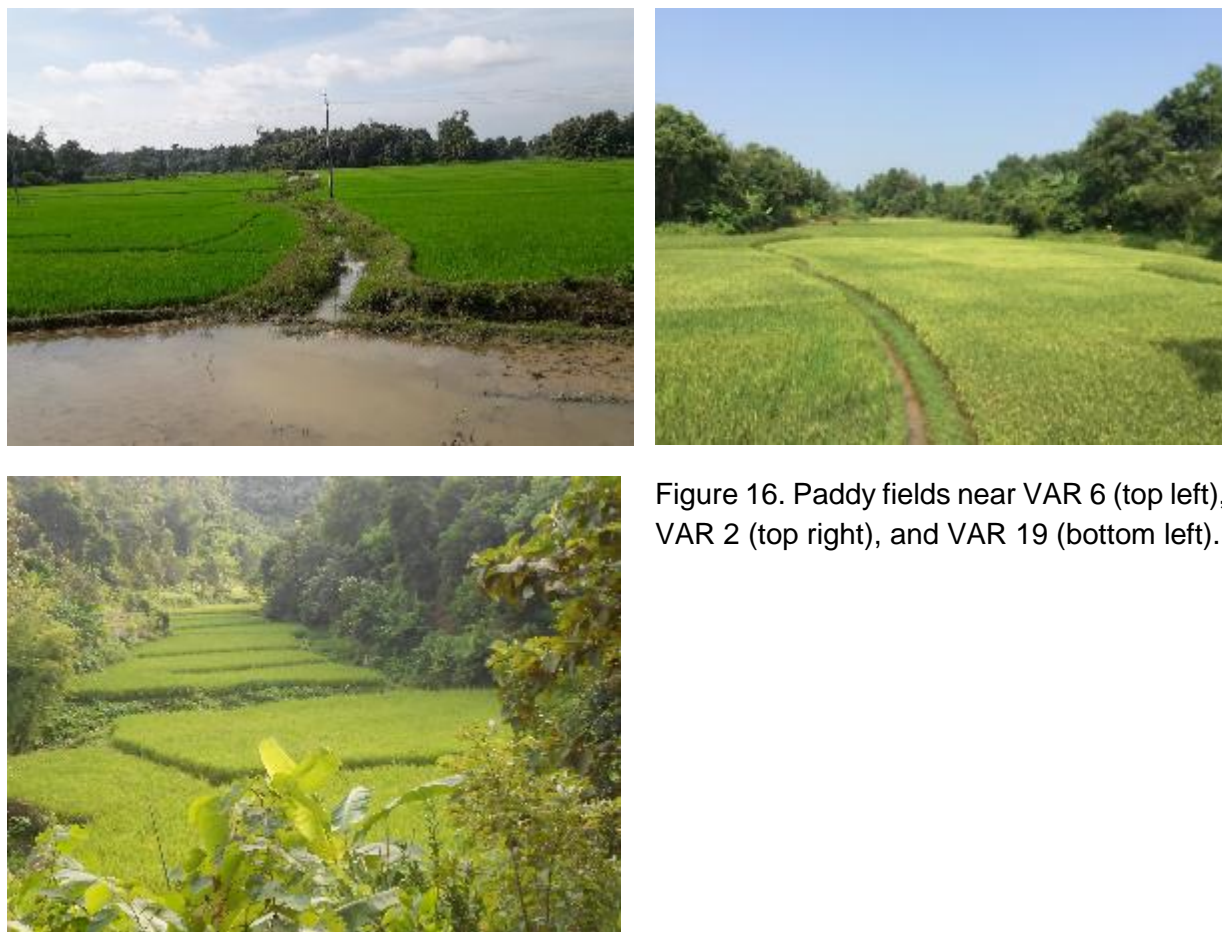


Figure 16. Paddy fields near VAR 6 (top left), VAR 2 (top right), and VAR 19 (bottom left).

114. Rice is grown for own consumption, and only in emergency cases sold in the market. Across the various road catchment areas, generally the people cultivate rice only one season when water goes down as the paddy land become suitable for ploughing. Around some villages, a second crop is possible. Besides rice, farming households also cultivate different vegetables for their own consumption. In all villages a substantial proportion of households is also engaged in growing one or more typical cash crops both in plain and hilly upland, especially vegetables, turmeric, arum, ginger and pineapple.



Figure 17. Harvest of ginger near VAR 18 (top left), pineapple garden near VAR 16 (top right) and transport of banana harvest near VAR 5 (bottom left).

115. Of those keeping livestock, free ranging poultry is most common with 73% of the HHs keeping some chicken. This is followed by cattle (44% of all HHs), pigs (30%), goats (28%), and pond fish (2%).

116. It is notable that almost all households bring their products to the bazar to sell them, indicating few traders visits their paras to buy directly at the farm gate or in the village itself. Some of them also go to a main bazar in one of the upazila headquarters rather than to the nearby village market. For many of the villages near the VARs, the nearest market is more than one hour away. Transportation modes used are often motorcycle, boat and foot. Due to the current road conditions, often goods have to be carried as head load. This is extremely hard work for the villagers. The work is very tiring and also keep porters from carrying out other livelihood activities.

117. According to consultation meetings, most of the roads virtually become unusable in rainy season and not possible to run any kind of transport due to muddy and slipper through this road in rainy season. Then the villagers suffer most for marketing their goods and taking to facility from service providers.

118. The use of commercial agricultural input is also extremely low: Only some 2% of HHs use chemical fertilizers, and even fewer use herbicides and pesticides.

D. Education and literacy

119. Most paras have a pre-school in their village, run by NGOs. Primary schools and junior high schools are shared by several paras and mostly in the neighbourhood. In seven of the nine main paras the primary school and junior high school was outside the main village. Most children needed half an hour to reach school in which case they walked or if a little longer a motorized rickshaw. But in one instance it took two hours in which case they walked the first stretch and then took a bus. High schools are mostly farther away. For seven of the nine village, students had to travel an hour or more to high school, in which case they mostly walked part of the journey and then took a bus or motorized rickshaw. For the 27 VARs the situation was quite similar: primary schools on average were less than 1.5 kilometre and junior high schools just over 1.5 kilometre and it takes children around 30 minutes by foot to reach them. High schools were further from home, almost 4 km on average and students used a mix of transportation modes to reach school, combining walking with rickshaws, buses, and in fringe lands boats.



Source: Feasibility study of Village Access Roads

Figure 18. Girls walking to school in Ramhari para (VAR 15 and VAR 16; left), and Chitamarang Highschool (VAR 14; right).

120. Across the upazilas of the village access roads, the literacy rate varies between approximately 30% and 60%, with the lowest literacy rates found in Bandarban District and the highest in Rangamati District. Literacy rates of women are overall lower than for men.

E. Public Health

121. The most common illness afflicting the households in the nine main paras were diarrhoea, respiratory tract infections, jaundice, common cold, malaria and flue(which could have included Covid-19 during the survey period). In case of illness people mostly turn to the local health worker and pharmacy. For more serious cases people go to the upazila hospital (average distance 4 km)

or district hospital (average distance 24 km). NGO operated health centres are rarely available. Family planning services are rarely used.



Figure 19. Ramhari Para community clinic near VAR 15 and 16.

122. Access to drinking water is a major concern for the inhabitants of the paras. For their water needs the villagers depend on groundwater and streams that flow through the villages. Tube wells, ring wells and dug wells are used, and in addition water is collected from streams and rivers. It is notable that many of the tube wells, ring wells and especially dug wells are no longer functional, which points to a declining ground water table.



Figure 20. Example of drinking water facilities near VAR 19 (left) and VAR 17 (right).

123. Women and girls are responsible for collecting water. In some villages they need to walk one to two kilometres three to four times daily to fetch water. They can carry around 30 litres of

water at a time and spend 30 minutes to two hours daily on this chore. Especially in the dry season from mid-January to mid-April, this creates hardship for women. In the rainy seasons, the footpaths leading to the water sources become slippery and risky. Women also mentioned risk pregnant women and elderly women are exposed to as they also need to collect water from distant water source.

124. Though Bangladesh had improved a remarkable measure in eliminating open defecation, access to safely sanitation and hygiene service is still a burning issue in the Chattogram Hill Tracts. Pit latrines are the most common sanitation facility, some 86% of HHs using this. These commonly have a number of cement rings in the pit and a ceramic non-sanitary toilet on top. 7% of households use open latrines (a simple hole without rings or proper cover) and another 7% use other facilities (mainly open defecation). Only 6% of households have a sanitary latrine with a water closet.



Figure 21. Example of latrine facilities near VAR 19 (left) and VAR 22 (right).

F. Cultural Heritage

125. In or near most of the paras served by the various village access roads, there are one or more religious institutes. Considering that most of the inhabitants of the paras are of the Chakma and Marma ethnic groups, especially Buddhist temples can be found in the area. There are also some Hindu temples, churches and mosques.

126. The Chitamarang Buddhist temple (see Figure 22) is a traditional Buddhist monastery near VAR 14. It was originally established in 1852 on the banks of the famous Karnafuli River. This Buddhist monastery is one of the most visited places for Buddhists and thousands of worshipers come to this monastery. Later, a new monastery was built on the top of a hill a little away from the river.

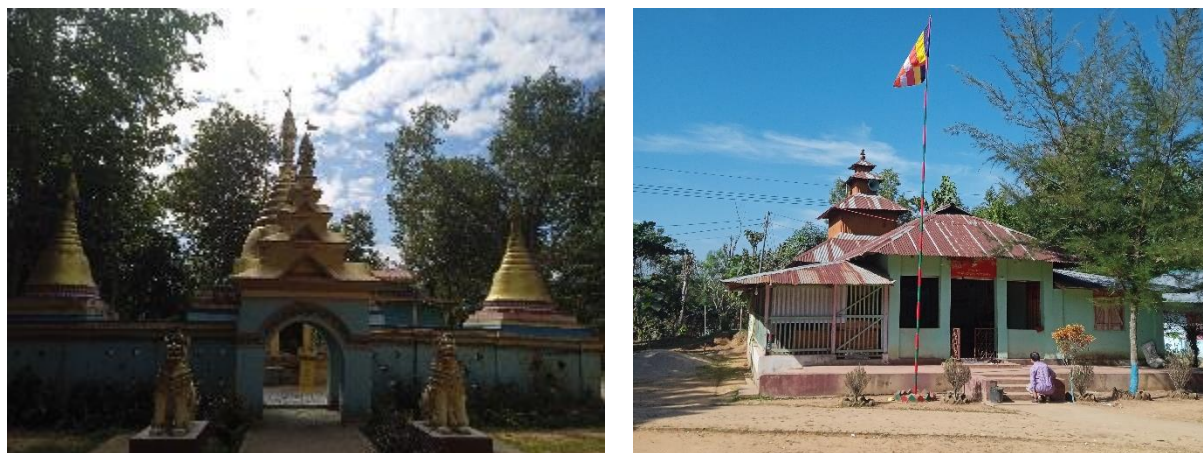


Figure 22. Chitamarang Buddhist Temple along VAR 14 (left), Nalkata Para temple along VAR 4 (right).

VIII. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATIONS MEASURES

127. The implementation of community infrastructures is likely to bring several impacts on the environment, both beneficial and negative. This section identifies the nature, extent, and magnitude of all such likely environmental impacts and risks due to subproject activities in all stages (i.e., pre-construction, construction and operation).

A. Positive Impacts

128. Based on intentions of the proposed Project and need of the people, the following benefits will accrue from the interventions. Village access roads aim to improve basic road access from villages to markets and centres delivering social and government services. Besides, improved mobility will provide benefits to the households in terms of greater economic opportunity and increased social trips. The proposed village access road will facilitate improved transportation and mobility of villagers together with all kinds of vehicular traffic like cycle, cycle cart, rickshaw, jeep, motorbike, pickup and auto rickshaws. These improvements are expected to stimulate agriculture and allied sector production in catchment areas of the proposed road. It is well known and established that transport linkage and easy access to various consumption hubs enhance rural economic activities, thereby improve livelihood opportunities creating positive impact on the socio-economic status of inhabitants the village in the catchment areas

B. Negative Impacts

129. This section presents analysis to identify environmental impacts associated with the implementation of CI interventions (i.e. 27 village access roads). Identification of impacts environmental risks commence by understanding the subproject works in consultation with the engineers and technical consultants of CHTRC. Corresponding interaction of these general components with specific environmental aspects (e.g., physical, biological, and socio-economic) are identified through environmental impact analysis (Table 12), and a series of discussions with stakeholders, including community stakeholders, Union Parishads, and relevant government departments.

130. As subproject under CRLIWM-CHT Sector Project, the process of the environmental assessment for the village access roads will be duplicated for the upcoming subprojects for project readiness and implementation. The EARF will provide guidance for other environmental safeguards requirements of the proposed Project.

C. Environmental Analysis

131. The civil work components and activities that are anticipated to affect the environment within the influence of VAR subprojects:

(i) *Pre-construction Phase:*

- (a) Road alignment and design involves screening and selection of roads to avoid environmentally sensitive areas, and surveys.
- (b) Finalization of road alignment including minor geometric realignment particularly on intersections and sharp corners.
- (c) Removal and transfer (utility shifting) from carriageway of electric, telephone, and water supply pipelines, gas pipeline, drainage pipes, gas pipelines, and hand pumps.
- (d) Construction mobilization involves land clearing, installation of electricity and other utility connections, perimeter fencing, establishment of storage areas, waste disposal, and installation of production equipment (i.e. cold mix, concrete batching, rock crusher, casting).
- (e) Tree cutting and clearing includes tree marking, cutting, and grubbing.

(ii) *Construction Phase:*

- (a) Road construction includes earthworks to implement design geometric shape, earth filling, sub-grade, earthwork in box cutting on-road crest, aggregate sand sub-base, brick aggregates for base course, earthen shoulder construction in layers and converted to hard shoulder and bitumen surfacing.
- (b) Construction plants operation for wet mix macadam (WMM) and cement batching plants.
- (c) Site restoration involves clean-up and restoration of construction zones back to its original condition prior to contractor demobilization to include: riverbeds used for sand mining; camps; hot mix plant, crushers, batching plant sites; and borrow areas rehabilitated.

(iii) *Post-Construction Phase:*

- (a) Road maintenance.
- (b) Vegetation control – involves periodic mechanical mowing, trimming, removal of brush, and removal of trees when necessary to enhance aesthetics and to prevent potential safety hazards (e.g., reduced visibility, obstruction of signs, and debris in the roadway).

132. Identification of potential impacts needs to define the environment based on the physical, biological, and social aspect of the subproject's area of influence. These components may be affected due to the implementation of CI interventions in all of the target paras. The environmental components for 27 VAR subprojects are drawn from the environmental baseline as follows:

- *Physical environment* – This is defined by the geographic area and abiotic components that influence the condition and define the characteristics of a location. These factors include the land use, air quality, noise levels, water resources and soil. Impacts on physical environment are examined in terms of activities of the subproject changes and/or damages on abiotic components.
- *Biological environment* – Presence of flora and fauna within the target areas of the project.

- *Social environment* – Immediate physical and social setting in which there are people interactions, and something develops such as public infrastructures, occupational health and safety and cultural resources.

133. A risk assessment is used to define the level of potential environmental risks by considering the magnitude, extent and duration. This is developed based on the professional judgement and experience of experts, who prepared the IEE for the subproject. Through these, risks are defined by minor, moderate and major. This is a simple mechanism to assess risks and assist in preparing mitigation measures. The assessment of potential environmental impacts requires classifications of the risks associated with the VARs in terms of the following categories.

- (i) *Magnitude (Mag)*: The potential risks of a particular project component refers to the level of disruption to the environment. Three levels have been defined:
 - (a) *Low (L)*: No or minimal change in the characteristics and conditions of the environment;
 - (b) *Medium (M)*: There is noticeable change in certain characteristics and conditions of the environment;
 - (c) *High (H)*: Significant change on the environment.
- (ii) *Extent (Ext)*: This describes the coverage of the potential risks caused by construction activity to the environment. It refers to the distance and area covered by an impact. The terms regional, local and limited are used to describe the scope:
 - (a) *Site specific (SS)*: Only within or immediate the project components' site boundaries or no impact at all;
 - (b) *Local (Lc)*: beyond project components' site boundaries (<500m).
 - (c) *Regional (Re)*: when an action affects beyond subproject area and reaches nearby districts.
 - (d) *National (Na)*: impacts are national concern.
 - (e) *Cross boundary (CB)*: nearby countries expect to be affected by such actions.
- (iii) *Duration (Dur)*: This is the time aspect of the potential environmental risks. The terms permanent, temporary and short are used to describe the period (or time):
 - (a) *Short term (ST)*: the effect disappears promptly or even no impact at all;
 - (b) *Medium term (MT)*: limited during construction period and few months in the operation stage;
 - (c) *Long Term (LT)*: change and/or impact on the environment throughout the life of the infrastructure or component.
- (iv) *Significance of impacts (Sig)*. Three classifications are incorporated into the impact matrix, thus defines the potential environmental risks into one of three categories below.

- (a) *Minor (Mi)*: Impacts are minimal or does not affect the environmental component in any observable or quantifiable way, and that it is related to a randomly occurring natural effect.
- (b) *Moderate (Mo)*: Potential impacts are less adverse on particular environmental component and/or not irreversible.
- (c) *Major (Ma)*: Signifies an effect that is severe and that affects the integrity, diversity and sustainability of the environment. Such an effect substantially or immediately alters the quality of the environment.

134. A matrix for identification of potential environmental impacts is provided below in Table 12. This reflects the potential impacts due to activities of the subproject, and classification of risks discussed above.

Table 12. Matrix for identification and analysis of potential environmental impacts

Activity	Potential Negative Impact	Specific Environmental Impact	Type of Impact			
			Mag	Ext	Dur	Sig
Pre-construction Phase						
Socio-economic environment						
Acquisition of land for maintaining road width	Loss or degradation of farmland and productivity	Reduced production, hardship, food shortage	L	SS	ST	Mi
	Loss of private properties	Displacement of people, hardship	L	Lc	LT	Mo
Land temporarily required for site offices, material storage, equipment parking, labour accommodation & occupational safety measures for workers	Loss or degradation of farmland and productivity	Reduced production, hardship, food shortage	L	Lc	MT	Mo
Biological environment						
Mobilization of construction	Change in local topography from establishment of (i) camp site and (ii) construction material storage areas	Loss of vegetation	M	SS	MT	Mi
Physical environment						
Mobilization of construction	Disturbance at target sites due to mobilization of construction equipment and vehicles	Dust and noise pollution	L	SS	MT	Mi
	Risk from storing of petrol, diesel and grease for vehicle and machines	Water source and soil pollution	M	SS	MT	Mi
Construction Phase						

Activity	Potential Negative Impact	Specific Environmental Impact	Type of Impact			
			Mag	Ext	Dur	Sig
Physical environment						
Construction of road: Site clearance	Change in land use	Loss of agricultural land and production, and property	L	SS	MT	Mo
Construction of road: Earth excavation	Spoil disposal and imposed weight of spoil on fragile slope	Gully erosion, landslide, disruption of road, damage to farmland, water pollution	M	SS	MT	Mo
Site clearance: Excavation	Slope instability in few locations	Erosion, landslide, loss of property	M	SS	MT	Mo
Construction of road: Drainage	Drainage maintenance and generation of surface runoff	Erosion, landslide, damage to farmland	M	Lc	MT	Mo
Construction works: Operation of constructions vehicles, materials hauling and unloading, spoil and waste disposal	Air pollution due to dust from exposed surface and construction equipment and vehicles	Effect on local people and workers health	M	SS	MT	Mo
	Noise pollution	Disturbance and annoyance around institutions	M	SS	MT	Mo
	Water pollution due to sediment level, spills and leakage of oils and chemicals to water bodies	Risk of water-borne diseases	M	Lc	MT	Mo
Cutting of slopes	Effect on instability of slopes	Scars of landslide, damage to farmland, disturbance to natural drainage	M	SS	LT	Mo
Associated activities for the construction of road: Camp site operations	Change in local landscape	Encroachment of agricultural land, alteration of drainage, disposal of solid waste and waste-water	L	SS	MT	Mo
Associated activities for the construction of road: Storage of petrol, diesel and grease for vehicle	Water Pollution	Water source and soil pollution, affect health of workers	L	Lc	MT	Mo
Biological environment						
Clearance of vegetation necessary for road formation	Loss of vegetation	Loss of environmental benefits from vegetation and disturbance in ecological function	M	Lc	LT	Mo
Construction activity	Impact on wildlife due to loss of habitats	Loss of biodiversity and valuable species of wildlife	L	SS	LT	Mi
Operation of constructions vehicles for hauling and unloading of construction materials	Increased vibration at target sites	Disturbance to local wildlife	L	SS	MT	Mi
Socio-economic environment						

Activity	Potential Negative Impact	Specific Environmental Impact	Type of Impact			
			Mag	Ext	Dur	Sig
Site clearance, and clearing and grubbing	Alteration of local surrounding	Damage to property	L	SS	ST	Mi
Occupational health and safety aspect	Health and Safety issue	Injury, fatal accidents, outbreak of epidemics and diseases, decline in capacity to work	H	SS	MT	Mo
Operation of constructions vehicles for hauling and unloading of construction materials	Health and safety issue	Injury and outbreak of diseases	M	SS	MT	Mo
	Noise pollution	Disturbance and annoyance around institutions	M	SS	MT	Mo
	Air pollution due to dust from construction vehicles	Effect on local people and workers health	M	Lc	MT	Mo
Operation Phase						
Physical environment						
Closure of equipment yards and camps	Health and safety issues	Disturbance to locals	L	Lc	ST	Mo
Road slope instability and management	Landslides	Disturbance to traffic flow and road users	M	Lc	MT	Mo
Biological environment						
Operation of road	Disturbance to wildlife	Collision of wildlife with vehicles, disturbance in their normal activities, loss of biodiversity	L	SS	LT	Mi
Socio-economic environment						
Operation of road	Issue of road safety	Increase in accidents	M	SS	LT	Mo
	Air, noise and water pollution	Disturbance and annoyance around institutions	M	SS	LT	Mo

IX. INFORMATION DISCLOSURE, CONSULTATION, AND PARTICIPATION

A. Principles

135. Disclosure, consultation, and participation involving persons interested in or affected by project activities forms a critical practice for project planning and environmental assessment. Active participation of stakeholders in all stages of project preparation and implementation is essential for successful implementation, ensuring that subprojects reflect stakeholder needs, have community acceptance, and are beneficial to the people.

136. SPS (ADB, 2009) requires meaningful consultation with affected people and other concerned stakeholders including civil society. Meaningful consultation:

- Begins early in project preparation and continues throughout the project cycle;
- Provides timely disclosure of relevant and adequate information that is understandable and readily accessible to affected people;
- Is undertaken in an atmosphere free of intimidation or coercion;
- Is gender inclusive and responsive and tailored to the needs of disadvantaged and vulnerable groups; and
- Enables the incorporation of all relevant views of affected people and other stakeholders into decision making, such as project design, mitigation measures, the sharing of development benefits and opportunities, and implementation issues.

137. Consultation is to be commensurate with impacts on affected communities, and its results documented and reflected in the environmental assessment report. For the village access roads subprojects, community consultations have taken place for the 9 sample VARs between August and November 2021.

B. Subproject Stakeholder Consultations

138. Multiple consultation meetings were held in the paras of the various VARs. An introduction meeting with the communities of the paras to be benefited from the VAR. During this meeting the purpose of the meeting was explained, the project was introduced, and villagers were encouraged to actively participate in the meetings. The projects principles of FPIC and the need to adhere to social and environmental safeguards were also explained. Typically, participants in these meeting are members of the Para Development Committees (PDCs), common villagers, upazila and union council representatives and traditional leaders. During the consultations COVID-19 preventive measure were applied, including social distancing, wearing of mask and holding meeting outdoors whenever possible.

139. In a next meeting separate men and women focus group discussions (FGDs) were conducted to identify key development needs of the community. After the separate FGDs a joint meeting is then conducted to decide and prioritize the needs and confirm whether the VAR improvement is indeed a top priority of the community. During this meeting the community was

also oriented on procurement and implementation modalities during the construction and post construction phases. The participants were informed that in case the road serves more than one para a Community Development Committee (CDC) would need to be formed consisting of representatives of the PDCs of each of the paras along the VAR. 30% of CDC members need to be women. It is also explained that contractors would be bound to use workers unskilled labour with priority to landless female headed HHs or in case there would be land acquisition also members of the affected HHs.



Figure 23. Impression of consultation meetings for VAR 14 (left) and VAR 26 (right).

140. The road alignment was also surveyed together with community representatives, including elected and traditional leaders, to ensure there would be no land related issues.

Table 13. Overview of consultation meetings held for VAR subprojects.

VAR	Road name	Upazila Union /	Consultation dates	Consultation venues	
3	RHD via Machchachara Ananda Mohan Karbari Para to Rabidhan Tripura Karbari Para	Panchari / 1 No. Logang	7 September 2021 15 September 2021 26 September 2021	Ananda Mohan Para Kendra	30 (21M, 9F) 11 (8M, 3F) 27 (16M, 11F)
10	Guimara DP Para Athowai Marma's Bari via Changdong Para Road Mukh (Nowa Para) to Naikya Para.	Guimara / 1 No. Guimara	19 September 2021 7 November 2021	Changdong Para	13 (8M, 5F) 17 (9M, 8F)
11	Kalapani Mihir's Bari (House) to Nowa Para via Kalapani Keyangghor	Manikchari / 3 No. Jogyochola	27 September 2021 4 November 2021 10 November 2021	Cingla Master House	37 (21M, 6F) 12 (7M, 5F) 20 (12M, 8F)
15	Ramhari Para Village Access Road	Naniarchar / Ghilachari	20 September 2021 21 September 2021 22 September 2021	Para Kendra	41 (29M, 12F) 51 (32M, 19F) 48 (30M, 18F)
16	Ramhari Para to Krishnamachara village access road	Naniarchar / Burighat	29 August 2021 30 August 2021 31 August 2021	Chakma House Gov't Primary School	30 (24M, 6F) 25 (all F) 22 (all M) 64 (39M, 25F)

23	Kurukpata Poamuhuri to Meringchar Para	Alikadam / 3 No. Naya Para	22 August 2021	Meringchar Para	46 (21M, 25F) 42 (36M, 6F) 23 (all F) 21 (all M)
25	Maddhyam Chak Para to Thuihla Aung Para	Naikhongchari / Baishari	12 August 2021 20 October 2021	Maddhyam Chak Para	40 (27M, 13F) 36 (21M, 15F)
27	Cherarkul to Keichyabunia Linked Road	Naikhongchari/ Naikhongchari Sadar	20 September 2021	Cherakul Para	23 (12M, 11F) 34 (16M, 18F)

141. Village mapping was facilitated by the TA's social mobilization team with support from the Para Kendra teacher, the traditional leader, elected representatives and villagers. The maps have been prepared through FGD and Participatory Rapid Appraisal (PRA). In this map, villagers shown their present socio-economic infrastructure, geographic location and proposed interventions.



Figure 24. Social community map examples for VAR 11 (top left) and VAR 24 (top right). Impression of village mapping process in VAR 2 (bottom left).



A wider selection of social community maps for the various village access roads is given in Annex 2.

C. Disclosure Framework

142. PMO, with support from PISC, will disclose safeguards information through public consultation and making available relevant documents in public locations. The following documents will be submitted to ADB for disclosure on its website:

- (i) subproject IEE (including EMPs)
- (ii) EARF before project appraisal

- (iii) Semi-annual environmental monitoring report during project implementation until ADB issues project completion report
- (iv) updated IEE of subproject and corrective action plan prepared during project implementation, if any.

143. The PMO will provide relevant safeguards information in a timely manner, in an accessible place and in a form and language understandable to subproject stakeholders/ affected people and other stakeholders. For illiterate people, other suitable communication methods will be used. Specifically, summary safeguards information translated into Bengali and other languages as required, will be made available to each Upazila and CHTRC District office.

D. Adaptive Mechanism

144. Adaptive mechanisms will be used to address limitations on environmental safeguard activities and consultations due to government restrictions and COVID-19 risks. Surveys and data collection will be conducted through online platforms, brochures, questionnaires, and other forms of media as applicable to provide information and receive feedback from the people, beneficiaries, government agencies and other stakeholders.

X. GRIEVANCE REDRESS MECHANISM

145. A dedicated multi-tier grievance redress mechanism (GRM) will be established to receive, evaluate, and facilitate the concerns and complaints of the affected people, if any, about the social and environmental performance at the project level. The GRM aims to ensure:

- a. basic rights and interests of every person affected by poor environmental or social performance of the project are protected; and
- b. concerns arising from the poor environmental or social performance of the project during the conduct of pre-construction, construction and operation activities are addressed.

A. Principles of GRM

146. The GRM is anchored on the following principles that guide the CRLIWM-CHT Sector Project:

147. *Transparency.* The Project will keep the affected person informed about the progress made in resolving the grievances and provide sufficient information about the mechanism's performance to build confidence in its effectiveness and meet any public interest at stake. The small ethnic communities (SEC) especially the *karbaris* must be (i) made aware of the complaints and issues reported, (ii) involved in their redress, and (iii) informed on progress made in resolving grievances. Confidentiality of the dialogue between parties and of individuals' identities should be provided where necessary.

148. *Empowering and participatory.* SEC, *karbaris*, affected persons, beneficiaries, INGOs and other stakeholders are encouraged to participate and bring complaints, issues and comments to the attention of Project management. More importantly, communities should be involved in problem solving.

149. *Socially inclusive.* The whole community is given the opportunity to raise concerns and the right to be accorded a response. The grievance system will allow anyone, especially the SEC, poor, the disadvantaged groups, the women, to raise grievance or complaints, be heard and involved on redressal process.

150. *Culturally appropriate.* Alternative dispute resolution forum (ADRFs) will be constituted for land dispute resolution where the *karbaris* and PDC in SEC will be members in grievance redress council.

151. *Simple and accessible.* Procedures to file complaints and seek redress are kept simple and easy to understand by the SEC and affected people. Complaints and queries may be sent through different accessible means such, as but not limited to, installation of grievance box in subproject areas, walk-in to district offices, para development committee (PDC) representatives, *karbari*, message or call to grievance hotline, or an email to the Project website.

152. *Confidentiality.* The identities of affected people and other stakeholders are kept confidential upon request. This encourages people to voluntarily participate in the GRM process, and file complaints and/or comments.

B. Functions of GRM

153. Response to grievance and comments is ensured within an acceptable timeline. The corresponding action is responsive and commensurate to complaint or issue. The GRM entails objective and independent practice to promote fair procedures and encourages people to use. Thus, GRM will enhance the proposed Project's contribution to participatory development. In all instances, conflict of interest or perceptions of it will be investigated and avoided.

154. The GRM will establish multiple channels by which grievances can be received by the PMO. The procedures will be easy for all the diverse groups of affected persons to understand and be made known to them and consider the many facets involved in making the mechanism accessible including affected people's (AP) access to transportation and roads and their literacy and education levels, as well as their access to such communications facilities as telephones, mail, and the internet. The project will ensure consultation is organized in a congenial environment without intimidation and should be culturally appropriate and acceptable to SEC and gender sensitive.

155. To ensure the GRM is in line with the ADB SPS, the GRM will be a time-bound, simple, transparent, gender- and culturally- responsive in addressing feedback, concerns and suggestions of, and facilitation of solutions for, all the relevant stakeholders of the project (i.e., local community, contractors, and other members in the value chain, including from SECs, women, and other vulnerable groups). The GRM will include service standards and an implementation modality by assigning a grievance redressal officer (GRO) at each IA to handle specific matters related to public grievances / complaints flagged to their respective offices.

156. Accessibility will be facilitated through provision of the following services: (i) grievance boxes in subproject areas, (ii) walk-in to district offices, (iii) speak to PDC representatives or karbari, (iv) message or call the grievance hotline, or (iv) email the Project website. The PMO is to establish a GRM hotline and project website for APs to contact. A phone number and web address will be defined during project readiness. Complaints received through the hotline and website will be documented and fed to the correct level of GRM for facilitation. Awareness of grievance redress procedures will be created through public awareness, outreach campaigns and clear signage with grievance foc'l person's contact details and procedure on how to file a complaint, including in Bangla or major SEC dialects on project sites. Redress through the GRM does not impede access to the country's judicial or administrative remedies.

157. Gender- and cultural- responsiveness will be supported through: (i) use of local issue resolution methods, (ii) membership of the SECs or their representative at the first tier GRM at field/village level; (iii) availability of the GRM form in local/SEC dialects or languages to the extent these have a written form and on information signage.

158. For any grievance filed by a marginalized or vulnerable person, such as a SEC member or poor person, extra attention will be paid to ensuring the following: (i) complainant will be aided in recording their grievance (field staff to write up verbal complaint verbatim), (ii) complainant can

be represented and supported by a local leader (such as an SEC leader), (iii) the outcome of the grievance will be delivered in writing and in person by the GRO responsible, to ensure comprehension of the outcome and any follow up actions. All grievances shall be recorded in grievance register (including in Bengali or local language), and entire process shall be tracked and reported through quarterly and annual progress reports and semi-annual social and environmental safeguards monitoring reports. The GRM process shall include the following stages.

C. Levels of GRM

159. Before any grievances are brought to the GRM, efforts will be made to solve queries and complaints at village (*para*) level by involvement of the headman (or *karbari*) through traditional conflict resolution methods.

160. The GRM has three tiers. There are two types of tier one. Tier 1, type A refers to the ADRF, which will be located at subproject level and will address land disputes for output 5 (rural roads component). Tier 1, type B refers to the para development committee or PDC, which will serve as tier one for all other social and environmental safeguards concerns raised across project outputs 1-5 (i.e., Community Infrastructure, Watershed Management, Agriculture Production and Rural Roads). Tier two is represented by a Grievance Redress Committee (GRC) which is established at Hill District Council (HDC). At the apex of this structure is the Regional Advisory Council (RAC) at CHTRC level.

161. If the ADRF under Tier 1, type A or the *karbari* under Tier 1, type B is unable to resolve the issue at para level to the satisfaction of the affected person, the issues can be forwarded to the GRC level in tier 2. If dissatisfaction remains at GRC level, the affected person can elevate the issue to tier 3 to the RAC level. The PMU will ensure the redressal of complaints, including anonymous complaints, and issues of non-compliance, in accordance with national regulations and the ADB Accountability Mechanism Policy 2012. However, the affected person has every right to bring their issue to a court of law. The overall model of GRM for this project is summarized in Figure 25.

C.1.1. Tier 1: Community level Type A (Alternative Dispute Resolution Forum or ADRF)

162. ADRFs will be constituted for land dispute resolution. In Bangladesh, *Shalish* and *Mimangsha* are when the community takes the leading role in resolving disputes. These are usually undertaken through mediation, negotiation, and reconciliation. In the *Shalish* and *Mimangsha*, the community leaders delve deep into the root cause/s in the presence of both parties, hear viewpoints of disputants, and try to find a solution agreeable to the parties concerned.

163. Resolving disputes through community initiatives with the above tools are commonly known as alternative dispute resolution (ADR). As proposed, INGOs will be involved in the GRM process, and constitute ADRFs at subproject level for the Rural Road component. In Bangladesh, traditional *Shalish* agreements were enforced through village peer pressure. Agreements were announced and publicly proclaimed. Families would lose face if they do not comply with

agreements. The reformed village mediation system, with support of INGOs, relies on traditional compliance mechanism and succeeds despite the lack of formal court enforcement. Not only does this conform with the traditions of the region, but use of a panel of mediators helps limit systematic corruption or bias. Measures for ADR in Bangladesh have been provided in the Code of Civil Procedure 1908 which allows for the settlement of disputes outside the courts: the court may formulate the terms of a possible settlement and refer the same for arbitration, conciliation, mediation, or judicial settlement.

164. An Executive Order will be issued by MoCHTA for setting up ADRFs for the Rural Road component (i.e. Output 5) covering membership, authority and responsibilities, and rules of business of the ADRF. Its membership will reflect the composition of the affected peoples of subprojects by incorporating members of SEC proportionately. Membership will be drawn from traditional and informal local leaders from the main subproject paras, thus guaranteeing that customary methods of conflict resolution will be applied where feasible. Before land issues are submitted to the ADRF an effort will be made to resolve them with the para through the *karbari*.

165. ADRFs will be composed of 3-5 members with the mouza headman as its Chair, with a minimum of four members for each mediation. In cases where appropriate, the headmen may be replaced by the UP Chairman. The remaining members of the ADRFs will be drawn from the community elders, traditional leaders (e.g. the village *karbari*) or representatives of local government institutions (e.g. UP Ward Members). At least one of the ADRF members will be a woman. The INGO responsible for the resettlement plan will facilitate the identification of the ADRF members in consultation with the mouza Headman and DPMO. The NGO will further be responsible for facilitating the conduct of the ADRF's meetings and act as its Member Secretary. The grievance redressal and resolution at this stage is within seven days.

166. At any time, any affected person can submit a grievance/complaint in writing (and other means mentioned above) to the concerned UP Chairman, Headman or *Karbari* or the PDC, using the grievance redress form (GRF) with support from NGOs or Social Development Organizers. At the time of registering the complaint, a copy will be given to the affected person making the complaint for their record. The PMO will make sure that sufficient GRF is available in the site office and in the office of the concerned UP Chairman/Mouza Headman, Headmen or *karbari* and other local community leaders. Some cases may just require provision of required information or clarification and may thereafter not be required to be referred to Step 2. The GRF is in Annex 3 (English version) and/or Annex 4 (Bengali version).

167. The ADRF is composed of:

- Mouza Headman as Chairperson
- Union Parishad Chairman as Alternate Chairperson
- Karbari as Member
- One female local leader as Member
- Resettlement INGO as Member Secretary
- Contractor's site engineer or representative (will take part when there is grievance on construction)

C.1.2. Tier 1: Community level Type B (Para Development Committee or PDC)

168. The PDC will be the first tier of the GRM for all social and environmental concerns, excepting land dispute resolution, caused by project components: community infrastructure, watershed, skills training, agriculture production outputs and the rural roads. The complaints resolution should be within seven days and will follow the same steps in filing the complaint as mentioned above. Any affected person can approach the *karbari* or any member of the PDC. The Social Development Organizers and NGOs will ensure to provide support throughout the grievance problem-solving process. The PDC will convene weekly to address all complaints lodged at the PDC level. If PDC is unable to resolve the issue at para level to the satisfaction of the affected person, the issues can be forwarded to the GRC level in tier 2 within seven days.

169. The PDC is composed of:

- Karbari as Chairperson
- Two representatives from PDC as Members
- One female local leader as Member
- Representative from contracted NGO as Member
- Social Development Organizer as Member Secretary
- Contractor's site engineer or representative (will take part when there is grievance on construction)

C.2. Tier 2: Grievance Redress Committee (GRC) - Hill District Council Level

170. For environmental or social safeguards related complaints that cannot be settled at the community level through the ADRF or PDC, the GRC at District level will provide a simple process for the affected person to raise their objection and get them resolved within seven days. The affected persons will be informed of their right to file complaints to the GRC.

171. The GRC will receive unresolved grievances of the affected persons through the ADRF and/or Resettlement INGO for the rural road output or through the concerned NGO or Social Development Organizer for community infrastructure, watershed, and agriculture production outputs. The ADRF and Resettlement INGO will assist the affected person in lodging their resettlement claims in a format acceptable to the GRC at Hill District Council. All complaints will be received at the office of the INGO, or by the GRC, with a copy to the Union Parishad representative. The INGO will operate through village consultation meetings and explain the process of grievance resolution, including the distribution of information booklet. The concerned INGO will explain the GRF in indigenous dialect and ensure that the affected person understands.

172. The GRC at Hill District Council level will settle the issues within seven days after receiving complaints. The Resettlement INGO, as member secretary of the GRC, upon receipt of complaints, will organize a GRC meeting. The GRC at Hill District Council level will pass a resolution which will be formally conveyed to the concerned affected persons through the Resettlement INGO. The key functions of a GRC will be as follows:

- Record, categorize and prioritize any grievances;

- Settle grievances in consultation with affected persons/representatives, project staff and other stakeholders;
- Inform the aggrieved parties about the resolutions; and
- Forward any unresolved complaints to the Regional Advisory Committee.

173. The authorities and responsibilities of the GRC and its rules of business will be part of the MoCHTA Executive Order.

174. The GRC is composed of:

- Chairman of Hill District Council as Chairperson
- Deputy Project Director of PMO as Member
- Deputy Project Director of LGED PMU as Member
- Representative from the District Commissioner's Office as Member
- Land Officer of Hill District Council as Member
- Representative, Headmen Association
- Representative, Union Parishad as Member
- NGO representing women in the Hill Districts
- Resettlement INGO or the contracted NGO will provide as Member Secretary

175. If not resolved at the GRC level within seven days, the matter will be referred immediately to the Regional Advisory Committee.

C.3. Tier 3: Regional Advisory Committee – Regional Council Level

176. Complaints that cannot be settled at the GRC level should be elevated to the Regional Advisory Council (RAC) at the Regional Council level for grievance redressal and resolution within 15 days. The RAC will meet whenever a case is brought to its attention and determine the merit of each grievance brought to their level. The authorities and responsibilities of the RAC and its rules of business will be part of the MoCHTA Executive Order. The RAC secretary will provide feedback to the affected person.

177. The RAC is composed of:

- Chairman or Representative of Chittagong Hill Tracts Regional Council as Chairperson
- Representative from the Ministry of Chittagong Hill Tracts Affairs as Member
- HDC Chairmen of the three Hill Districts or their nominated councilor as Member
- Deputy Commissioners of the three Hill Districts or their nominated representatives as Member
- Circle Chiefs of the three Hill Districts Circles as Member
- Project Director LGED PMU or nominated representative as Member
- Project Director PMO as Member Secretary

178. None of the three levels of the GRM possess any legal mandate or authority to resolve land issues, they rather act as an advisory body or facilitator to try to resolve issues between the

affected household/person and the CRLIWM-CHT Sector Project. Any complaints of ownership or other suits, to be resolved by judicial system, will not be resolved by project's GRM. The affected person always has other recourse through the Government legal channels. However, every effort will be made to avoid this by applying traditional conflict resolution procedures in negotiating resolutions to complaints. Should an affected person wish to pursue legal recourse at any point prior to approaching, during interaction with, or after interacting with the GRM, the PMO, DPMO and Implementation NGOs (INGOs) will ensure that support is given to the affected person to prepare a case. No fees will be charged to the affected person for such assistance.

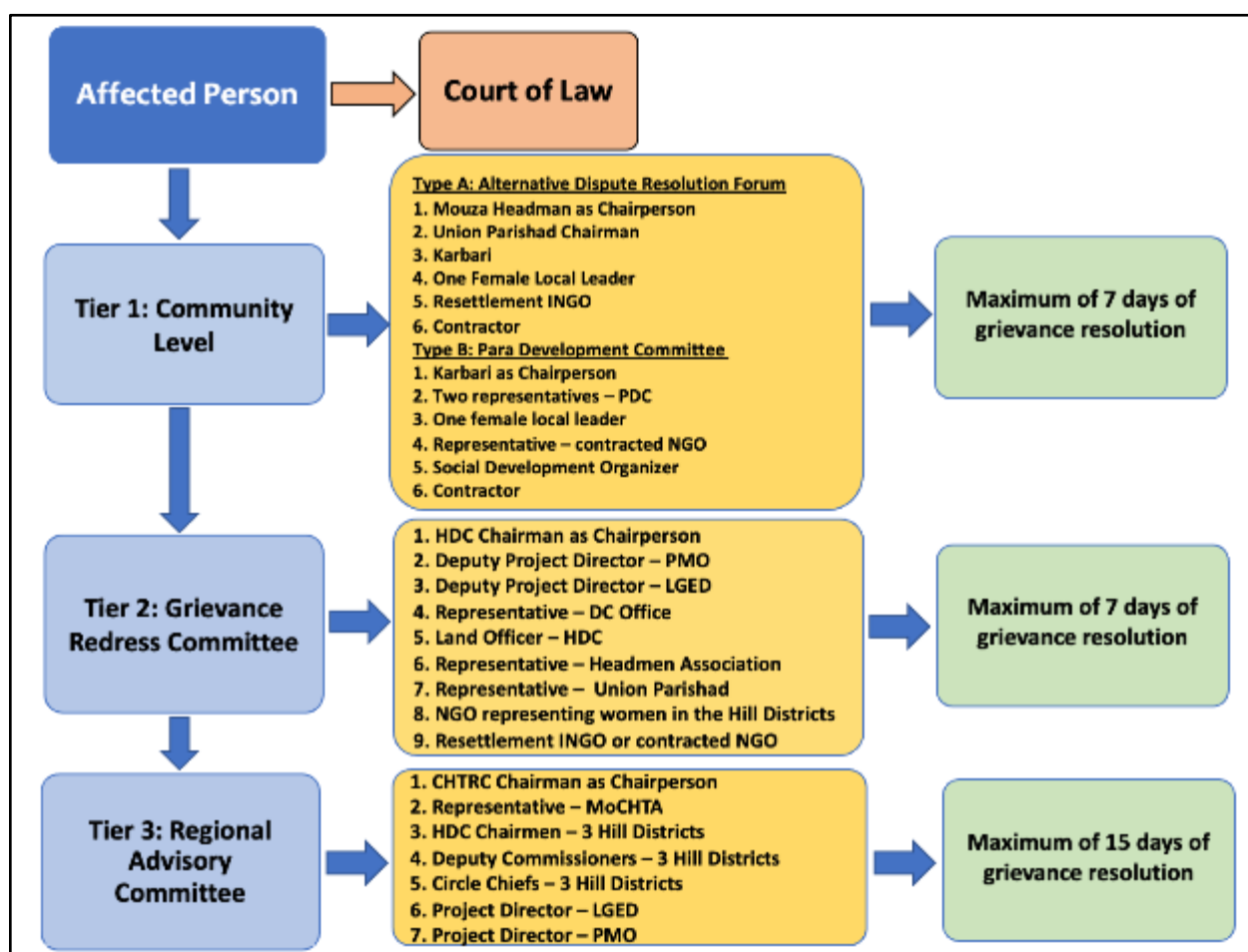


Figure 25. Framework of the GRM for BAN:CRLIWM-CHT Sector Project

C.4. Relevant GRM Activities

179. *Court of Law.* The GRM notwithstanding, an aggrieved person will have access to Bangladesh Legal System at any stage, Accessing the court of law is not dependent on the outcome of the GRM.

180. *ADB Accountability Mechanism.* If the established GRM is not able to resolve the issue, the affected person can use the ADB Accountability Mechanism through directly contacting (in writing) the Complaint Receiving Officer at ADB headquarters. Before submitting a complaint to the Accountability Mechanism, it is recommended that affected people make good faith effort to resolve their issues by working with the Bangladesh Resident Mission. Only after doing that, and if they are still dissatisfied, they could approach the Accountability Mechanism. The ADB Accountability Mechanism information will be included in the project-relevant information to be distributed to the affected communities.

181. *Consultation and Information Dissemination.* Consultation will include group meetings, and one-on-one discussion with affected persons, to be announced in advance and conducted at the time and day agreed on with the affected persons or their representatives. Non-literate affected persons will be assisted to understand the grievance redress process. The GRM process will be explained to them in indigenous dialects by the Resettlement NGO, contracted INGOs, or the Social Development Organizers. The public especially the SEC and affected persons will be made aware of the GRM through consultation meetings, focus group discussions and inclusion of the GRM hotline and relevant details in the Project information booklet.

182. *Record Keeping.* A grievance database system will be established by CHTRC. Records of all grievances received, including contact details of affected person, date of complaint/grievance received, nature of grievance, agreed actions and measures, dates of meetings conducted and resolutions with linked documentation are recorded in the database. The number of grievances recorded and resolved, and the outcomes will be displayed/disclosed in the PMO office, and on the website of PMO (to be developed in project readiness), as well as reported in the semiannual environmental, IR and IP safeguards monitoring reports to be submitted to ADB. The PMO, with support from the GROs composed of the Environmental Management/Climate Adaptation Expert, Land Acquisition Expert, and SEC Expert, will be responsible for maintaining the grievance database system.

183. *Costs.* All costs involved in resolving the complaints (meetings, consultations, communication, and reporting/information dissemination) will be borne by the PMO. Cost estimates for grievance redress are included in resettlement cost estimates.

XI. ENVIRONMENTAL MANAGEMENT PLAN

A. Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP)

184. The implementation of EMP is necessary to mitigate the potential impacts of interventions of CI subproject, while EmoP is an instrument to check and document effectivity of mitigation measures of the EMP. Environmental Monitoring Report (EMR) will document and disclose EMP implementation and other safeguard activities on a periodic interval. Table 14 shows the EMP for the village access roads.

Table 14. EMP for VAR subprojects

Table 14: EMI for VAK subprojects					
Activity	Potential Negative Impact	Specific Environmental Impact	Mitigation Measures	Responsibility for mitigation measures	
				Implementation	Monitoring/Support
Pre-Construction Phase					
Physical Environment					
Mobilization of construction	Disturbance at target sites due to mobilization of construction equipment and vehicles	Dust and noise pollution	Regulating movement of construction vehicles only at designated routes. Spraying of water to minimize dust emission. Construction period will only be at designated time as approved by District Project Management Office in CHTRC and consultation from community.	Contractor	Monitoring: CHTRC PDC/CDC Support: PISC
	Risk from storing of petrol, diesel and grease for vehicle and machines	Water source and soil pollution	Establish dedicated fuel, oil, and chemicals stores on impermeable bunded area to avoid spills and leaks Avoid storage of fuel, oil, and chemicals in areas ideally within 500m to water sources (surface water and groundwater wells, springs etc.) to avoid direct contamination or contamination through run off, if this is not possible minimum distance is to be 100m. Undertake refueling only on areas of hard protected soil, preferably bunded, ideally 500m from water sources (surface water and groundwater wells, springs etc.) but if this is not possible minimum distance to be 100m, with all drainage directed through oil interceptors. Undertake mobilization during the dry season as much as possible to minimize exposed areas subject to erosion by surface water runoff. Do not allow washing of equipment or vehicles near surface water and ensure all washing water is discharged to sedimentation basin and oil interceptor instead of directly to surface water. Petrol, diesel and grease for vehicle and machines should be stored in storage facilities, enclosed and not exposed to weather elements.	Contractor	Monitoring: CHTRC PDC/CDC Support: PISC

Activity	Potential Negative Impact	Specific Environmental Impact	Mitigation Measures	Responsibility for mitigation measures	
				Implementation	Monitoring/Support
Biological Environment					
Mobilization of construction	Change in local topography from establishment of (i) camp site and (ii) construction material storage areas	Loss of vegetation	<p>Cutting trees at the proposed sites will be kept to an absolute minimum, and only be permitted when trees/vegetations are obstruction to campsite and other facilities.</p> <p>Tree cutting permit is obtained prior to the start of land clearing works where cutting tree cannot be avoided.</p> <p>Before land clearing and/or site preparation, perform a detailed survey of the number and species of trees in order to calculate the compensatory tree replacement.</p> <p>If there will be removal of vegetation, important tree species to be retained as identified by Forest Department.</p> <p>Felled trees recovered after cutting will be handed over for use according to the national laws and regulations.</p>	Contractor	<p>Monitoring: CHTRC PDC/CDC Forest Department</p> <p>Support: PISC</p>
Socio-economic					
Land temporarily required for site offices, material storage, equipment parking, labour accommodation & occupational safety measures for workers	Loss or degradation of farmland and productivity	Reduced production, hardship, food shortage	<p>A suitable location will be selected for site office which will have a negligible impact on environment. Proper care will be taken for not disturbing natural living beings and avoiding of uprooting trees.</p> <p>Healthy accommodation for the laborers, sufficient drinking water supply, and sanitary arrangement will be provided in the sites.</p> <p>Necessary precautionary measure will be taken which may include the building of temporary barricades to isolate the boundaries of the education/hospital/ religious institutes from the construction site, restriction on movement of heavy machinery and avoiding disposal or tipping of earth near those institutes.</p> <p>Signages that will reflect (i) key information of the scope of works, and (ii) GRM access and process.</p>	Contractor	<p>Monitoring: CHTRC PDC/CDC Forest Department</p> <p>Support: PISC</p>
Acquisition of land for maintaining road width	Loss or degradation of farmland and productivity	Reduced production, hardship, food shortage	<p>Minimize productive land acquisition through alignment selection</p> <p>Compensation for affected people</p>	CHTRC	LGED
	Loss of private properties	Displacement of people, hardship	Lands acquisition will be done after providing full compensation to the landowners	CHTRC	LGED
Construction Phase					
Physical environment					
Site clearance, and clearing and grubbing	Alteration of local surrounding	Change in land-use	<p>No forest areas will be developed as access roads.</p> <p>Consult and seek agreement with local communities and District Project Management Office in CHTRC on the alignment of VAR.</p> <p>Natural slope disturbances will be minimized, as much as possible during site clearance</p>	Contractor	<p>Monitoring: CHTRC PDC/CDC</p> <p>Support: PISC</p>

Activity	Potential Negative Impact	Specific Environmental Impact	Mitigation Measures	Responsibility for mitigation measures	
				Implementation	Monitoring/Support
			Limit use of heavy equipment and machineries to minimize further impact on the landscape. Manual labors would be promoted.		
Excavation and box cutting	Removal of soil and ground surface	Erosion	As far as practical, excavation and box cutting will be done during the dry season to minimize exposed areas subject to erosion by surface water runoff. Maintaining vegetative cover along VAR, as much as possible, to minimize direct impacts of raindrops and to impede surface flow.	Contractor	Monitoring: CHTRC PDC/CDC Support: PISC
		Dust generation and vehicle emission increase	Dust suppression measures like water sprinkling, will be applied in all dust prone locations. Construction vehicles and machineries will be periodically maintained. Require construction equipment and vehicles to meet national emissions standards. Regular checks, and maintenance of construction equipment and vehicles to keep them in good working order to meet emission standards.	Contractor	Monitoring: CHTRC PDC/CDC Support: PISC
Construction of road: Drainage	Drainage maintenance and generation of surface runoff	Erosion, landslide, damage to farmland	Proper construction of drainage structures as per design Disposal of spoil and construction wastes through authorized company Avoid blockage or diversion of natural channels due to construction of road	Contractors	LGED
Construction works: Operation of constructions vehicles, materials hauling and unloading, spoil and waste disposal	Air pollution due to dust from exposed surface and construction equipment and vehicles	Effect on local people and workers health	Use of face mask while working on dust prone areas for workers Covering of dust sources such stockpiles Water sprinkling of ground Inform communities on construction schedules that may cause dust generations Secure valid vehicle emission clearance from authorities	Contractors	Monitoring: CHTRC PDC/CDC Support: PISC
	Noise pollution	Disturbance and annoyance around institutions	Restrict horns near school, health posts and sensitive areas Inform communities on construction schedules	Contractors	Monitoring: CHTRC PDC/CDC Support: PISC
	Water pollution due to sediment level, spills and leakage of oils and chemicals to water bodies	Risk of water-borne diseases	Proper spoil management and prevention of leakage and spills of construction chemicals, Restriction in urination and defecation in open areas and provide comfort/bathrooms The washing of vehicles and construction equipment will be carried out at designated washing areas in order to avoid soil and water pollution.	Contractors	Monitoring: CHTRC PDC/CDC Support: PISC

Activity	Potential Negative Impact	Specific Environmental Impact	Mitigation Measures	Responsibility for mitigation measures	
				Implementation	Monitoring/Support
			Locate facilities at a sufficient distance from human receptors to eliminate the impact.		
Operation of constructions vehicles for hauling and unloading of construction materials	Water pollution due to spills and leakage of oils and chemicals to water bodies.	Risk of water contamination	Do not allow washing of equipment or vehicles near surface water and ensure all washing water is discharged to sedimentation basin and oil interceptor instead of directly to surface water. Regular checks, and maintenance of construction equipment and vehicles to keep them in good working.	Contractor	Monitoring: CHTRC PDC/CDC Support: PISC
Cutting of slopes	Effect on instability of slopes	Scars of landslide, damage to farmland, disturbance to natural drainage	Proper selection and management of quarry site Rehabilitation of quarry site after completion of work Procure materials from government authorized quarry only	Contractors	LGED
Associated activities for the construction of road: Camp site operations	Change in local landscape	Encroachment of agricultural land, alteration of drainage, disposal of solid waste and wastewater	Proper selection of camp site away from forest and sensitive areas such as households, institutional facilities and religious sites Proper sanitation facilities by providing pit latrine with soak pit Proper management of spoil and waste through authorized company	Contractors	Monitoring: CHTRC PDC/CDC Support: PISC
Associated activities for the construction of road: Storage of petrol, diesel and grease for vehicle	Water Pollution	Water source and soil pollution, affect health of workers	Store fuels and chemicals on paved surface with surrounding catch drain to protect soil from leakage Use of safety gears to workers during handling fuels and chemicals	Contractors	Monitoring: CHTRC PDC/CDC Support: PISC
Biological environment					
Clearance of vegetation necessary for road formation	Loss of vegetation	Loss of environmental benefits from vegetation and disturbance in ecological function	Minimize cutting of trees, vegetation and taking bio-engineering measures. Compensatory tree plantation will be done by Bangladesh Forest Department at the ratio of 1:10 Planting trees under the watershed management component of CRLIWM-CHT Project	Bangladesh Forest Department DC	Monitoring: CHTRC PDC/CDC Support: PISC
Construction Activity	Impact on wildlife due to loss of habitats	Loss of biodiversity and valuable species of wildlife	Work only in daytime and approved sites only No poaching and hunting Do not disturb and/or harm wildlife that may come across during construction Provide awareness among workers in regards with wildlife conservation Invite government agencies relevant with wildlife conservation to awareness events	Contractors	Monitoring: CHTRC PDC/CDC Support: PISC

Activity	Potential Negative Impact	Specific Environmental Impact	Mitigation Measures	Responsibility for mitigation measures	
				Implementation	Monitoring/Support
			<p>In case of wildlife occurrence at work sites, record sightings and inform EHS Officer or site engineer on how to handle situation</p> <p>Avoid dumping of construction materials and/or wastes along waterways</p>		
Operation of constructions vehicles for hauling and unloading of construction materials	Increased vibration at target sites	Disturbance to local wildlife	<p>Regulating movement of construction vehicles and works only at designated areas.</p> <p>In case there are wildlife conflict in the area, the contractor will inform immediately the District Project Management Office of CHTRC on such occurrence.</p> <p>With the help of local Forest Department, the District Project Management Office of CHTRC will provide awareness on wildlife and habitat protection to Contractor.</p> <p>A record of wildlife sighting shall be kept.</p>	Contractor	<p>Monitoring: CHTRC PDC/CDC Forest Department</p> <p>Support: PISC</p>
Socio-economic environment					
Site clearance, and clearing and grubbing	Alteration of local surrounding	Damage to property	<p>Regulating movement of construction vehicles only at designated routes.</p> <p>Reuse spoil and other materials for construction purposes.</p> <p>Maintain proper material storage system and ensure to control littering of construction materials outside the designated places.</p>	Contractor	<p>Monitoring: CHTRC PDC</p> <p>Support: PISC</p>
Occupational health and safety aspect	Health and Safety issue	Injury, fatal accidents, outbreak of epidemics and diseases, decline in capacity to work	<p>Occupational health and safety regulations</p> <p>Provide first aid facility at site with health treatment arrangement</p> <p>Proper drinking water and toilet facility for construction crew at campsite</p> <p>Provide health and safety awareness and PPE for workers</p> <p>Conduct awareness on communicable diseases such as HIV/STDs and COVID-19</p> <p>Prepare occupational health and safety management plan for managing risks from (i) workers' injuries and (ii) COVID-19</p>	Contractors	<p>Monitoring: CHTRC PDC/CDC</p> <p>Support: PISC</p>
Operation of constructions vehicles for hauling and unloading of construction materials	Air pollution due to dust from exposed surface, from construction equipment and vehicles	Effect on local people and workers health	<p>Dust suppression measures like water sprinkling, will be applied in all dust prone locations.</p> <p>Construction vehicles and machineries will be periodically maintained.</p> <p>Require construction equipment and vehicles to meet national emissions standards.</p> <p>Regular checks, and maintenance of construction equipment and vehicles to keep them in good working order to meet emission standards.</p>	Contractor	<p>Monitoring: CHTRC PDC/CDC</p> <p>Support: PISC</p>

Activity	Potential Negative Impact	Specific Environmental Impact	Mitigation Measures	Responsibility for mitigation measures	
				Implementation	Monitoring/Support
	Noise pollution	Disturbance and annoyance around institutions	Regulating movement of construction vehicles only at designated routes. Construction period will only be at designated time as approved by District Project Management Office in CHTRC. Inform village people on the construction period.	Contractor	Monitoring: CHTRC PDC/CDC Support: PISC
	Health and safety issue	Injury and outbreak of diseases	Provide worker training on health and safety on operation of constructions vehicles for hauling and unloading of construction materials. Workers will use proper personal protective equipment at all times. Ensure all equipment and vehicles used are routinely disinfected. Prepare health and safety plan to manage risks in construction works. (See Annex 5 for reference) Prepare COVID-19 health and safety plan to manage risks. (See Annex 6 for reference) Provide regular briefing/training on disease prevention to workers. Maintain COVID-19 and construction related injuries weekly monitoring and reporting mechanism at the worksite, including any necessary actions to be taken.	Contractor	Monitoring: CHTRC PDC/CDC Support: PISC
Operation Phase					
Physical environment					
Closure of equipment yards and camps	Community health and safety issues	Disturbance to locals	Regulating movement of construction vehicles only at designated routes. Avoid nighttime works Demobilization period will only be at designated time as approved by District Project Management Office in CHTRC. Inform village people on the demobilization.	Contractor	Monitoring: CHTRC PDC/CDC Support: PISC
Road slope instability and management	Landslides	Disturbance to traffic flow and road users	Slope at hill cutting portions will be protected by proper slope protections measures Regular maintenance of slope protections measures	LGED	LGED
Biological environment					
Operation of road	Disturbance to wildlife	Collision of wildlife with vehicles, disturbance in their normal activities, loss of biodiversity	Warning traffic signs and signals Road signs and precautions are provided to guide drivers for sensible driving, especially at night-drive. Necessary road safety measures.	LGED	LGED
Socio-economic environment					
Operation of vehicles and machines for repair and maintenance	Occupational health and safety issue	Workers' injury	Workers will use proper personal protective equipment against dust and high noise levels.	Contractor	Monitoring: CHTRC PDC/CDC

Activity	Potential Negative Impact	Specific Environmental Impact	Mitigation Measures	Responsibility for mitigation measures	
				Implementation	Monitoring/ Support
					Support: PISC
	Air, noise and water pollution	Disturbance and annoyance around institutions	Regulating movement of vehicles only at designated routes. Construction period will only be at designated time as approved by District Project Management Office in CHTRC. Inform village people on the maintenance period.	Contractor	Monitoring: CHTRC PDC/CDC Support: PISC

Table 15. Environmental Management Plan budget for Village access roads subproject

Environmental Impact/Issue	Mitigation Measures	Responsibility		Budget (BDT)
		Implementation	Supervision	
Pre-operations Phase				
Land Temporarily Required for Site Offices, Material Storage, Equipment Parking, Labor Accommodation & Occupational safety measures for workers and road side institutions etc	A suitable location will be selected for site office which will have a negligible impact on environment. Proper care will be taken for not disturbing natural living beings and avoiding of uprooting trees.	Contractor.	CHTRC	2,50,000/- (Included in the estimated cost)
	Healthy accommodation for the laborers, Sufficient drinking water supply, and sanitary arrangement will be provided in the sites.	Contractor.	CHTRC	75,000/- (Included in the estimated cost)
	Necessary precautionary measure will be taken which may include the building of temporary barricades to isolate the boundaries of the education/hospital/ religious institutes from the construction site, restriction on movement of heavy machinery and avoiding disposal or tipping of earth near those institutes. Signages that will reflect (i) key information of the scope of works, and (ii) GRM access and process.	Contractor	LGED	1,50,000/- (Included in the estimated cost)
Operations Phase				
Air pollution by creating Dust	Spraying of water in quarrying areas and proper covering of vehicles carrying quarried materials.	Contractor	CHTRC	30,000/- (Included in the estimated cost)
Noise and Other Nuisances	All activities during construction will be conducted in a manner which minimizes nuisance to the general public and to the occupiers of premises. Proper measure will be taken to minimize noise pollution due to construction.	Contractor	CHTRC	30,000/- (Included in the estimated cost)

Soil and Water Pollution	The washing of vehicles and construction equipment will be carried out at designated washing areas in order to avoid soil and water pollution.	Contractor	CHTRC	20,000/- (Included in the estimated cost)
Disposal of Waste/ Construction debris	Necessary care will be taken to avoid any kind of waste/ construction debris disposal in water bodies. All necessary measures will be taken while working close to cross drainage channels to prevent congestion by earth, stone etc.	Contractor	CHTRC	20,000/- (Included in the estimated cost)
Post-operations Phase				
Closure of equipment yards and camps	Remove all temporary structures and clean up construction camp debris, backfill work camp latrines and vegetate the area with tree planting.	Contractor	CHTRC	50,000/- (Included in the estimated cost)

Table 16. Environmental Monitoring Plan (EMoP) for village access roads subproject

Impact	Monitoring Parameter	Method of Monitoring	Indicator	Location	Frequency of Monitoring	Responsibility
Water Pollution	pH, BOD, COD, TSS	Laboratory analysis as per Standard Methods	Test results should comply with national standards	Nearby water channels	Two times in subproject duration (i.e., 50% and 90% of progress of works)	Contractor, LGED
Air Pollution	SPM		Test results should comply with national standards	Project site		Contractor, LGED
Noise Pollution	Noise Level		Test results should comply with national standards and/or WHO levels	Project site		Contractor, LGED
Soil Pollution	Oil & Grease, Organic Matter		Test results should comply with national standards	Campsite		Contractor, LGED

B. Environment Safeguard Responsibilities of Project Proponents

185. The PMO is responsible for the full compliance of the project on ADB loan agreement and SPS 2009, and all applicable laws and rules of the government. The PMO will be headed by a Project Director from CHTRC. The PMO will:

- Comply with the government Environment Conservation Act (1995) and Environment Conservation Rules (1997), and other environment-related statutory requirements of the project.
- With the support of the PISC, DPMOs and LGED, review and approve subproject IEEs and EMP(s), and environmental safeguard related clauses and sections to be included

- in tender documents and civil works contracts of contractor(s).
- Be responsible for application and forwarding of key documents to government agencies for processing of permits including, but not limited to Environmental Clearance Certificate (ECC) for the rural roads, any tree cutting activities in subproject sites, and other relevant permits and license prior to awarding any works contracts for civil works.
 - Ensure preparation, review, and submission of semi-annual EMRs for disclosure on ADB's website.
 - Disclose IEEs, EMRs and other environment safeguards documents on MOCHTA and LGED websites.
 - Ensure compliance of the project on the EARF. Take the lead on updating the EARF when needed.
 - Conduct training and workshops on environment, health and safety of all staff and workers involved in the project implementation. The staff and workers will include all engineers, and staff and laborers of contractors.
 - Implement effective environmental monitoring during pre-construction, construction, and operation phases. This includes, but is not limited to, inspections, review of monitoring forms prepared by the contractors, and documentation of the issues received through GRM;
 - Take proactive and timely measures to address any environment safeguards related challenges at the national or division/district levels such as (a) delays in processing of clearances during pre-construction stage and (b) significant grievances during construction and operation stages).
 - Review and approve corrective action plans (CAPs) for environment safeguard non-compliance.
 - Inform ADB on any unanticipated environmental impact/s occurred during project implementation phase.
 - Participate and/or lead public consultations and GRM processes.
 - Ensure GRM is in place and fully operational from the onset of project implementation.

186. There will be three DPMOs headed each by a Deputy Project Director (DPD). Each DPMO will be managed by the DPD, who will report to PD-PMO on district-wise subproject related activities under outputs 1–4. The DPMO will:

- support the PMO and LGED in the preparation of IEEs and EMPs of subprojects through, but not limited to, reconnaissance survey, collecting data from the proposed subproject sites, government requirements and public consultations;
- ensure that the project, and all contractors obtain permits, licenses, etc. before the implementation of the respective construction activity;
- Carry-out regular field verification and review of environmental compliances by contractors, in coordination with the PISC and the contractors' environmental focal person;

- with PISC's support, provide and record environmental impact observations during any site visits;
- participate and/or lead public consultations and grievance redress mechanism processes; and
- in case of potential risks and hazards to health, environmental quality, and properties that may result from poor EMP implementation, immediately instruct the contractor to cease the construction activities that pose risk and conduct immediate containment and mitigation activities.

187. Comprising with international and national experts, the PISC will support the capacity and operational effectiveness of the PMO, DPMOs and LGED (PMU and PIUs) including for environment safeguard matters. The Environment and Climate Specialist and Junior Environmental Engineers²⁰ under the PISC will support the project on supervision, compliance and monitoring of environmental safeguards. Particularly, the PISC will:

- ensure subprojects will conform to national policies and ADB's requirements for environmental safeguards;
- ensure subprojects are following social, technical, environmental and economic criteria;
- provide support to PMO for the collection of environmental information to be used in the feasibility assessment of proposed subprojects;
- provide technical expertise to PMO to implement environmental safeguard requirements;
- assist on the preparation of IEEs and EMPs of subprojects;
- support the PMO, DPMOs and LGED (PMU and PIUs) to implement EMPs, the recommendations of the IEEs and guidance in the EARF;
- assist the project to comply with the procedures and requirements indicated in the EARF;
- support the project on monitoring of environmental safeguards at subproject sites;
- provide technical expertise to PMO, DPMOs and LGED (PMU and PIUs) in the preparation of environmental safeguard requirements;
- support PMO to conduct environmental site inductions to contractors, LGED (PMU and PIUs) and DPMOs to ensure understanding of EMPs, government's environmental laws and requirements, and ADB SPS 2009 requirements;
- assist the PMO to prepare the environmental monitoring reports for timely submission to ADB; and
- provide support on any environmental management and safeguards matters of the project.

188. The contractor(s)²¹ is the principal agent to implement EMP and environmental quality monitoring for structural works. Specifically, the contractor/s will:

²⁰ There will be a Junior Environmental Engineer for each CHT district, who will be led by the Environment and Climate Specialist.

²¹ Includes any subcontractor(s) of the contractor.

- appoint the contractor's environment, health and safety focal person and attend the trainings organized by the PMO and DMOs;
- obtain necessary environmental license(s), permits etc. from relevant agencies as specified in the IEE(s) prior to commencement of works;
- prepare and implement environment, health and safety measures;
- implement and document all mitigation measures in the EMP and environmental quality monitoring plan;
- ensure that workers and site supervisors participate in all environmental safeguard related training events;
- ensure compliance with environmental statutory requirements and contractual obligations;
- participate in resolving issues relevant with safeguards;
- respond promptly to grievances from local community or any stakeholder and implement environmental corrective actions or additional environmental mitigation measures as necessary;
- provide information to DPMOs and LGED (PMU and PIUs) on the status of EMP implementation, environmental quality monitoring and other safeguard matters; and
- based on the results of EMP monitoring, cooperate with the DPMOs and LGED (PMU and PIUs) to implement corrective action plans, as necessary.

189. The PDC in each of the eight paras and one CDC for the VAR will form an O&M group with at least 30% participation of women for future maintenance and repair works of all the interventions. The INGO facilitates training on financial management, participatory planning and monitoring and need based training. The DPMO engineer will coordinate and provide on the job training on technical matters. PISC will provide an O&M manual.

190. ADB is responsible for the following:

- review IEEs including EMPs and disclose the final reports on ADB's website;
- review EMRs, and disclose the final reports on ADB's website;
- explain policy requirements and safeguard covenants in the loan and project agreements to PMU, SMOs and PMU;
- monitor implementation of the EMP through due diligence missions;
- assist PMU, if required, in carrying out its responsibilities and in building capacity for safeguard compliance;
- monitor overall compliance of the subprojects to this PAM; and if necessary, provide further guidance on the format, content, and scope of the periodic monitoring reports for submission to ADB.

XII. CONCLUSION AND RECOMMENDATION

191. CRLIWM CHT Sector Project is categorized as “B” in line with ADB SPS 2009. The project is a sector loan, where IEE is required particularly for Village Access Roads Sub-Projects Batch 1 under Output 1. The conclusions and recommendations are the following:

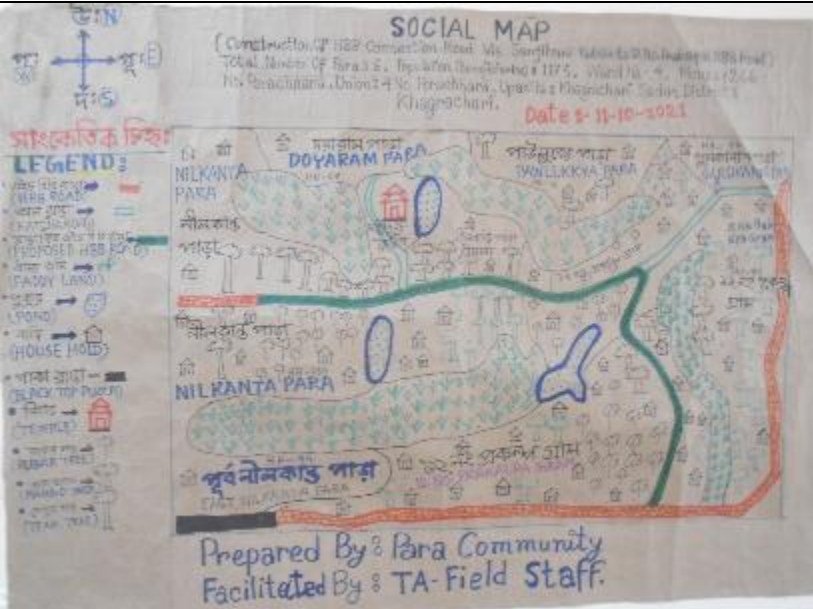

- The IEE for has been prepared in accordance with ADB SPS 2009. This IEE serves as compliance to environmental due diligence requirement of Output 1. Further, this IEE serve as environmental assessment VAR subproject during project readiness.
- 28 village access roads (VAR) will be constructed, of which 27 are covered by this IEE. Together, the 27 VARs serve approximately 50,000 people of more than 10,000 household, spread across more than 130 paras. The interventions will consist of the construction of HBB road, where needed complemented by RCC road, drainage, culverts, a road safety component, and in a few cases a bridge component.
- The proposed interventions under the subproject are not within any environmentally sensitive area. No environmental clearance is required from the government for any of the interventions. There will be minor to moderate negative impacts however the extent of these impacts is expected to be site-specific and localized. With the EMP in places, the potential impacts will either be eliminated or minimized to insignificant levels.
- Throughout the implementation, relevant environmental safeguard requirements of ADB SPS 2009 and by the Government of Bangladesh must be complied through PMO and DPMO of Rangamati.
- Semi-annual EMRs will be prepared and submitted until project completion report is issued by ADB.
- In the event of any unanticipated environmental impact(s) during implementation, PMO, with PISC's, support will update the IEE and EMP, or alternatively prepare an environmental due diligence report including EMP for ADB review and disclosure on the ADB website.

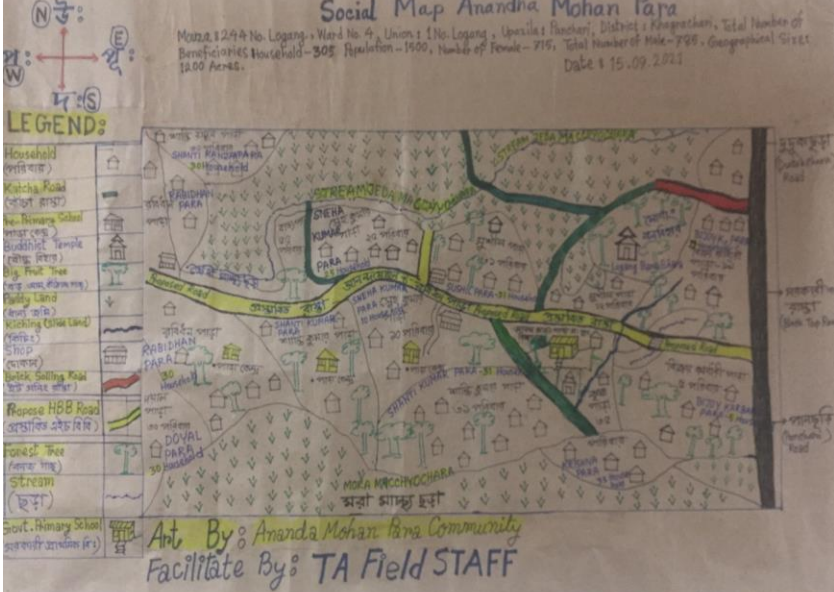
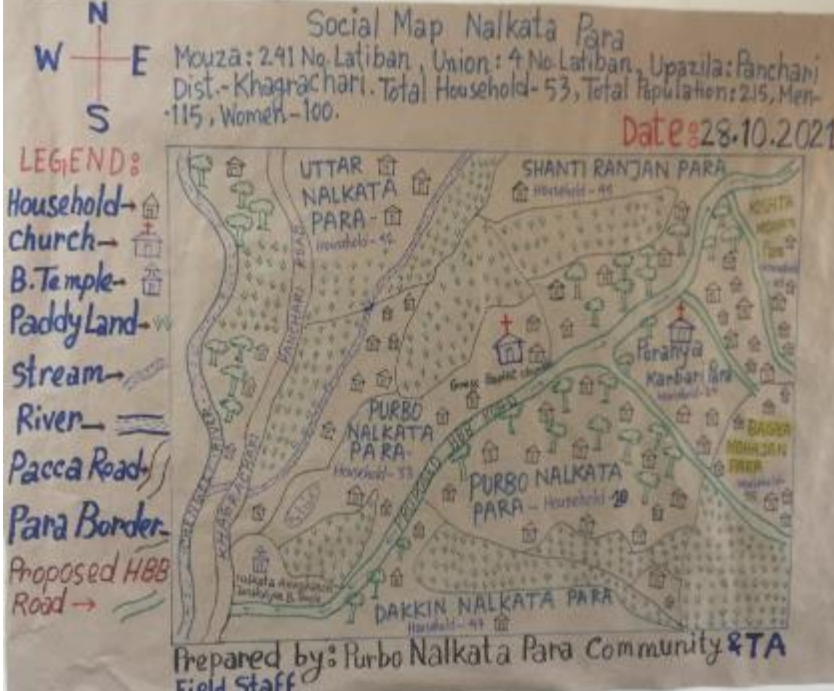
XIII. ANNEXES



Annex 1. Outputs under the CRLIWM-CHT Sector Project and corresponding indicators based on the Fact-Finding Mission on July 2022.


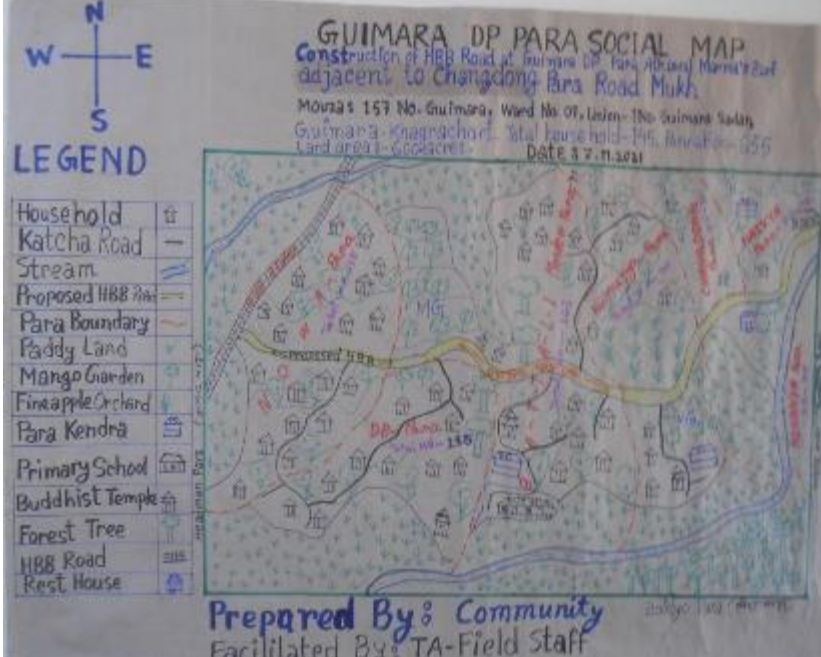
Outputs	Performance Indicators with by 2029
1. Community infrastructure developed	<p>1a. 1000 paras supported with small scale climate resilient community infrastructure facilities in which, on average, small ethnic community households represent at least 65% of total households.</p> <p>1b. 2,950 completed small scale climate resilient community infrastructure facilities managed by Para Development Committees (of which 30% are Para Nari Development Group).</p>
2. Watershed management strengthened	<p>2a. 9 sub-watersheds with an average surface of 1450 Ha restored and managed by Village Common Forest Committees (of which 30% of members are women)</p> <p>2b. 540 small scale climate resilient water resource management infrastructure facilities constructed and managed by Para Development Committees (of which 30% are Para Nari Development Group)</p>
3. Agriculture production, processing, and marketing improved	<p>3a. At least 21,000 new farmers in the project assisted areas (65% representing small ethnic communities and 30% women) adopt climate-smart and good agriculture practices.</p> <p>3b. At least 1,200 farmers (65% representing small ethnic communities and 30% women) in the project supported areas undertake primary processing of an agricultural product.</p> <p>3c. At least 4,200 farmers (65% representing small ethnic communities and 30% women) are linked with new buyers of an agricultural product.</p>
4. Rural non-farm skills improved	<p>4a. At least 8,000 people (of which at least 65% are from small ethnic communities and 30% are women) receive training and at least 75% them are certified in a non-farm vocational practice.</p>
5. Rural roads rehabilitated	<p>5a. 130 km of roads in the CHT area are climate proofed, upgraded and maintained, using labor-based contracts (where at least 65% of the contracted laborers are from small ethnic communities and at least 20% are women)</p>

Annex 2. Community social maps for village access roads



1	Construction of HBB Road at Nilkanta Para Sanjiboni Kutir (Bihar) via 12 No. Prokolpo Gram	 <p>SOCIAL MAP (Construction of HBB Connection Road Via Sanjiboni Kutir to Nilkanta Para HBB Road) Social Number Of Para 32, Registration Number 1175, Ward No. 4, Mouza 12 No. Prokolpo Gram, Union 2 No. Bhaibonchara, Upazila Khagrachari, District Khagrachari. Date: 11-10-2021</p> <p>LEGEND: Household HBB ROAD Paddy Land Pond House Mango Tree Big Tree Para Borden Katcha Road</p> <p>Prepared By: Para Community Facilitated By: TA-Field Staff.</p>
2	Construction of HBB Road from Bhaibonchara Mukh Govt. Primary School to 2 No Banchara Prakaipa HBB Connecting Road via Kukichara vijekijing Boishali Nagor Arunyo Bon Kutir.	 <p>NOWA PARA KUKICHARA SOCIAL MAP Mouza: 240 No. Bhaibonchara, Ward No-6, Union- 5 No. Bhaibonchara, Upazila- Khagrachari Sadar, District - Khagrachari. Date: 1.11.2021</p> <p>LEGEND: Household Govt. Primary School Buddhist Temple Proposed HBB Road HBB Road Big Tree Para Borden Paddy Land Mango Tree Katcha Road</p> <p>Prepared by: Community & TA-field Staff.</p>

3	Construction of HBB Road from Highways Department Road (RHD) via Machchachara Ananda Mohan Karbari Para to Robidhan Tripura Karbari Para	 <p>Social Map Anandha Mohan Para Mouza: 1294 No. Logang, Ward No. 4, Union: 1 No. Logang, Upazila: Panchari, District: Khagrachari, Total Number of Beneficiaries Household - 308, Population - 1400, Number of Female - 715, Total Number of Male - 795, Geographical Size: 12.00 Acres. Date: 15.09.2021</p> <p>LEGEND: Household (ঘর) → Khatka Pota (খটকা পোতা) → Govt. Primary School (সরকারি প্রাথমিক বিদ্যালয়) → Religious Place (পবিত্র স্থান) → Big Fruit Tree (বড় ফলি গাছ) → Paddy Land (পaddy land) → Uncultivated Land (অসংস্কৃত ভূমি) → Stream (প্রবাহ) → Block Selling Road (ব্লক বিক্রয় রাস্তা) → Proposed HBB Road (প্রস্তাবিত HBB রাস্তা) → Forest (জঙ্গল) → River (নদী) → Govt. Primary School (সরকারি প্রাথমিক বিদ্যালয়) →</p> <p>Art. By: Ananda Mohan Para Community Facilitate By: TA Field Staff</p>
4	Construction of HBB Road from Purba Nalkata Army Camp to Kista Mohan Karbari Para Via Chitta Biplob Chakma's Bagan	 <p>Social Map Nalkata Para Mouza: 241 No. Latiban, Union: 4 No. Latiban, Upazila: Panchari, Dist: Khagrachari, Total Household: 53, Total Population: 215, Men: 115, Women: 100. Date: 28.10.2021</p> <p>LEGEND: Household → Church → B. Temple → Paddy Land → Stream → River → Pacca Road → Para Border → Proposed HBB Road →</p> <p>UTTAR NALKATA PARA - Household - 46 SHANTI RANJAN PARA - Household - 44 PURBO NALKATA PARA - Household - 33 PURBO NALKATA PARA - Household - 20 DAKKIN NALKATA PARA - Household - 42</p> <p>Prepared by: Purbo Nalkata Para Community & TA Field Staff</p>

7	Construction of HBB Road from CHTDB HBB Road to Kengalchari via Khamar Para.	 <p>KHAMAR PARA SOCIAL MAP Total Para: 7, Total Household-496, Total Population: 1892, Mouza: 253 No. Dimpujyana, Union-1 No. Mohalchari, Upazila: Mohalchari, Dist. Khagrachari, HH-156. Date: 15.12.2021</p> <p>LEGEND: Household Pre-Primary School Primary School Proposed HBB Road Stream Paddy Land Field/Garden Forest/Garden Fruit Tree Buddhist Temple</p> <p>Prepared By: TA-Field Staff & Community</p>
8	Construction of HBB Road from Datkupa Tetultola to stream over with Bridge Lamba Para	 <p>DATKUPYA PARA SOCIAL MAP Mouza: 258 No. Ultachari, Ward No. 8, Union: 3 No. Keyanghat Upazila: Mohalchari, District: Khagrachari, Total Beneficiaries Paras-7, Date: 15.12.2021</p> <p>LEGEND: Pre-Primary School Govt. Primary School High School Buddhist Temple Black Top Pucca Road Earthen (Katcha) Road Stream Church Paddy Land Proposed Road Orchard Cultant Forest Trees/Garden Big Temarind Trees</p> <p>Prepared By: Community & TA-Field Staff</p>



9	Construction of HBB Road from DP Dakkhin (South) Muslim Para to Raingkheng Mog Para via 2 No Rubber bagan para.	 <p>DAKKHIN MUSLIM PARA TO RAIKLONG DP PARA Mouza: 201 No. Wasu, Ward No 6, Union-6 No. Matiranga, Laxzila-Matiranga, Dist.-Khagrachari, Date-23.1.2022</p> <p>LEGEND: Household — [house icon] School — [school icon] Para Kendra — [kendra icon] Black Top Bagan Road — [thick black line] Proposed HBB — [red line] Paddy Land — [green wavy line] Pond — [blue circle]</p> <p>Prepared By: TA-Field Staff & Community.</p>
10	Construction of HBB Road from Guimara DP Para Athowai Marma's Bari via Changdong Para Road Mukh (Nowa Para) to Naikya Para.	 <p>GUIMARA DP PARA SOCIAL MAP Construction of HBB Road at Guimara DP Para Athowai Marma's Bari adjacent to Changdong Para Road Mukh Mouza: 157 No. Guimara, Ward No 07, Union-1 No. Guimara Sadak, Guimara-Khagrachari, Total household-145, Area-1055 Land area-1000 acres. Date: 17.11.2021</p> <p>LEGEND Household [house icon] Katcha Road [thin line] Stream [blue line] Proposed HBB [red line] Para Boundary [dashed line] Paddy Land [green wavy line] Mango Garden [yellow wavy line] Pineapple Orchard [orange wavy line] Para Kendra [kendra icon] Primary School [school icon] Buddhist Temple [temple icon] Forest Tree [tree icon] HBB Road [thick red line] Rest House [house icon]</p> <p>Prepared By: Community Facilitated By: TA-Field Staff</p>



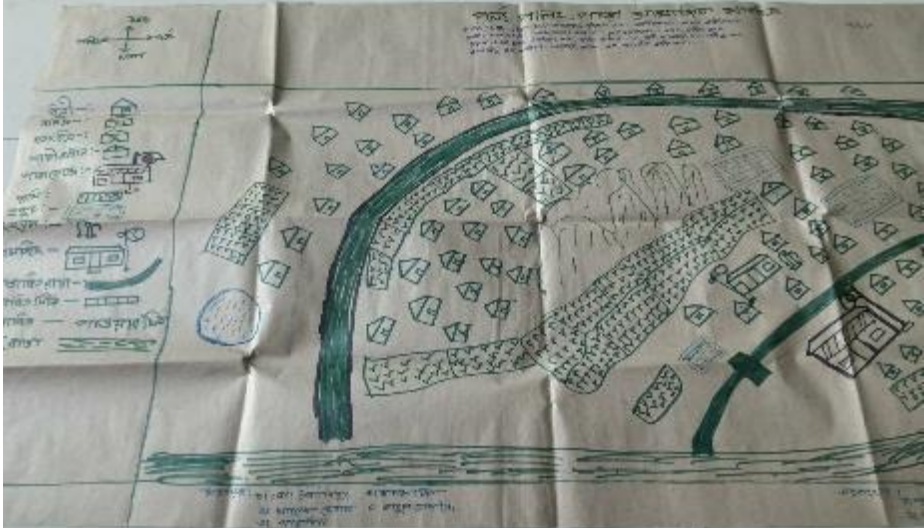
11	Construction of HBB Road at from Kalapani Mihir's Bari (House) to Nowa Para via Kalapani Keyangghor	<p>KALAPANI PARA SOCIAL MAP Mouza: 231 No. Kalapani, Ward No. 2, Union: 3 No. Jogyachola Upazila: Manikchari, Dist.: Khagrachari, Total Household: 498 Population: 2603, Land Area: 2000 acre Date: . Art By: Kalapani Para Community Facilitate By: TA TEAM, Khagrachari.</p>
12	Construction of HBB Road at Barmachari Main Road to Guichari Mukh via Tholi Para	<p>SOCIAL MAP OF (Construction HBB Road at Barmachari Main Road to Thali Para) Mouza: 85 No. Barmachari, Union: 3 No. Barmachari, Upazila: Laxmichari, Dist.: Khagrachari Total Para: 9, HH: 53, Total Population: 2495, Date: 29.11.2021 Prepared By: Community & TA-Field Staff.</p>



13	Construction of HBB Road at Gujapara to Nowapara	 <p>Gujapara Social Map Mouza: 237 No. Navaraja, Ward No. 07, Union-2 No. Patlachara Upazila: Ramgarh, Dist.-Khagrachari. Date: 18.01.2022</p> <p>LEGEND: Household Free-Primary School Tea Shop Hindu Temple Buddhist Temple Bamboo Garden Govt. Pr. School Katcha Road Non-Govt. High School Proposed HBB Road HBB Road River Stream</p> <p>Prepared by: Community & TA-Field Staff.</p>
14	Chongrachari Mukh Para to Haji Shaheb (Muslim) Para	 <p>Chongrachari Mukh Para to Haji Shaheb Para Date: 18.01.2022</p> <p>LEGEND: House Shop Tea house Paddy land Bamboo garden Rice land Rice road Rice field Stream Paddy field Field Toilets Cemetery</p> <p>Prepared by: Community & TA-Field Staff.</p>
15	Ramhari Para Village Access Road	



16	Ramhari Para to Krishnamachara village access road	<p>Hand-drawn map titled "Ramhari Para to Krishnamachara village access road" (ରାମହରି ପାରା ଓ ଖୁସ୍କାହାଟ ଗ୍ରାମର ମଧ୍ୟମଧ୍ୟ ରାସ୍ତା). The map shows a proposed road route (indicated by a red line) connecting Ramhari Para to Krishnamachara village. The map includes a legend on the left with symbols for houses, fields, ponds, and roads. The title is in Odia script.</p>
17	Manikjor Chara Gram Ratan Chakma's Bari House to Naniarchar Main Road	<p>Hand-drawn map titled "Manikjor Chara Gram Ratan Chakma's Bari House to Naniarchar Main Road" (ମନିକ୍‌ଜୋର ଗ୍ରାମ ରାତନ ଚକ୍ମାଙ୍କ ବାରି ଘରୁ ନାନୀଅର୍ଚାର ମୁଖ୍ୟ ରାସ୍ତା). The map shows a proposed road route (indicated by a red line) connecting Manikjor Chara Gram Ratan Chakma's Bari House to Naniarchar Main Road. The map includes a legend on the left with symbols for houses, fields, ponds, and roads. The title is in Odia script.</p>

18	Leba Para Rastamatha to Kozoichari Para village access road	
19	Betbunia Simana to Hatimara village access Road	

20	Rajsthali main road to Paidong Para village access road	 <p>A hand-drawn map on aged paper showing a village layout. A prominent red line represents a main road, and a thinner red line branches off to the right, labeled as an access road. The map includes various symbols for buildings, trees, and a river on the right side. A legend on the left lists symbols in Nepali and English, such as 'House', 'School', 'Temple', 'River', and 'Road'. The title at the top is in Nepali script.</p>
21	Sakrachari Mukh to Pangkua Para village access road	 <p>A hand-drawn map on aged paper showing a village layout. A red line indicates an access road. The map features numerous symbols for buildings, trees, and a river. A legend on the left lists symbols in Nepali and English, including 'House', 'School', 'Temple', 'River', and 'Road'. The title at the top is in Nepali script.</p>

22	Maddya Balukhali Jotimoy Chakma's House to Subalong shakha Banbihar	
23	Kurukpata Poamuhuri to Meringchar Para	
24	Thanchi Sarak Purba Palong Para via Md. Ali's House to Amtoli Taxi Station	

25	Maddhyam Chak Para to Thuihla Aung Para	
26	Alikhyang Road to Charabunia Para	

27	Cherar Kul to Keichyabunia Linked Road	
28	Ashartali Main Road to Puraba Math	

Annex 3. Grievance recording form (English version)

GRIEVANCE RECORDING FORM

Ministry of Chittagong Hill Tracts Affairs

Climate Resilient Livelihood Improvement and Watershed Management in Chattogram Hill Tracts Sector Project

SL	GRIEVANCE RECORDING FORM			
1.	Date of Grievance Reporting			
2.	Full Name of AP / Complainant			
3.	Gender of AP/ Complainant		Male Female	
4.	ID of AP (voters ID/passport number/driving license/any other ID)			
5.	Address of AP/ Complainant			
6.	Contact Information	Phone:	Email:	
7.	Mode of communicating grievance (<i>circle the number below</i>)			
8.	Oral	Oral (but not AP)	Written	Written (by other)
	1	2	3	4
9.	Mode of Contact (<i>circle the number below</i>)			
	Phone	Email	UP Chairman/ Mouza Headman/ UP Member/ Karbari/ Local Community Leader	Others (specify)
	1	2	3	4
10.	Type of Grievance (<i>circle as many reported</i>)			
Unaware of project component boundary		1	Safety of women	7
Parcel missed in measurement		2	Damage to crops due to construction	8
Parcel measurement error		3	Inappropriate livelihood restoration scheme	9

Disagreement over rates used for valuation	4	Loss of access	10
Mistakes in compensation agreement/ID reference	5	Others (Specify)	11
Delay in compensation payment	6		

a. 11.	Description of Grievance:		
12.	Frequency of Grievance (<i>circle the number</i>):		
	• One time incident	1	
	• Happened more than once	2	
	• On-going	3	
13.	Expected resolution to stated grievance:		
14.	Signature/Thumb impression of AP/Complainant	Date:	
15.	Name and Signature of the Official recording grievance	Date:	
16.	Has AP been handed a copy of the grievance form	Yes	No
Status of Resolution			
17.	By GRC	Date:	
Resolution details:			
Has AP/ Complainant been notified?		Yes	No
Is Grievance resolved/closed?		Yes	Not resolved. Referred to Provincial Administrator
If case is closed, then Signature of AP/ Complainant to show agreement		Date:	
Name and signature of the Official		Date:	

18	By Hill District Council	Date:	
Resolution details:			
Has AP/ Complainant been notified?		Yes	No
Is Grievance resolved/closed		Yes	Not resolved. Referred to IPMU/WAF
If case is closed, then Signature of AP/ Complainant to show agreement		Date:	
Name and signature of the Official		Date:	
19.	BY Regional Council	Date:	
Resolution details:			
Has AP/ Complainant been notified?		Yes	No
Is Grievance resolved/closed?		Yes	Not resolved. Referred to Court
If case is closed, then Signature of AP/ Complainant to show agreement		Date:	
Name and signature of the Official		Date:	
20.	By Court	Date:	
Resolution details:			
Is Grievance resolved/closed?		Yes	No
Name and signature of the Official		Date:	
DECISION OF THE COURT IS FINAL			

Annex 4. Grievance recording form (Bengali Translation)

পরিশিষ্ট ৪

অভিযোগ সংরক্ষণ ফর্ম

পার্বত্য চট্টগ্রাম বিষয়ক মন্ত্রণালয়

পার্বত্য চট্টগ্রাম জলবায়ু স্থিতিস্থাপক জীবিকা উন্নয়ন ও জলাধার ব্যবস্থাপনা সেক্টর প্রকল্প

ক্রমিক	অভিযোগ সংরক্ষণ ফর্ম			
১.	অভিযোগ প্রতিবেদনের তারিখ			
২.	এপি /অভিযোগকারীর পুরো নাম			
৩.	এপি/অভিযোগকারীর লিঙ্গ		পুরুষ নারী	
৪.	এপি আইডি (ভোটার আইডি / পাসপোর্ট নম্বর / ড্রাইভিং লাইসেন্স / অন্য কোনও আইডি)			
৫.	এপি/অভিযোগকারীর ঠিকানা			
৬.	যোগাযোগের তথ্য	ফোন:	ইমেল:	
৭.	যোগাযোগের অভিযোগ করার পদ্ধতি (নীচের নম্বরটি বৃত্তাকার করুন)			
৮.	মৌখিক	মৌখিক (কিন্তু এপি নয়)	লেখা	লেখা (অন্যের দ্বারা)
	১	২	৩	৪
৯.	যোগাযোগের মোড (নীচের নম্বরটি বৃত্তাকার করুন)			
	ফোন	ইমেইল	ইউপি চেয়ারম্যান/মোজা হেডম্যান/ইউপি সদস্য/কারবাড়ি/স্থানীয় কমিউনিটি লিডার	অন্যান্য (নির্দিষ্ট)
	১	২	৩	৪

১০.	অভিযোগের ধরণ (বৃত্ত হিসাবে অনেক রিপোর্ট করা হয়েছে)		
প্রকল্পের কম্পোনেন্ট সীমানা সম্পর্কে অবগত নয়	১	নারীর নিরাপত্তা	৭
	২	নির্মাণের কারণে ফসলের ক্ষতি	৮

পরিমাপে পার্সেল মিস হয়েছে			
পার্সেল পরিমাপ ত্রুটি	৩	অনুপযুক্ত জীবিকা পুনরুদ্ধার প্রকল্প	৯
মূল্যায়নের জন্য ব্যবহৃত হারের বিষয়ে মতানৈক্য	৩	অ্যাক্সেস হারানো	১০
ক্ষতিপূরণ চুক্তি/আইডি রেফারেন্সে ভুল	৫	অন্যান্য (নির্দিষ্ট করুন)	১১
ক্ষতিপূরণ প্রদানে বিলম্ব	৬		

১১.	অভিযোগের বিবরণ:		
১২.	অভিযোগের ফ্রিকোয়েন্সি (সংখ্যাটি বৃত্তাকার করুন):		
	• একবারের ঘটনা		১
	• একাধিকবার ঘটেছে		২
	• চলমান		৩
১৩.	অভিযোগ বিবৃত করার প্রত্যাশিত সমাধান:		
১৪.	এপি/অভিযোগকারীর স্বাক্ষর/থাম্ব ইমপ্রেশন	তারিখ:	

১৫.	অফিসিয়াল রেকর্ডিং অভিযোগের নাম এবং স্বাক্ষর	তারিখ:	
১৬.	এপিকে কি অভিযোগ ফর্মের একটি অনুলিপি দেওয়া হয়েছে	হ্যাঁ	না
রেজোলিউশনের বিস্তারিত:			
১৭.	জিআরসি দ্বারা	তারিখ:	
রেজোলিউশনের বিস্তারিত:			
		হ্যাঁ	না

এপি/অভিযোগকারীকে কি জানানো হয়েছে?		
অভিযোগ কি সমাধান/বন্ধ হয়ে গেছে?	হ্যাঁ	সমাধান হয়নি। প্রাদেশিক প্রশাসক
যদি কেস বন্ধ হয়ে যায়, তাহলে চুক্তি দেখানোর জন্য এপি/অভিযোগকারীর স্বাক্ষর	তারিখ:	
কর্মকর্তার নাম ও স্বাক্ষর	তারিখ:	

a. ১৮	পার্বত্য জেলা পরিষদ	তারিখ:	
রেজোলিউশনের বিস্তারিত:			
এপি/অভিযোগকারীকে কি জানানো হয়েছে?		হ্যাঁ	না
অভিযোগ কি সমাধান করা হয়েছে/বন্ধ করা হয়েছে		হ্যাঁ	সমাধান হয়নি। উল্লেখিত IPMU/WAF
যদি কেস বন্ধ হয়ে যায়, তাহলে চুক্তি দেখানোর জন্য এপি/অভিযোগকারীর স্বাক্ষর		তারিখ:	
কর্মকর্তার নাম ও স্বাক্ষর		তারিখ:	
19.	আঞ্চলিক পরিষদ	তারিখ:	
রেজোলিউশনের বিস্তারিত:			
এপি/অভিযোগকারীকে কি জানানো হয়েছে?		হ্যাঁ	না
অভিযোগ কি সমাধান/বন্ধ হয়ে গেছে?		হ্যাঁ	সমাধান হয়নি। আদালতে রেফার করা হয়েছে
যদি কেস বন্ধ হয়ে যায়, তাহলে চুক্তি দেখানোর জন্য AP/অভিযোগকারীর স্বাক্ষর		তারিখ:	
কর্মকর্তার নাম ও স্বাক্ষর		তারিখ:	

২০.	আদালত দ্বারা	তারিখ:	
রেজোলিউশনের বিস্তারিত:			
অভিযোগ কি সমাধান/বন্ধ হয়ে গেছে?		হ্যাঁ	না
কর্মকর্তার নাম ও স্বাক্ষর		তারিখ:	
আদালতের সিদ্ধান্তই চূড়ান্ত			

Annex 5. Guide for preparing Occupational Health, and Safety Plan

I. Introduction

Occupational health, and safety (OHS) plan contain measures that are generally considered to be achievable. The applicability of the OHS plan should be tailored to the hazards and risks due to community infrastructure interventions. The OHS plan include information relevant to construction, operation and maintenance, including associated bridges.

Health and safety issues during the construction and operation are similar to those of other infrastructure projects involving earth moving and civil works. These impacts include, among others, construction site waste generation; soil erosion and sediment control from materials sourcing areas and site preparation activities; fugitive dust and other emissions (e.g. from vehicle traffic, land clearing and movement, and materials stockpiles); noise from heavy equipment and truck traffic; and potential hazardous materials and oil spills associated with heavy equipment operation and fueling activities.

Guidance on the prevention and control of construction hazards common to most constructions and facilities is presented in the following sections.

II. Integrity of Workplace Structures

Permanent and recurrent places of work should be designed and equipped to protect OHS.

1. Surfaces, structures and installations should be easy to clean and maintain, and not allow for accumulation of hazardous compounds.
2. Campsites should be structurally safe, provide appropriate protection against the climate, and have acceptable light and noise conditions.

Lavatories and showers.

1. Adequate lavatory facilities (toilets and washing areas) should be provided for the number of people expected to work in the facility.

First aid for workers.

1. The contractor should ensure that qualified first-aid can be provided at all times. Appropriately equipped first-aid stations should be easily accessible throughout the place of work
2. Eye-wash stations should be provided close to all workstations where immediate flushing with water is the recommended first-aid response

III. Physical Hazards

Physical hazards represent potential for accident or injury or illness due to repetitive exposure to mechanical action or work activity. Single exposure to physical hazards may result in a wide range of injuries, from minor and medical aid only, to disabling, catastrophic, and/or fatal. Multiple exposures over prolonged periods can result in disabling injuries of comparable significance and consequence.

Construction personnel can be exposed to a variety of physical hazards, principally from operating machinery and moving vehicles but also working at elevation on bridges. Other physical hazards (e.g. exposure to weather elements, noise, work in confined spaces, trenching, contact with overhead power lines, falls from machinery or structures, and risk of falling objects) are issues on rural road project.

Moving equipment and traffic safety

1. Establishment of work zones to separate workers on foot from traffic and equipment by:
 - a. Routing of traffic to alternative roads when possible
 - b. Closure of lanes and diversion of traffic to the remaining lanes if the road is wide enough (e.g. rerouting of all traffic to one side of a multi-lane highway)
 - c. Where worker exposure to traffic cannot be completely eliminated, use of protective barriers to shield workers
 - d. from traffic vehicles, or installation of channeling devices (e.g. traffic cones and barrels) to delineate the work zone
 - e. Regulation of traffic flow by use of flaggers if possible
2. Reduction of maximum vehicle speeds in work zones;
3. Training of workers in safety issues related to their activities, such as the hazards of working on foot around equipment and vehicles; and safe practices for work at night and in other low-visibility conditions, including use of high-visibility safety apparel and proper illumination for the work space (while controlling glare so as not to blind workers and passing motorists).

Elevated and overhead work

1. The area around which elevated work is taking place should be barricaded to prevent unauthorized access. Working under personnel on elevated structures should be avoided;
2. Hoisting and lifting equipment should be rated and properly maintained, and operators trained in their use. Elevating platforms should be maintained and operated according to established safety procedures including use of fall protection measures (e.g. railings); equipment movement protocols (e.g. movement only when the lift is in a retracted position); repair by qualified individuals; and installation of locks to avoid unauthorized use by untrained individuals;
3. Ladders should be used according to pre-established safety procedures for proper placement, climbing, standing, as well as the use of extensions.

Fall protection

1. Implementation of a fall protection program that includes training in climbing techniques and use of fall protection measures; inspection, maintenance, and replacement of fall protection equipment; and rescue of fall-arrested workers, among others;
2. Installation of fixtures on bridge components to facilitate the use of fall protection systems;
3. Safety belts should be not less than 16 millimeters (mm) (5/8 inch) two-in-one nylon or material of equivalent strength. Rope safety belts should be replaced before signs of aging or fraying of fibers become evident;
4. When operating power tools at height, workers should use a second (backup) safety strap.

IV. Chemical Hazards

Chemical hazards in construction, operations, and maintenance activities may be principally associated with exposures to dust during construction and paving activities; exhaust emissions from heavy equipment and motor vehicles during all construction and maintenance activities (including during work in tunnels or in toll collection booths); potentially hazardous dust generated during bridge paint removal; herbicide use during vegetation management; and diesel fuel used as a release and cleaning agent for paving equipment. Recommendations specific to road projects include:

1. Maintenance of work vehicles and machinery to minimize air emissions;
2. Reduction of engine idling time in construction sites;
3. Avoiding the use of lead-containing paint and using appropriate respiratory protection when removing paints (including those containing lead in older installations) or when cutting galvanized steel.

V. Noise and Vibration

Construction and maintenance personnel may be potentially exposed to extremely high levels of noise from heavy equipment operation and from working in proximity to vehicular traffic. As most of these noise sources cannot be prevented, control measures should include the use of personal hearing protection by exposed personnel and implementation of work rotation programs to reduce cumulative exposure.

1. No employee should be exposed to a noise level greater than 85 dB(A) for a duration of more than 8 hours per day without hearing protection. In addition, no unprotected ear should be exposed to a peak sound pressure level (instantaneous) of more than 140 dB(C).
2. The use of hearing protection should be enforced actively when the equivalent sound level over 8 hours reaches 85 dB(A), the peak sound levels reach 140 dB(C), or the average maximum sound level reaches 110dB(A). Hearing protective devices provided should be capable of reducing sound levels at the ear to at least 85 dB(A).
3. Prior to the issuance of hearing protective devices as the final control mechanism, use of acoustic insulating materials, isolation of the noise source, and other engineering controls should be investigated and implemented, where feasible
4. Periodic medical hearing checks should be performed on workers exposed to high noise levels

Exposure to hand-arm vibration from equipment such as hand and power tools, or whole-body vibrations from surfaces on which the worker stands or sits, should be controlled through choice of equipment, installation of vibration dampening pads or devices, and limiting the duration of exposure.

VI. Personal Protective Equipment (PPE)

PPE provides additional protection to workers exposed to workplace hazards in conjunction with other facility controls and safety systems. Table 1 presents general examples of occupational hazards and types of PPE available for different purposes. Recommended measures for use of PPE in the workplace include:

1. Active use of PPE if alternative technologies, work plans or procedures cannot eliminate, or sufficiently reduce, a hazard or exposure
2. Identification and provision of appropriate PPE that offers adequate protection to the worker, co-workers, and occasional visitors, without incurring unnecessary inconvenience to the individual
3. Proper maintenance of PPE, including cleaning when dirty and replacement when damaged or worn out. Proper use of PPE should be part of the recurrent training programs for employees
4. Selection of PPE should be based on the hazard and risk ranking described earlier in this section, and selected according to criteria on performance and testing established

Table 1. Summary of recommended PPE according to hazard

Objective	Workplace Hazards	Suggested PPE
Eye and face protection	Flying particles, molten metal, liquid chemicals, gases or vapors, light radiation.	Safety Glasses with side-shields, protective shades, etc.
Head protection	Falling objects, inadequate height clearance, and overhead power cords.	Plastic Helmets with top and side impact protection.
Hearing protection	Noise, ultra-sound.	Hearing protectors (ear plugs or ear muffs).
Foot protection	Falling or rolling objects, pointed objects. Corrosive or hot liquids.	Safety shoes and boots for protection against moving & falling objects, liquids and chemicals.
Hand protection	Hazardous materials, cuts or lacerations, vibrations, extreme temperatures.	Gloves made of rubber or synthetic materials (Neoprene), leather, steel, insulating materials, etc.
Respiratory protection	Dust, fogs, fumes, mists, gases, smokes, vapors.	Facemasks with appropriate filters for dust removal and air purification (chemicals, mists, vapors and gases). Single or multi-gas personal monitors, if available.
	Oxygen deficiency	Portable or supplied air (fixed lines). On-site rescue equipment.
Body/leg protection	Extreme temperatures, hazardous materials, biological agents, cutting and laceration.	Insulating clothing, body suits, aprons etc. of appropriate materials.

VII. Monitoring OHS

OHS monitoring programs should verify the effectiveness of prevention and control strategies. The selected indicators should be representative of the most significant occupational, health, and safety hazards, and the implementation of prevention and control strategies. The occupational health and safety monitoring program should include:

1. *Safety inspection, testing and calibration.* This should include regular inspection and testing of all safety features and hazard control measures focusing on engineering and personal protective features, work procedures, places of work, installations, equipment, and tools used. The inspection should verify that issued PPE continues to provide adequate protection and is being worn as required. All instruments installed or used for monitoring and recording of working environment parameters should be regularly tested and calibrated, and the respective records maintained.
2. *Training.* Training activities for employees and visitors should be adequately monitored and documented (curriculum, duration, and participants).

VIII. Accidents and Diseases monitoring

The contractor should establish procedures and systems for reporting and recording of (i) occupational accidents and diseases and (ii) dangerous occurrences and incidents. These systems should enable workers to report immediately to their immediate supervisor any situation they believe presents a serious danger to life or health.

The contractor should further enable and encourage workers to report to management all:

1. Occupational injuries and near misses
2. Suspected cases of occupational disease
3. Dangerous occurrences and incidents

All reported occupational accidents, occupational diseases, dangerous occurrences, and incidents together with near misses should be investigated with the assistance of a person knowledgeable/competent in occupational safety. The investigation should:

1. Establish what happened
2. Determine the cause of what happened
3. Identify measures necessary to prevent a recurrence

Annex 6. Health and Safety Plan to manage risks of COVID-19 in construction sites.
 (Source: file:///Users/B2A/Downloads/construction_site_safety_recommendations_in_light_of_covid-19.pdf)



Guidance note - Construction site safety recommendations

Minimize spread of infections in light of COVID-19

Some critical construction activities such as building health facilities or erecting emergency shelters are likely to continue during the restrictions in place due to COVID-19. Partners overseeing construction sites operating during the COVID-19 pandemic should ensure all possible steps are taken to protect their workforce and to minimize the spread of the infection. This guidance is based on WHO's key messages for infection prevention and control, and illustrates some basic measures and principles to be followed in this scenario. It mostly focuses on construction and repurposing of facilities, appreciating the greater limitations occurring while working on individual shelters. Acknowledging the complex, challenging and fast-paced operating environment, partners are invited to adopt the recommendations when applicable and to the most possible extent, embracing a "good enough" approach. This guidance does not encompass all aspects of health and safety and should be seen a complement of standard health and safety policy in place for all construction projects, rather than a standalone document. It must be updated as the situation evolves globally and specifically in the Rohingya Response.

The main underlying approaches are:

- ✓ Reduce access to site
- ✓ Adapt work plan and activities to reduce close contact
- ✓ Increase overall level of hygiene of the site
- ✓ Prioritize health and safety of staff, workers and their surrounding communities
- ✓ Increase awareness of the workforce

Planning phase

- Plan construction phases avoiding large group of workers and unnecessary overlap of crews. If the work plan was developed prior to COVID-19 outbreak, consider reviewing and adapting when necessary;
- Basic Personal Protective Equipment (PPE) related to construction safety such as gloves and glasses should be provided to workers depending on the tasks they are assigned to. In addition, each worker should be provided with two or more reusable masks (not surgical/medical graded masks);
- Additional hand washing stations including provision of clean water and soap, together with cleaning and disinfection products may be required for construction sites opened prior to the outbreak. For new construction site, plan and budget provision of these items;
- Preferably, every worker should be provided with a basic set of tools needed for the tasks they are assigned to. Using of the same tool by multiple workers should be avoided. If tools are shared or stored for later use by another person, they need to be disinfected/cleaned;¹
- Plan to engage workers coming from the close proximity of the facility been built (possibly from the same block) and avoid involving labour from farther away camps or villages;
- Supervision should be strengthened including COVID-19 prevention principles, and supervisors oriented on their new responsibilities;

¹ More instructions for safe disinfection - Cox's Bazar WASH Sector technical guidance on disinfection procedures for COVID-19 response (non-health settings) - v. 02: <https://drive.google.com/open?id=1gM8QwM4d7Y3ZEXcJlM07wRorVwAetrhD>



- If possible, prior to start construction work coordinate with Health partners to check the site and ensure appropriate measures are adopted;

Prepare your workforce

- An orientation on COVID-19 should be provided to all workers, including description of the disease, symptoms, transmissibility, severity and WHO's key prevention messages to be followed on site, public spaces as well as in their homes;
- Prevention messages should be printed and clearly displayed on site. Consider providing an additional printed copy of the key prevention messages for all workers to disseminate in their families (and communities);
- Workers should be clearly informed on protocols to follow in case they or their family members get sick;
- Workers should be requested to maintain physical distance of 2 meters (6') from others as much as possible and to adhere to the other suggested practices for infection prevention and control, in particular:
 - Wash your hands regularly with clean water and soap for at least 20 seconds, or clean them with a hand sanitizer;
 - Avoid touching your eyes, nose and mouth with unwashed hands;
 - When coughing or sneezing, cover your mouth with tissue and throw it into closed bin immediately. If you do not have a tissue, cough or sneeze into your flexed elbow;
 - Do not spit.
- Working gloves are sometimes worn to protect against injuries during some activities, but they do not offer any protection against transmission of COVID-19 and should be considered as unwashed hands in terms of minimizing touching one's face;
- Workers should not greet each other with handshakes or embraces at any point during the day;
- If workers are operating in an area where sick or suspected infected people are currently or recently transited (in the previous 3 days), they should wear mask and disposable gloves at all times;
- If masks are not available, workers should be encouraged to prepare handmade ones using household items or clothes materials;²
- Advice workers to wash their clothes frequently (daily if possible).

Access to site

- Only essential visitors (workers, supervisors, and managers) should be allowed on site;
- Programme/monitoring visits should be reduced to the minimum and should be planned when workers are not on site (i.e. lunch or prayer time);
- Fence off the construction site to ensure no one can enter or approach the workers without authorization;
- Entry and exit gates should be clearly marked and guarded;
- Body temperature should be measured for all persons entering the site;
- Allow enough space for people to queuing in a safe manner at the entrance of the site while they wash their hands and get screened;

² More instructions can be found at <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/diy-cloth-face-coverings.html>, <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public/when-and-how-to-use-masks> and https://drive.google.com/open?id=1Jb173nCRQ_HwtrTfqCdT5UaE8rxYAgl



- A trained staff should be designated to guard the access, checking temperature of workers and visitors and enquiring about overall health condition and vulnerability;
- Ensure there are sufficient hand washing stations at the entrance and that they have water and soap, as well as clearly display signs requesting persons entering to wash their hands;
- Anyone falling in one of the following categories should not be allowed on site:
 - Has a family member suspected COVID-19 patient living in the same household or self-isolating, or if s/he has got in close contact with a confirmed COVID-19 patient in the previous two weeks. S/he should not report on site and self-quarantining at home for two weeks;
 - Is showing one or more symptoms related to COVID-19 (high temperature, new persistent cough, shortness of breath). S/he should not report on site, stay home and self-isolate or seek medical care in case of severe symptoms;
 - Is a vulnerable person (by virtue of age, clinical/health condition or pregnant).
- All persons should wash or clean their hands before entering and leaving the site;
- Workers should be encouraged to reach the site using individual modes of transportation and avoid public transport when possible.

During construction

- To the most possible extent, workers should maintain physical distance of 2 meters (6') from others at all times. Performing activities that must be conducted in close proximity should be avoided when possible. If these activities must take place, workers should wear masks;
- If possible, construction crews should be segregated and tasks allocated so they do not overlap. It is suggested to establish crew shifts to be also applied for break, lunch and pray time;
- If a worker develops COVID-19 symptoms on site, the following actions should be followed:
 - Avoid touching anything;
 - Cough and sneeze into a tissue and put it in a closed bin, or in their flexed elbow in case they don't have tissues;
 - Return home and self-isolate, or seek medical care in case of severe symptoms;
 - All surfaces and tools s/he may have recently touched should be cleaned and disinfected.
- In spaces where queuing may happen (including latrines and hand washing stations), consider marking safe distance of 2 meters (6') on ground or railings;
- Meetings on site should be avoided at all times. Instruction to workers should be given in open spaces and maintaining physical distance;
- If construction activities happen in an enclosed space, the site should be ventilated as much as possible, for example leaving doors and windows open during the working day;
- Due to potential sudden access restrictions, all materials and equipment should be carefully and safely stored before leaving the site at the end of every day;
- When receiving and unloading goods and construction materials, workers should keep distance from the drivers at all times. When possible, drivers should remain in their vehicles. If drivers must unload the goods for safety reasons, they should do so without the help of the workers and they should wash or clean their hands before and after. Any contact between deliverers and receivers should be avoided (including delivery papers and pens for signature, etc.). It is recommend that everyone needing to sign paperwork have their own pen or wash their hands after.



Hand washing, hygiene and cleaning

- Provide adequate hand-washing station with water and soap or an alcohol-based hand sanitizer (min. 60% alcohol). Ensure water and soap are topped up regularly;
- Clean the hand washing facilities regularly during the day, establishing a clear cleaning plan;
- Tools, reusable PPE and frequently touched surfaces should be cleaned and disinfected frequently (at least daily);
- If possible, appropriate latrine facilities should be made available inside the compound and be kept cleaned. In any case, workers should be encouraged to wash their hands before and after using the latrines;
- Dedicated eating, break and prayer areas should be identified on site and access should be staggered to reduce risk of congestion. Workers should keep physical distance while eating, praying and having a break;
- Provide safe drinking water dispensers and one-time cups, or encourage workers to carry an individual cup;
- All solid waste (excluding construction materials) should be put immediately in closed bins or closed bags and not left for someone else to clear up;
- Separate and collect all solid waste that could serve as transmission vector. To avoid contact with waste bags, use double plastic bags (for instance when removing a filled waste bag, cover tightly and wrap with a second plastic bag). Store the waste for at least 72 hours before disposing;
- Store leftovers construction materials for at least 72 hours before disposing.

Upon completion

- The facility should be carefully cleaned and disinfected prior to the handover;
- All waste, construction materials, tools and equipment should be removed from the site and disposed safely.

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