

Initial Environmental Examination

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

Ghagra Community Infrastructure Subproject

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

CURRENCY EQUIVALENTS

(as of 25 August 2022)

Currency unit – Bangladesh Taka (Tk)

Tk1.00 = \$ 0.0105

\$1.00 = Tk 95.04

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 Ghagra Union Community Infrastructure Subproject, which includes upgrading of village access road (VAR); water, sanitation and hygiene (WASH); and provision agricultural infrastructure and equipment (Agri-infra). This IEE will serve as example and template for other community infrastructure and VAR subprojects under Output 1.

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. 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. For agri-infra, villagers argued that improved agricultural and irrigation facilities will increase agricultural production improving food security as most of the paddy is consumed locally, as well as generate employment (wage labor) for the poor and vulnerable groups. For WASH, villagers requested construction of a new gravity flow system (GFS) to replace the one they had before the 2017 natural disaster, and an alternative source for a new GFS for upper Chelachara para has been identified.

11. Alternatives have been analyzed regarding location, VAR routes, VAR design, Agri-infra and WASH. 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

² CHT districts of Rangamati, Bandarban and Khagrachari.

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.

12. Chapter VII describes environmental aspects of the project, like detail explanation of the location, physical environment and socio-economic information. Ghagra Union in Kawkhali Upazila of Rangamati Hill District lies about 20 kilometres from the district capital Rangamati. Ghagra bazar, the union headquarters, is a small town (a so-called growth centre) at the junction of the Dhaka-Chattogram and Kaptai-Kawkhali roads. Ghagra is part of Kawkhali Union. Three of these paras (Kojoichari, Badalchari and Ghagra Chelachara) are situated in the valley, while the other five are on the slope of the Furomon Mountain. The climate in the Chattogram Hill Tracts is tropical monsoon.

13. There are in total 673 households in the 8 villages, of which 44 are headed by women. The size of the villages varies from 43 to 124 HH, or 84 HHs per village on average. The total population is 2,959 people, 1,517 men and 1442 women. 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.

14. 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 water availability for the water-starved communities for household use, (ii) Improved agricultural production, income and livelihood, (iii) Improved sanitation and potable water of improved quality will lead to improved health of local community members, but also reduced effluents in surface water and hence improved surface water quality, and (iv) 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. Negative impacts have been carefully considered, and categorized on activity, phase (operation/ construction) and type of impact (i.e., magnitude, extend, duration and significance).

15. 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. All eight villages were visited twice for half-day sessions in meeting places chosen by community members to ensure an open communication.

16. 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.

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

18. As explained in Chapter 9, 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 GRM will be a time-bound, simple, transparent, gender- and culturally- responsive in addressing feedback, concerns and suggestions, and facilitation of solutions.

19. 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.

20. 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 9 gives a detailed list of tasks of these actors.

21. 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 (i) the VAR at Chelachara-Leba Para and Kojoichari Para, and (ii) WASH that consists of small-sale water supply of ring wells, shallow and deep tube wells, GFS in Chelachara Para, and latrines at household and community buildings, including schools. Agri-infrastructure component would not need and EMP, however, implementing NGO must provide guidance and awareness on the health and safety of users of power tillers and lift water pumps. 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.

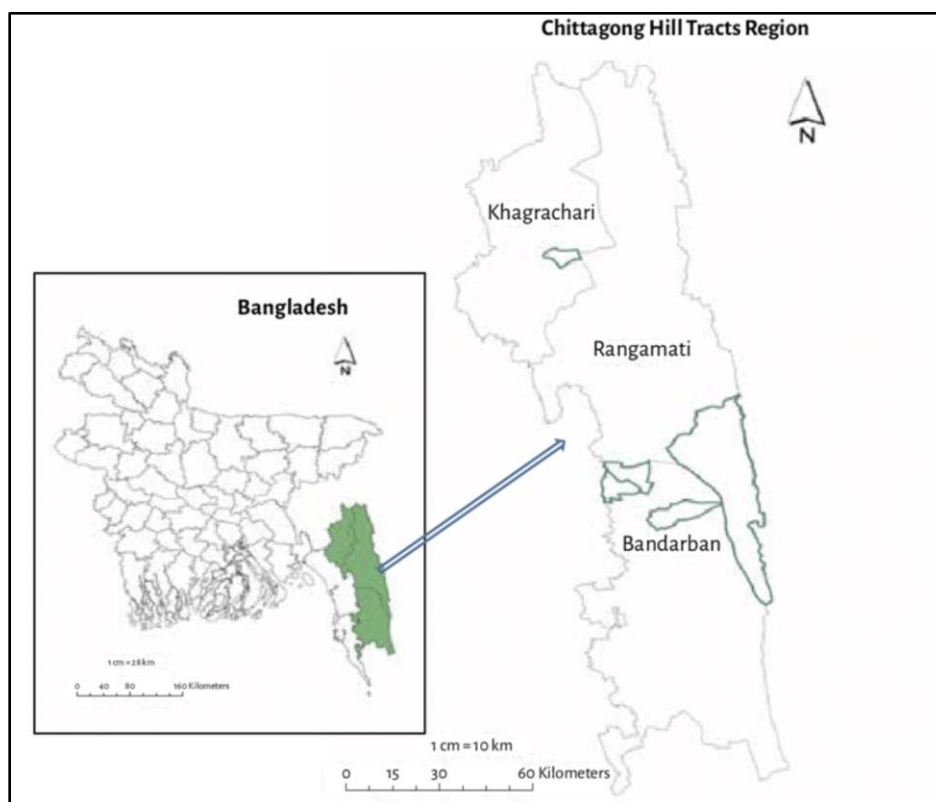


Figure 1. Map of CHT in Bangladesh covering districts of Bandarban, Rangamati and Khagrachari.³

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

³ Source of map: Ahammad, Ronju & Stacey, Natasha. (2016). Forest and agrarian change in the Chattogram Hill Tracts region of Bangladesh.

have the following outcome: climate resilient livelihoods and access to basic services for the rural 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.⁴ The skills component will specifically target employment opportunities that will arise from implementing this project.⁵ The main direct beneficiaries will be motivated rural youth, both men and women.⁶ 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.⁷ 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 Ghagra Cluster Union. 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.

⁴ 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.

⁵ Including latent demand that will become realized once this project is implemented.

⁶ 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.

⁷ 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 Ghagra Subproject and its 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.

12. This IEE will serve as an example for environmental assessment of the succeeding subprojects for project readiness and implementation under Output 1.

C. Scope of the IEE Report

13. The IEE for Ghagra CI Subproject 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

14. 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.

15. 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.⁸

A. Environmental Legislation

16. 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.⁹

17. 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.

18. 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

⁸ This is the village headman. The circle chief, headmen, and karbari were established by CHT Regulations of the year 1900.

⁹ 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.

19. 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

20. In respect with environment and social considerations, list of national legal instruments with relevance to the interventions under Ghagra Subproject 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
Road Transport Act 2018 The Motor Vehicles Ordinance, 1983	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

Act/ Rule/ Law/ Ordinance/SRO	Enforcement Agency – Ministry/ Authority	Key Features
The Bengal Motor Vehicle Rules, 1940		<ul style="list-style-type: none"> • 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 Ground Water Management Ordinance, 1985	Upazila Parishad	<ul style="list-style-type: none"> • Management of ground water resources • Installation of tube wells at any place after license from Upazila Parishad only • Proposed interventions will use surface water source, however, should groundwater also be required then licenses will need to be obtained prior to installation of any tube-wells.
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
The Protection and Conservation of Fish Act 1950 subsequent amendments in 1982	Ministry of Fisheries and Livestock	Protection and conservation of fish in Government owned water bodies
The Embankment and Drainage Act 1952	Ministry of Water Resources	An Act to consolidate the laws relating to embankment and drainage and to make better provision for the construction, maintenance, management, removal and control of embankments

Act/ Rule/ Law/ Ordinance/SRO	Enforcement Agency – Ministry/ Authority	Key Features
		and water courses for the better drainage of lands and for their protection from floods, erosion and other damage by water
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

21. 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.

22. In view of this, 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. Standards for drinking water of Bangladesh

Parameters	Unit	DoE (Bangladesh) Standard for drinking water
pH	-	6.5-8.5
Hardness(as CaCO ₃)	mg/L	200-500
Iron	mg/L	0.3-1.0
Chloride	mg/L	150-600
Arsenic	mg/L	0.05
Residual chlorine	mg/L	0.2
Total Coliform	n/100mL	0
Fecal Coliform	n/100mL	0
Ammonia	mg/L	0.5
Nitrate	mg/L	10
Phosphate	mg/L	6

Source: ECR'97, Schedule-3

Table 7. 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	Turbi- dity NTU	NO3-N mg/l	Cl- mg/l	Tota Coliform cfu/100ml
Standard per ECR,1997 (Schedule 3A)	6.5- 8.5		5.0 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 8. 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)	Chlo- ride (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

23. 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

24. *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.

25. *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 CI and improvements of VAR in Ghagra may have a range of possible impacts on nearby paras or villages (e.g., due to noise, dust, road disruption, etc.).

26. *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 Section 11.

27. *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 Section 9.

28. *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. Section 9 discusses the results of public consultation with stakeholders and beneficiaries.

29. *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 actions¹⁰, 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.

30. *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

¹⁰ In case of non-compliance with environmental safeguards during project implementation, CAP will be prepared by the EA/IA.

national judicial or administrative remedies. Section 10 of the IEE discusses the GRM process common for environment and social safeguards.

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

31. 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.

E. International Treaties.

32. 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

33. 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.

34. 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.

35. *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).

36. 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 subprojects¹¹ will be implemented during the project.

37. *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.

38. *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.

39. *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

¹¹ 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.

40. *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.

41. 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.¹² 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.

42. 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

43. 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.¹³ 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.

44. 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

¹² This support is provided through TA 9461-REG: Protecting and Investing in Natural Capital in Asia and Pacific.

¹³ 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

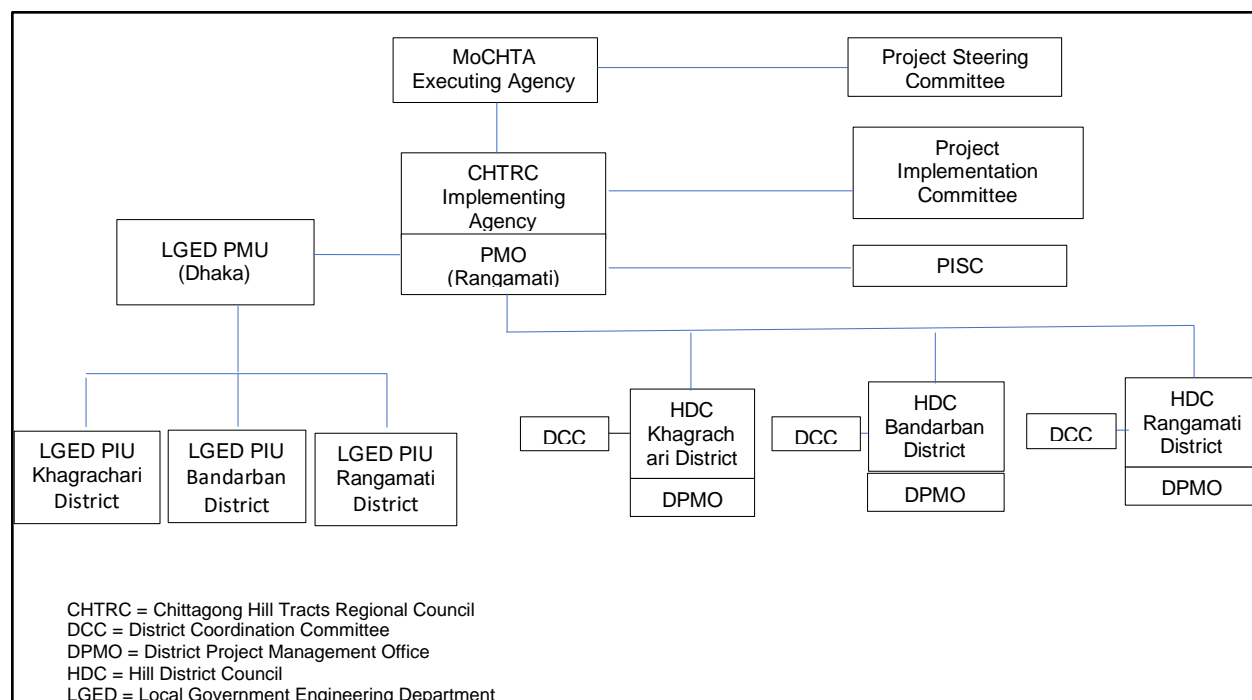
C.1. Project Schedule

45. 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

46. 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.

47. 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

48. 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 CDCs¹⁴ 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.

49. 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.

50. 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.

¹⁴ Each PDC or CDC committee will include a minimum of 30% women.

51. 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.

52. 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.

53. 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

54. Output 1 of the proposed Project, community infrastructure or CI, will support infrastructure interventions aimed at improving village access roads, water supply and sanitation, household renewable energy supply, and agriculture productivity. Main concerns raised by stakeholders during consultation meetings in Ghagra Union Cluster were: (i) lack of all-weather access road and irrigation infrastructure, (ii) scarcity of water sources for drinking, sanitation, (iii) lack of access for marketing of produced agricultural products, (iv) poverty and (v) vulnerable socio-economic condition of the majority of households. In most villages, the women gave high priority on improving water and sanitation.

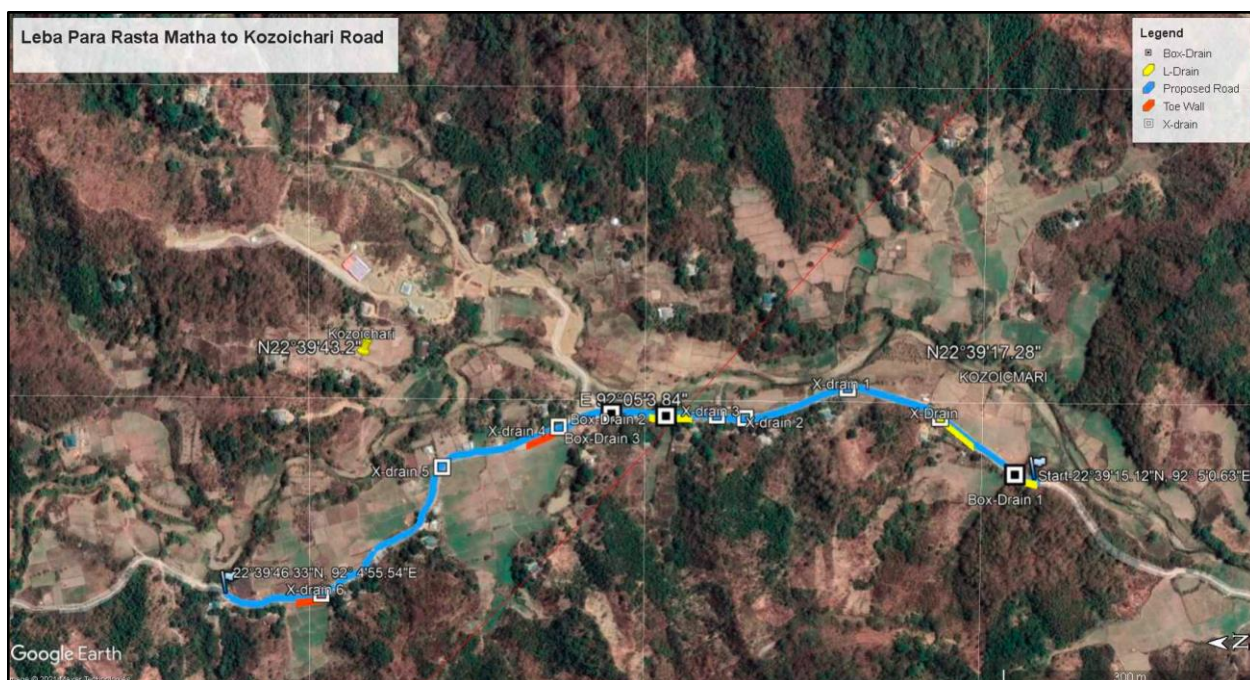
55. Based on the participatory needs assessment and planning process communities under the CI component, the proposed Project will prioritize infrastructure interventions aimed at improving access, water and sanitation, energy, and agriculture productivity. As mentioned by the paragraph above, these interventions will be:

- VAR which is located at Chelachara-Leba Para and Kojoichari Para.
- WASH that small-sale water supply of ring wells, shallow and deep tube wells for potable water, gravity flow systems (GFS) is considered in Chelachara Para, and latrines at household and community buildings, including schools. Source of renewable energy or provision of photovoltaic (PV) solar panels for households' lightening has been added as an additional intervention as well.
- Agri-infra that includes power tillers and lift pumps. These will be closely integrated with the watershed management component (Output 2) and agriculture value chain development component (Output 3).

B. Village Access Roads (VAR)

56. Under Output 1 of the proposed CRLIWM-CHT Sector Project, 28 roads were selected (extending over 60 km) for upgrading, of which one VAR is included in the Ghagra Union Subproject (i.e. Chelachara-Leba Para to Kojoichari Para) VAR.¹⁵ For all 28 proposed roads, it was confirmed that the concern communities have no other access to main roads than by the existing earthen footpaths. In the community consultation meetings, VAR is confirmed as being an important priority for the villagers of the concerned subproject area. Communities articulated VAR improvement at Ghagra Union, mainly referring for the need in transporting agriculture produce from their village to the main road. Especially during rainy season, there are difficulties by children going to school due to muddy paths.

¹⁵ Only VAR in Chelachara-Leba Para to Kojoichari Para, Ghagra Union is assessed in this IEE. The other 27 VARs are in different unions and district all over CHT Region, and will be subject for environmental assessment and due diligence during project readiness.



Source: Feasibility Study VAR

Figure 3. Map showing the target VAR in Ghagra Union.¹⁶

57. Through Output 2, the VAR in Ghagra Union will be improved by means of:

- Preparatory earth work
- Provide a hard surface through HBB patterns
- For some short stretches that are frequently flooded, a concrete surface is proposed
- Provision of drains and culverts
- Road safety mainly consist of traffic signs indicated sharp curves or junctions with the main road.

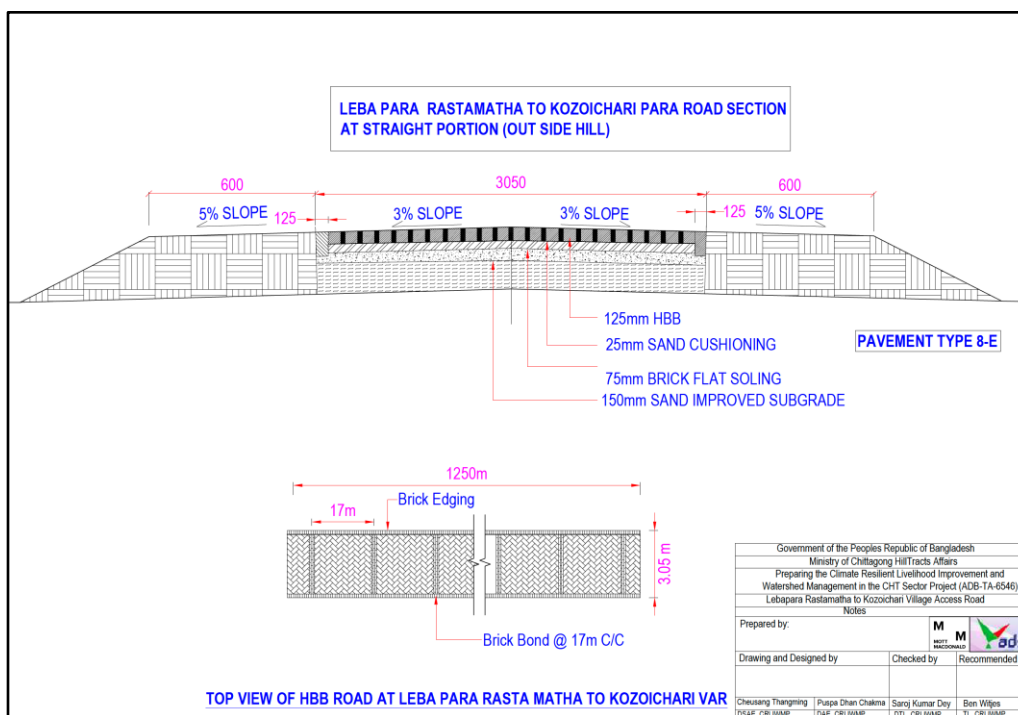
58. There are two major works for VAR (i.e. Chelachara-Leba Para to Kozoichari Para) under Ghagra Union Subproject, particularly installation of HBB road and construction of drainage. Summary of the description of works are listed below.

59. Key works for HBB road will include the following:

- Earthworks for box cutting on road crest and spreading the excavated earth on road flanks and slopes uniformly subgrade by manual labour.
- Sand filling on the road bed to improve subgrade.
- Brick on end edging with 1st class/picked bricks that include cutting trenches, removing earth, refilling and ramming the sides properly, including supplying and filling gaps with local sand.
- Providing single layer brick flat soling with 1st class or picked bricks.
- Providing brick on edge pavement in single layer of HBB with 1st class or picked bricks.

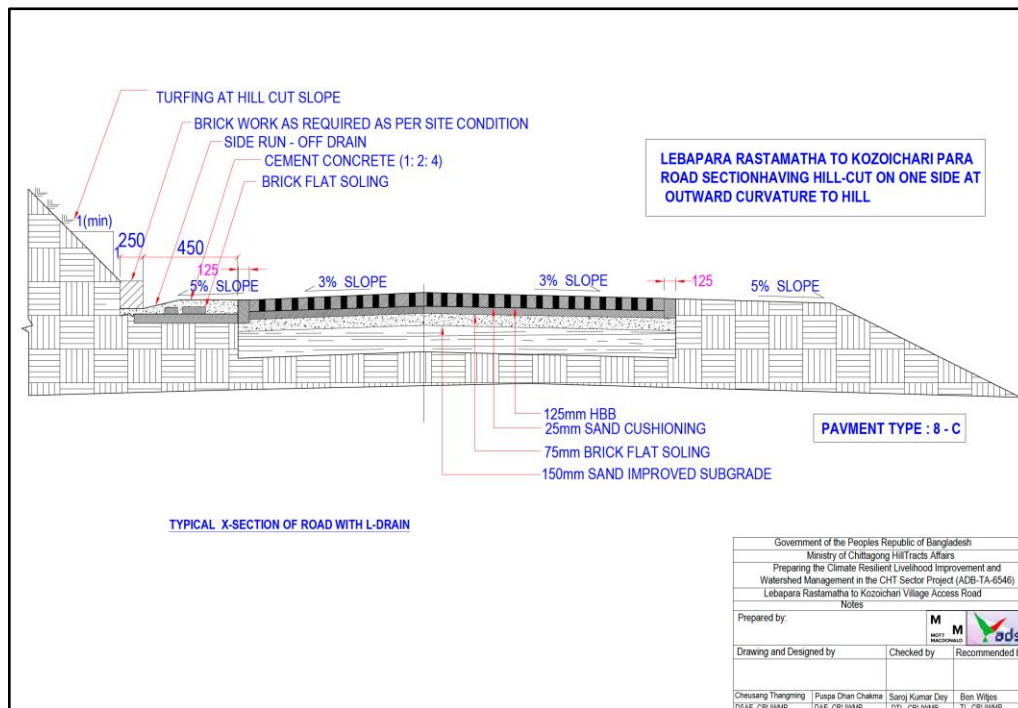
¹⁶ Sample VAR to represent environmental assessment and due diligence for the other VARs included as project readiness and those to be identified during project implementation at different unions of the three districts.

- Earth filling inside plinth with earth available within 90m of the building site, watering, leveling and consolidating each layer up to finished level.
 - Compaction of earth in layers by using machine and/or manual labor.
 - Clearing and grubbing by removal and disposal of above ground level including overhanging branches, removing of all foundation stumps, embedded logs, tree roots and other materials.
 - Excavation for roadway/canals/ponds in soil by manual means, including cutting and disposing of all excavated materials at a safe distance.
 - Providing, fitting and fixing rectangular road name plate as per standard design.
 - Providing and fixing of retro-reflectorized cautionary, mandatory and informatory sign as per standard design.
 - Turfing on embankment top and slope.
60. For the drainage of VAR, the following are key works:
- Construction of box drain, cross drain, L-drain, U-drain, toe wall.
 - Earthwork for excavation of foundation trenches to remove earth to the lines, grades and elevation as shown in the designs.
 - Sand filling in foundation trenches and inside plinth.
 - Single layer brick flat soling with 1st class or picked bricks.
 - Brick works with 1st class bricks in cement mortar in foundation and plinth with portland composite cement.
 - Cement plastering.
 - Mass concrete work in foundation or floor.
 - For drainage and slabs, reinforced cement concrete (RCC) works with minimum cement content relates to mix ratio (tentative 1:2:4) and maximum water cement ratio.
 - Supplying and fabrication of ribbed or deformed bar reinforcement for all types of reinforced concrete cement works for cross top slab.
 - Dismantling of damaged structures and disposal of unserviceable material.



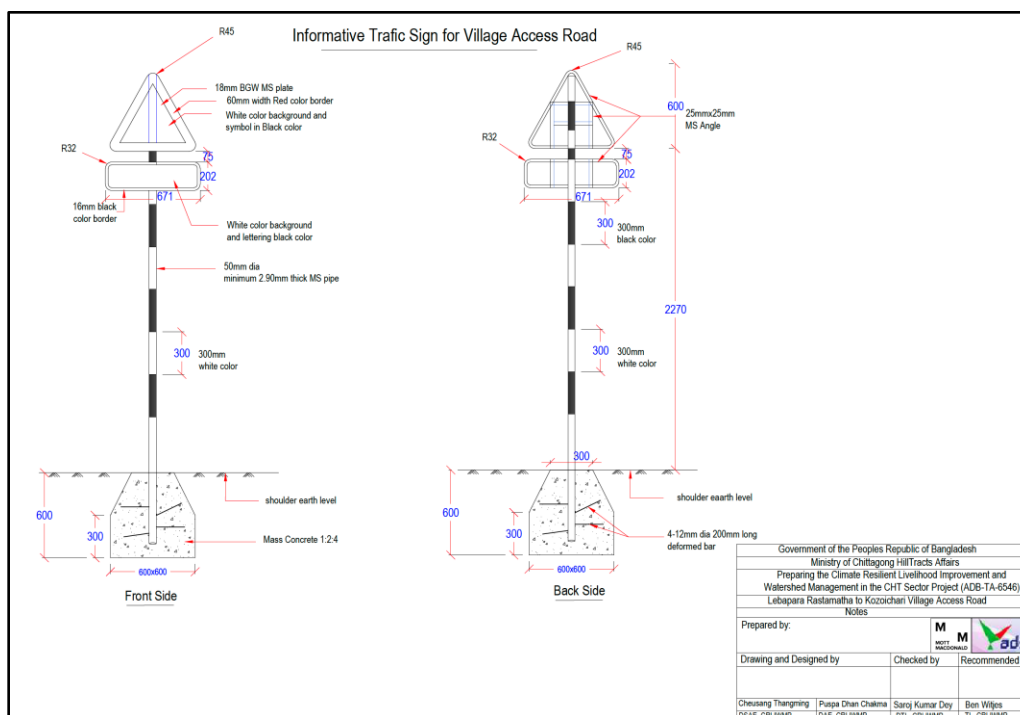
Source: CHTRC

Figure 4. VAR design for areas with gentle or flat slopes in Chelachara-Leba Para to Kozoichari Para.



Source: CHTRC

Figure 5. VAR design for areas with hilly slopes in Chelachara-Leba Para to Kozoichari Para



Source: CHTRC

Figure 6. Design for the VAR name at Chelachara-Leba Para to Kozoichari Para.

61. The VAR will have the Kojoichari Para (which include Upor Para) villagers as its main beneficiaries, together with the three smaller neighboring villages. Kojoichari Para will also benefit from the WASH and Agri-infra interventions of the project. Table below show the number of beneficiaries of VAR (Chelachara-Leba Para to Kojoichari Para)

Table 9. Beneficiaries of VAR.

Sl No	Name of Village	Ethnicity	No of HH	Population		
				Male	Female	Total
1	Kojoichari Para	Chakma	63	142	133	275
2	Kojoichari-Upor para	Chakma	53	109	118	227
3	Kojoichari Moan Para	Chakma	45	97	96	193
4	Jibtali-Moan Para	Chakma	20	44	42	86
5	Dane Ulthachari Para	Chakma	15	29	35	64
Total			196	421	424	845

Source: Feasibility Study VAR

C. Agriculture infrastructure (Agri-infra)

62. Villagers in Ghagra Union Cluster have argued that improved agricultural and irrigation facilities will increase agricultural production improving food security as most of the paddy is consumed locally. It will also generate employment (wage labor) for the poor and vulnerable

groups as an additional crop (mostly rice or vegetables) can be cultivated in plough land. The 555 acres of paddy land and 320 acres of land for vegetables cultivation in Ghagra Union were identified as suitable for improvement.

63. Interaction with individual farmers and with community representatives in focus group discussions (FGDs) reveals annual production of paddy per acre increase due to improvement of irrigation by the provision of lift pumps and power tillers. In addition, seasonal vegetables can be grown in higher quantity than at present as crop water provision will increase its productivity.

64. Under the Agri-infra of the subproject, power tillers and pump machines will be procured to support farmers of the target paras in Ghagra Union. The equipment will help to improve production of rice and vegetable farming.



Figure 7. Sample photographs of power tiller¹⁷ and water pump¹⁸.

D. Water supply, sanitation and hygiene infrastructure (WASH)

65. Water supply is a key concern in many of the cluster paras in Ghagra, especially the upper Chelachara para which depends fully on water from a local stream. The villagers requested construction of a new GFS to replace the one they had before an extreme weather event in 2017. An alternative source for a new GFS for upper Chelachara para has been identified.

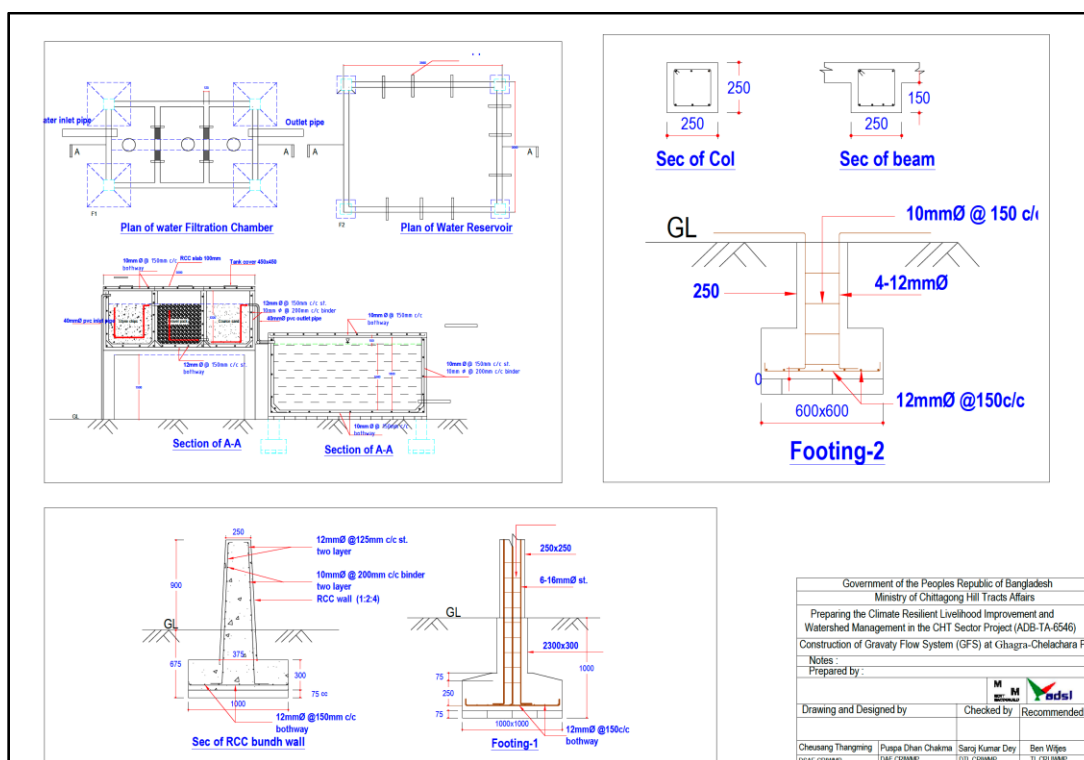
66. There is already a design (Figures 8) and description of works for GFS. The following key works to construct GFS are:

- Earthworks to excavate soil for foundation trenches
- Sand filling in foundation trenches and inside plinth.
- Single layer brick flat soling with 1st class or picked bricks.
- Mass concrete work in foundation or floor with portland composite cement
- Brick works with 1st class bricks in cement mortar in foundation and plinth.

¹⁷ Source: [Tilling and line sowing in one pass using a power-tiller-operated... | Download Scientific Diagram \(researchgate.net\)](#)

¹⁸ Source: [Improving energy efficiency in rice field irrigation | EEG \(energyeconomicgrowth.org\)](#)

- RCC works with minimum cement content relates to mix ratio (tentative 1:2:4) and maximum water cement ratio 0.45 having minimum required average strength.
- Supplying and fabrication of ribbed or deformed bar reinforcement for all types of RCC work.
- Minimum 6mm thick cement plaster and best quality sand (minimum FM1.2) to ceiling RCC columns, beams, surface of staircase, sunshades, cornices, railings, drop wall, louvers, fins and finishing the corners and edges



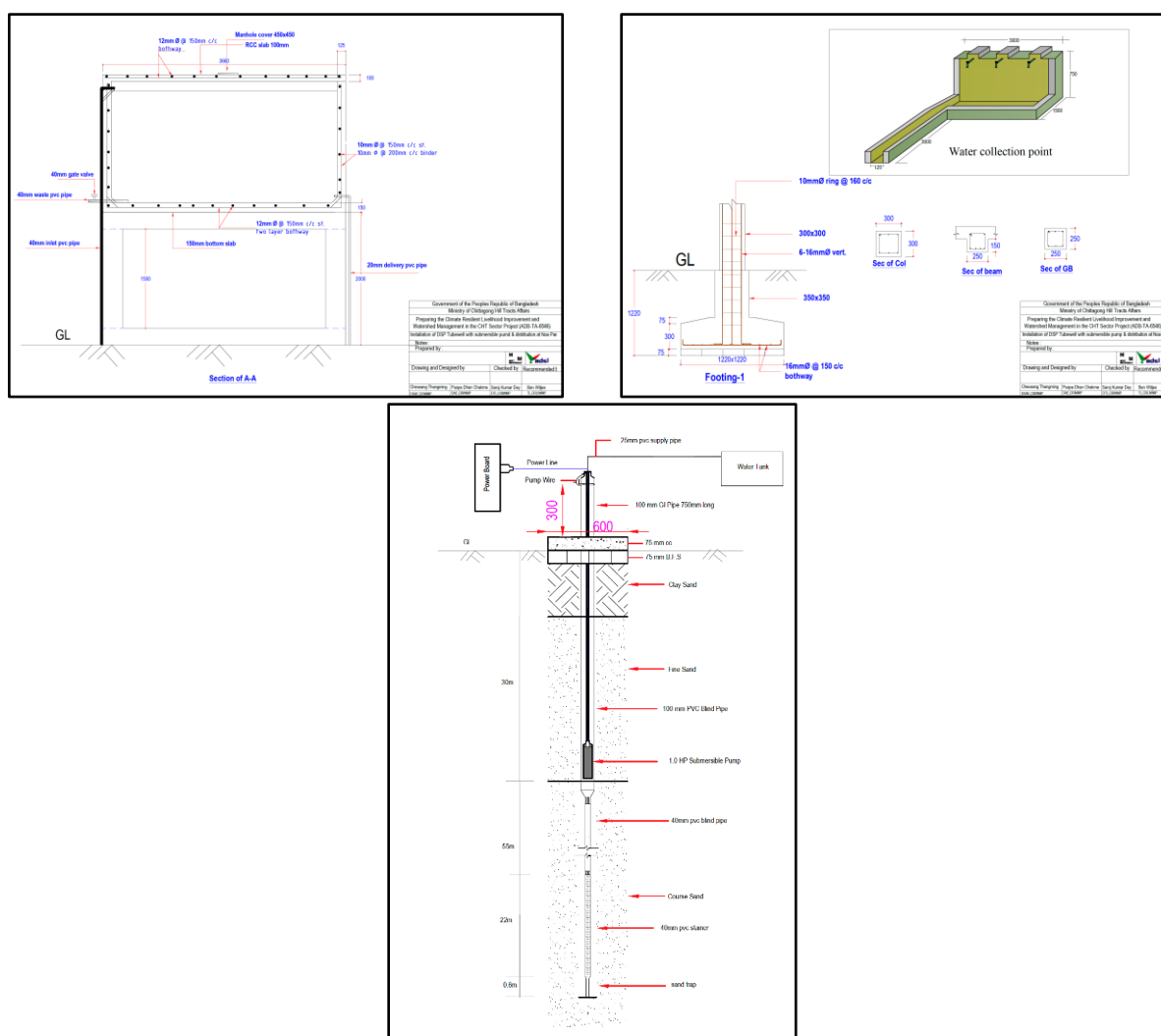
Source: CHTRC

Figure 8. Design for the water filtration chamber, water reservoir, footings and bundh wall of the GFS at Chelachara Para, Ghagra Union.

67. For the other villages, the guidelines of Department of Public Health and Engineering (DPHE), Rangamati are followed according to which one tube well is required for 50 persons or 10 households for dense populations in plains. This may go up to one tube well for two households if households are scattered on hill slopes.

68. The key works to construct deep tube wells (with and without submersible water pumps) are listed below:

- Mobilization of materials, equipment, tools and plants, boring rig at the work site and cleaning the site upon completion of work.
- Boring by using 100mm diameter cutter and 38mm diameter galvanized (GI) pipe and other equipment capable of drilling up to a depth of 500m by water jet system through all sorts of strata. Collection of soil samples at every 3m interval and at every change of strata, and preserve them for analysis.



Source: CHTRC

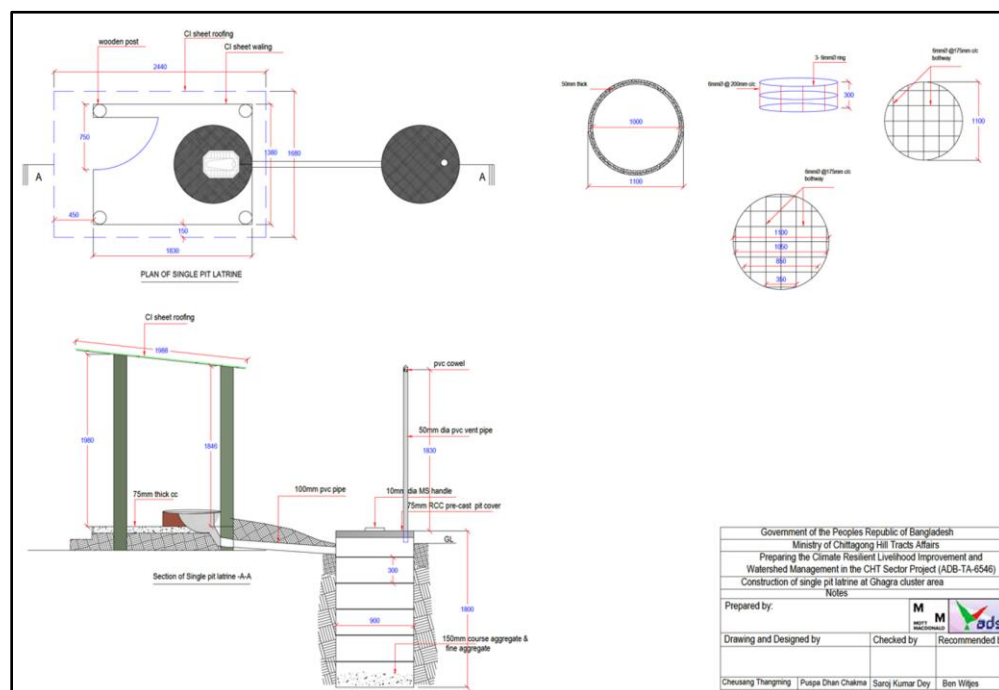
Figure 10. Designs for the installation of tube well with submersible pump and construction of water reservoir with distribution line at Noa Para.

69. Improved water supply will also help enhance sanitation. As the effort required for collecting water at present, means that villagers are reluctant to use for flushing their latrines and handwashing. Women were keen to improve water supply as they experienced security as a main problem for them while using toilet during night-time.

70. Key construction works for the latrines are show below:

- Mass concrete work in foundation or floor with portland composite cement
- Reinforced cement concrete works with minimum cement content relates to mix ratio (tentative 1:2:4) and maximum water cement ratio 0.45 having minimum required average strength.

- Supplying and fabrication of ribbed or deformed bar reinforcement for all types of RCC works.
- Supplying, fitting and fixing galvanized color iron corrugated sheet.
- Supplying best quality PVC pipes, fitted and fixed in position with sockets head and shoes, bends, clamps and nails
- Supplying, fitting and fixing long Pan
- Supplying, fitting and fixing ventilation pipes.



Source: CHTRC

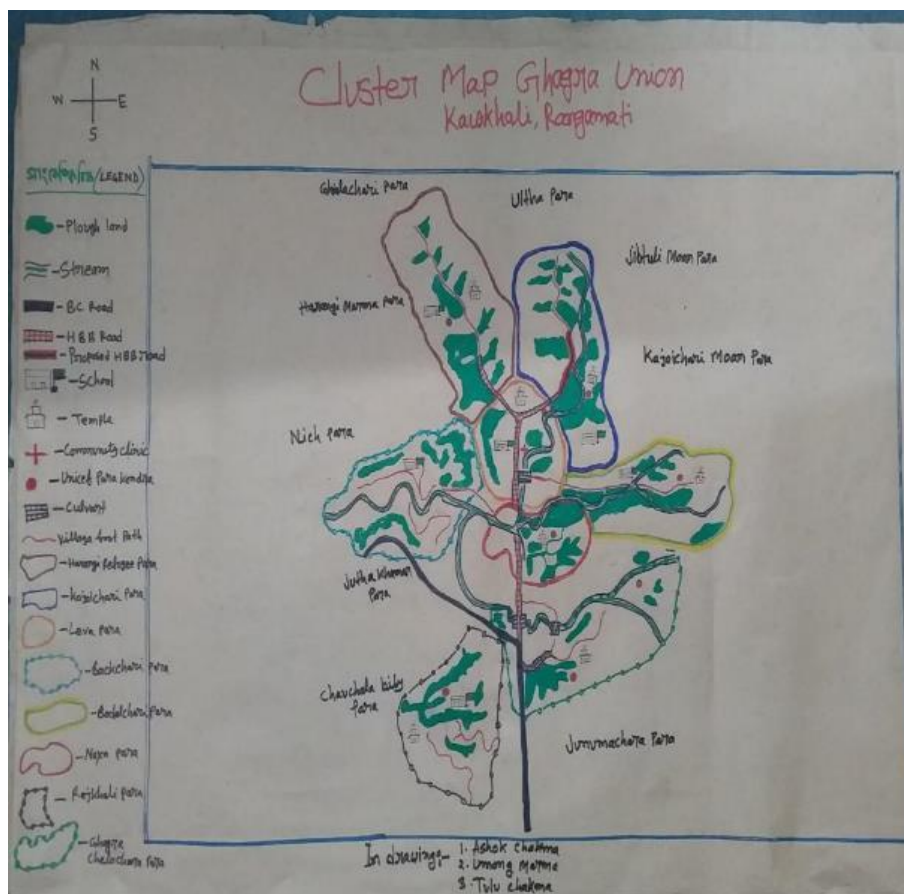
Figure 11. Design for a single sanitary latrine.

71. Community infrastructure interventions in 8 Paras prioritized in the Gaghra Union Cluster Subproject are listed in Table 10 below, along with quantities and provisional costs. A social map of these Paras produced during the FGD is provided in Figure 12.

Table 10. Interventions in 8 paras of Ghagra Cluster Union.

Sl no	Name of village	Intervention	Unit	Quantity
1	Harangi Refugee para	Deep Tube well	no	4.00
		Sanitary Latrine	no	20.00
		Power Tiller	no	2.00
		Power pump	no	4.00
		Machinery training & 02 bundle CI sheet for shade	no	1.00
		Sub-Total		
2	Kozoichari	Solar panel	no	7.00
		Deep Tube well	no	4.00
		Sanitary Latrine	no	21.00
		Power Tiller	no	4.00
		Power pump	no	4.00
		Agriculture training & CI sheet for shade	no	1.00
3	Leba Para	Sub-Total		
		Deep Tube well	no	5.00
		Sanitary Latrine	no	20.00
		Power Tiller	no	2.00
		Power pump	no	3.00
		Agriculture training & CI sheet for shade	no	1.00
4	Badalchari	Sub-Total		
		Solar panel	no	27.00
		Deep Tube well	no	4.00
		Sanitary Latrine	no	10.00
		Power Tiller	no	2.00
		Power pump	no	2.00
5	Bakchari	Agriculture training & CI sheet for shade	no	1.00
		Sub-Total		
		Deep Tube well	no	4.00
		Sanitary Latrine	no	40.00
		Power Tiller	no	2.00
		Power pump	no	2.00
6	noa para	Agriculture training & CI sheet for shade	no	1.00
		Sub-Total		
		Solar panel	no	2.00
		Deep Tube well	no	1.00
		Sanitary Latrine	no	15.00
		Water tank with distribution	no	1.00
7	Rajkhali	Power Tiller	no	2.00
		Power pump	no	3.00
		Agriculture training & CI sheet for shade	no	1.00
		Sub-Total		
		Deep Tube well	no	4 nos
		Sanitary Latrine	no	50 nos
8	Ghagra chelachara	Power Tiller	no	1nos
		Power pump	no	2nos
		Agriculture training & CI sheet for shade	no	1nos
		Sub-Total		
		Gravity Flow system	no	1nos
		Deep Tube well	no	3nos
		Sanitary Latrine	no	10 nos
		Power Tiller	no	2nos
		Power pump	no	2nos
		Agriculture training & CI sheet for shade	no	1nos
		Sub-Total		

Source: Feasibility Study CI Ghagra Cluter Union



Source: Feasibility Study Ghagra Cluster Union

Figure 12. Social map of prioritized 8 paras as result from FGD.

E. Project Schedule

72. 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 Ghagra CI Subproject is 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. CI interventions normally will take around one year to complete civil works.

73. The VAR covering two paras in Ghagra (i.e. Chelachara Para and Kajoichari Para) will be appraised for ADB Board approval. Other 27 VAR (along with VAR under Ghagra Union CLuste) will be prepared as part of CRLIWM-CHT Sector Project readiness. VAR implementation in Chelachara Para and Kajoichari Para can start together with the CIs for Ghagra Union.

74. 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

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

Table 10. Institutional and implementation arrangement

Name of Committee/ Institute	Major responsibilities
PDC	There will be a PDC for each para (village) and comprising of 7, 9 or 11 members. Every family of the village is a member of PDC. The PDC will play the main roles in selecting and implementing the subproject under the CI component (Output 2).
Implementing NGO	Provide backstopping support to PDC
Project Implementation Support Consultant	Provide technical support for enhancing capacity of PDC.
DPMO	Provide guidance and technical support to the PDC.
PMO	Approve and guidance these arrangement

Source: Feasibility Study Ghagra Cluster Union

G. Operation and Maintenance of CI

76. The PDC in each of the eight paras in Ghagra Union 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. PISC will provide an O&M manual for the CI and VARs.

77. Regarding maintenance, each PDC have to deposit total BDT10,000. An amount of BDT5000 will be paid before start of works for an intervention, and the balance of BDT5000 after works completion. This amount will be used for future maintenance. However, this amount will not be sufficient. Therefore, the PDCs will need to collect additional funds from the users (according to user manual), such as rental fees for the use of power tillers @ BDT1000 per *kani*.

78. Villagers will also be requested to contribute to the operation and maintenance costs for water supply systems. In collecting and managing the funds, women are expected to play a prominent role as they are the main users of the infrastructure and often more trusted as custodians of community funds. Training of women treasurers will be required.

H. Operation and Maintenance Plan for Power Pumps and Power Tillers

79. Under the Agri-infra, each PDC will form a power tiller and power pump management committee. The primary role of the committee is to ensure fairness and equity in enjoying the benefits. The other function is to maintain day-to-day operation and maintenance of the power tiller and power pump. The committee will calculate a basic rate based on 'per hour operation cost' taking into account cost of fuel, lubricants, remuneration for caretaker, minimal service charges and other costs. Based on that, the user will be liable to pay on an hourly basis or in case of power tiller based on area ploughed. The amount of service charge to be collected over the

year can vary between 10% and 15% of the total cost, of which at least 5% should be reserved as contingency for future maintenance.

80. The O&M committee should provide access on a 'first come-first service' basis and keep a proper record of this. The charges should be recorded in the book of accounts with acknowledgement of the farmer renting the power tiller or pump. Implementing NGO staff will brief to the respective PDC about operation and maintenance of power tiller and power pump before the equipment is handed over.

81. Table below gives an overview of the O&M activities to be undertaken by the communities.

Table 11. Operation and maintenance activities of power tiller and lift pumps

Activity	Frequency	Who is responsible?	Material or tools required
Security of power tiller/pump during operation	As required	Caretaker	Badge, Lights
Security during off-days	As required	PMC	Housing
Fuel	Before and during operation	Caretaker	Diesel, fuel log sheet
Lubricants	After 24 hours of continuous run or as per need	Caretaker	Lubricants, fuel log sheet
Maintenance check of pump and accessories like suction pipe, foot valves, delivery etc	Before, middle and after the operation	Caretaker	Maintenance check data sheet
Engine Overhauling	After 150 hours of run or as per need	Caretaker/ PMC	Outsourced maintenance vendor

Source: Feasibility Study Ghagra Cluster Union

VI. ANALYSIS OF ALTERNATIVES

82. *Alternative locations.* There are 28 roads selected for the proposed VAR upgrading, one of which is included in the Ghagra Union (i.e. VAR Chelachara-Leba Para to Kojoichari Para). For all 28 proposed roads, it was confirmed that the concern communities have no other access to main roads other than by the existing earthen footpath. For the CI interventions, 8 paras were prioritized in Ghagra Union based on a shortlisting prepared by the HDCs,¹⁹ which was then approved by the CHTRC Chairman. Paras were prioritized by the HDC based on several criteria: (i) a minimum number of inhabitants of 20 households, (ii) not having been supported under the 1st and 2nd Chittagong Hill Tracts Rural Development Project, (iii) not receiving government rations, and (iv) within 5 km of a union or upazila road.

83. *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.

84. *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 smoothed and with drainage added).

85. *Alternative Agri-infra.* The improved irrigation and agri-production by provision of power pumps and tillers is what emerged from FDG meetings as the most effective way of increasing agricultural production. Deviating from this option (e.g., by investing in other agricultural production methods) would mean non-compliance with stakeholder aspirations and is likely less effective in raising agricultural production.

86. *Alternative WASH.* Communities have expressed desire for additional GFS, tube wells and sanitary latrines, along with water tanks for storage. There are few alternatives to these that meet both community requirements and are within budget limitations and technically feasible (e.g., for O&M purposes), for example larger pipe water schemes are economically not feasible.

87. *“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.

¹⁹ With support from the DPMOs of the second Chittagong Hill Tracts Rural Development Project

VII. DESCRIPTION OF THE ENVIRONMENT

88. 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. Location

89. Ghagra Union in Kawkhali Upazila, Rangamati Hill District lies about 20 kilometres from the district capital Rangamati (Figure 13). Ghagra bazar, the union headquarters, is a small town (a so-called growth centre) at the junction of the Dhaka-Chittagong and Kaptai-Kawkhali roads. This is the major wholesale marketplace which functions as collection centre for agriculture produce for farmers in the area. The town also houses shops, schools and colleges²⁰, banks, NGO offices, and a large cotton mill under the Bangladesh Textile Mills Corporation (BTMC) which was established 1977 and employs over 550 workers.

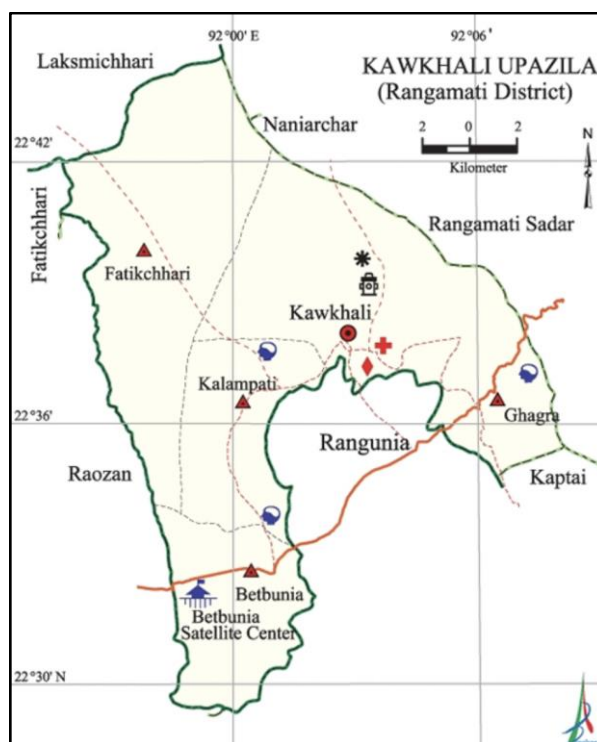


Figure 13. Map of Kawkhali Upazilla showing Ghagra Union at the eastern part of Kawkhali Upazila.²¹

²⁰ Ghagra is well known for its educational institutions. It has seven high schools and two colleges, which is exceptional for the CHT. The union gained national fame when the Mobhachari government primary school, which is 3 kilometres far from Ghagra growth centre, became national football champions. Moreover, five of Bangladesh's national women's football team are from Ghagra. This led to the establishment a hostel dedicated to football training for girl students run by the Ghagra High School.

²¹ Source of map: [Kawkhali Upazila \(Rangamati District\) - Banglapedia](#)

90. The villages of the union are mostly situated on the lower slopes and valley of the 463 m Furomon - the highest mountain in Rangamati District. There is a large and well-known Buddhist temple at the top of the mountain, which also has military camp. The natural forest on the hillslope is not a reserve forest controlled by the Forest Department, but an open forest and forms an important element in the livelihoods of the rural communities here.

91. Ghagra Bazar has two market days each week, on Saturday and Wednesday. It attracts buyers from different places of Chattogram and Rangamati districts, and even from Dhaka. The area is well known for its high-quality ginger and coriander, and also for its bananas, turmeric and different seasonal vegetables. Not only farmers from the Union's villages bring their produce to Ghagra bazar, but it is also a wholesale market for banana, ginger and turmeric from all over Rangamati District.

92. The subproject will target 8 villages within the Ghagra Union, all around at 3 – 5 km to the north of Ghagra Bazar. The union is home to four different communities: Chakma, Marma, Tanchangya, and Bengali. Administratively, these target paras are part of two wards in Ghagra Union, and of two Mouzas of the traditional Chakma administrative and justice governance system.²² Figure 14 gives the boundaries of the 8 villages, the blue lines indicate the main roads. Most of the paras were established over 150 years ago.

93. Six of the eight villages are part of ward no. 3 of Ghagra Union, and no. 98 Kochukhali Mouza:

- Kojoichari Para
- Harangi refugee Para
- Leva Para,
- Badalchari Para
- Bakchari Para
- Noa Para.

94. The other two villages (Chakma and Marma) come under ward no. 9 of Ghagra Union and no. 96 Ghagra Mouza:

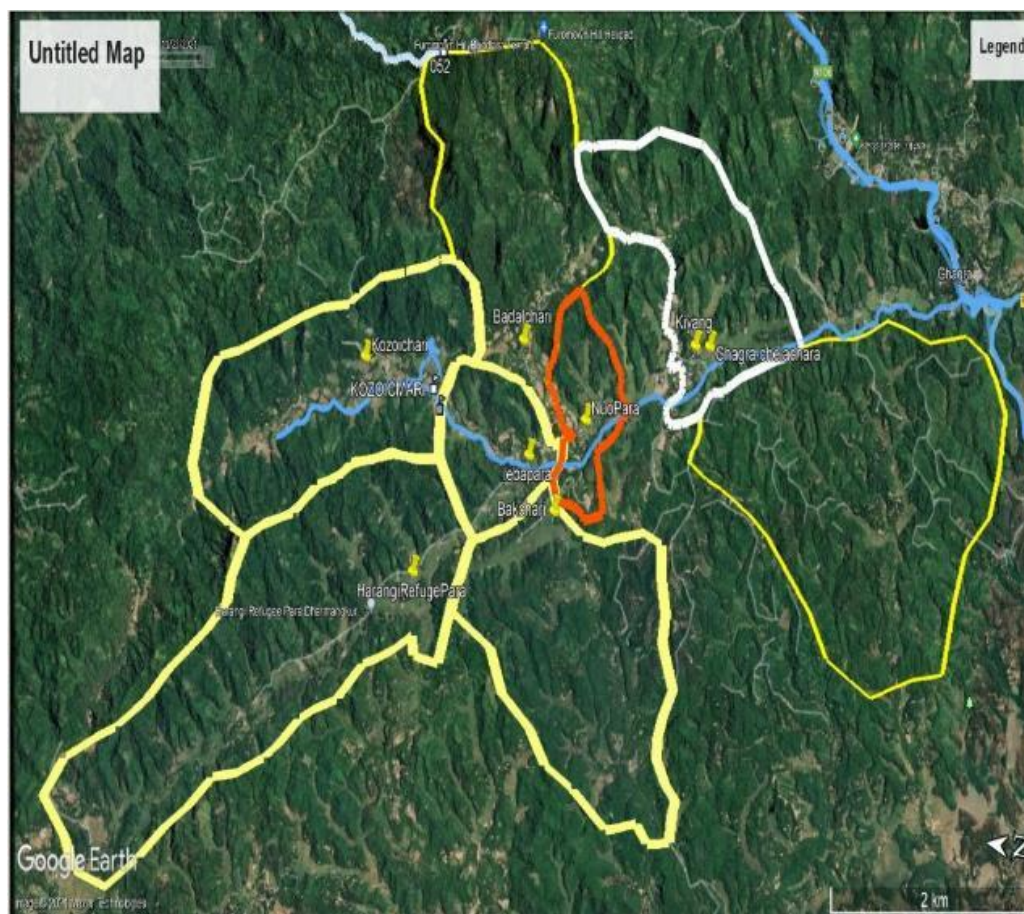
- Rajkhali Para
- Chelachara

95. Three of these paras (i.e. Kojoichari, Badalchari and Chelachara) are situated in the valley, while the other five are on the slope of the Furomon mountain. There are 56 former refugee households living at the higher parts of mountain slope, where outside the main villages. This includes a group of refugees from Kalampati, who fled military aggression in 1979.²³ Figure 14 indicates the locations of these target paras under Ghagra CI and VAR.

²² The CHT has overlapping nation-state and traditional ethnic based governance systems. The traditional system consists of Mouza's headed by a Headman which in the case of Ghagra are part of the Chakma circle headed by the Chakma Raja. The paras are the lowest tier in the traditional governance system. They are headed by a *karbari*.

²³ The first incident during the long insurrection period which lasted till the Peace Accord was signed in 1997.

96. Figure 12 shows a similar map, prepared together with communities during the meeting at the Union headquarters, where landmarks and main infrastructures of the union and eight prioritized paras.



Source: Feasibility Study Ghagra Cluster Union

Figure 14. Locations of the target paras under the Ghagra Cluster Union Subproject (North direction points to left)

B. Physical Environment

B.1. Topography

97. In Rangamati District, a total of 17,382 ha located along the slopes.²⁴ The topography in the area comprises valleys, floors and hill slopes (varying from less than 5% to over 70%). The topography of the subproject is cultivable low-lying hilly land. There are paddy, farmlands and homestead areas.

²⁴ CHT Regional Development Plan.

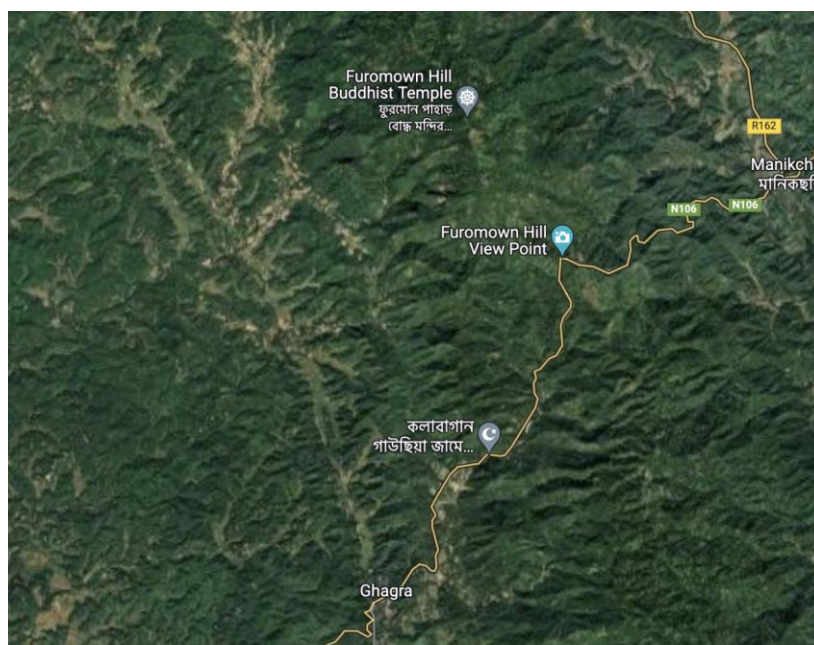
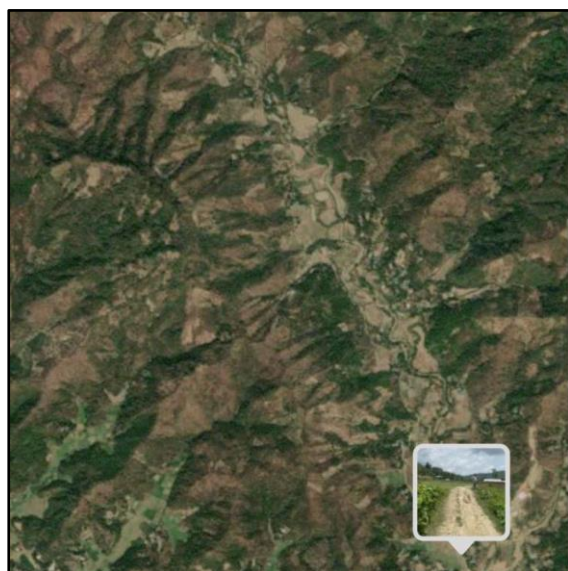


Figure 15. Hilly characteristics at the Ghagra Subproject sites.

B.2. Soil

98. The soil in the subproject area is mainly yellowish-brown to reddish-brown loams which grade into broken shale or sandstone at a various depth (between 30-120 cm). The valley soil is mainly acid loams and clays subject to abnormal rainfall. Soil in this area generally appears to be fertile.



(a)



(b)

Figure 16. (a) Aerial view of soil characteristics at the target paras. (b) Exposed soil at Badalchari Para.

B.3. Climate

99. 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. Thunderstorms and lightning usually occur in the months April.

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

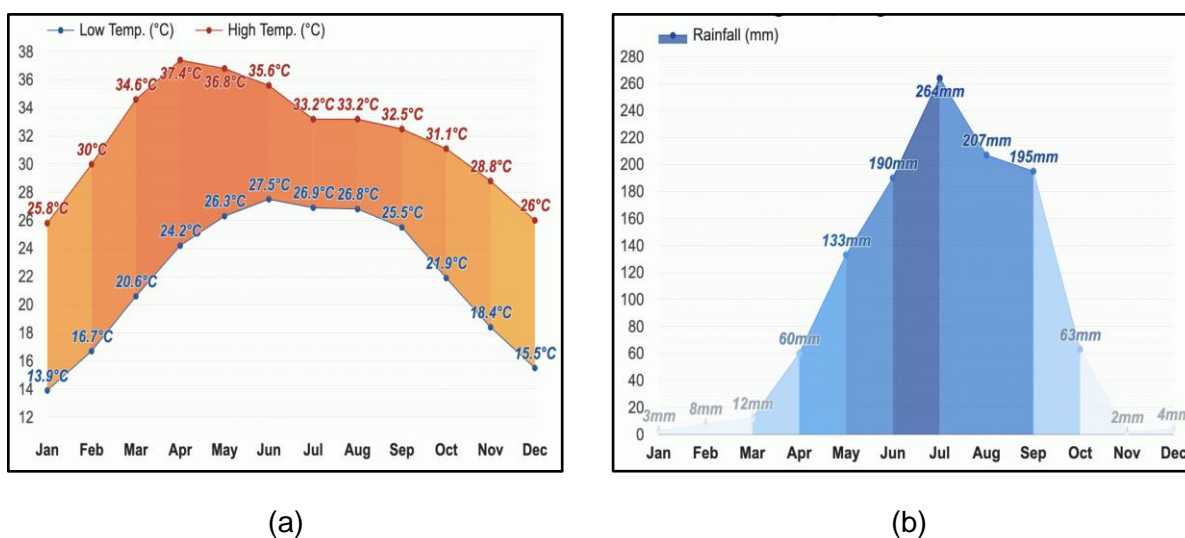


Figure 17. Graphs showing the average monthly temperature (a) and rainfall (b).²⁵

B.4. Climate Change Scenario

101. 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

²⁵ Source: [Rangamati, Bangladesh - Climate & Monthly weather forecast \(weather-atlas.com\)](http://Rangamati.Bangladesh-Climate-Monthly-weather-forecast(weather-atlas.com))

of the community (economic, social and environmental wellbeing), and more risk from a climate hazard especially incidents of extreme weather and land degradation.

B.5. Water Resources

102. 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. In the overall CHT region, surface water mostly comes from springs, streams, canals, rivers and lakes.

103. At the target sites in Ghagra Union, there are eight river systems (or chhara). These are charra called (i) Chela, (ii) Kola, (iii) Badal, (iv) Rajkhali, (v) Mongali, (vi) Debang, (vii) Tribra, (viii) Chhara and (viii) Kozoi. Out of eight chhara, there are only two rivers flowing all throughout the year (i.e. Rajkhali and Tribra). The other six are dry during the winter season, but their main surface run-off sources are flowing all year round.



(a)



(b)



(c)

Figure 18. Local scenes of rivers flowing within the subproject sites. (a) Chella, (b) Mongali and Badal, and (c) Junama.

B.6. Air Quality and Noise Levels

104. According to the Environmental Monitoring Report of the 2nd Phase Chittagong Hill Tract Rural Development Project²⁶ 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.

B.7. Water Quality

105. 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.

C. Biological Environment

106. Generally, target intervention sites of the subproject are in modified habitats²⁷ 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 are Krishnachura (*Delonix regia*), Mango (*Mangifera indica*), Jackfruit (*Artocarpus heterophyllus*), Banana (*Musa paradisiacum*), Litchi (*Litchi chinensis*), Papaya (*Carica papaya*), Bel (*Aegle marmelos*), Sloe Berries (*Prunus spinosa*), Teak (*Tectona grandis*), Gamari (*Gmelina arborea*), Jarul (*Lagerstroemia speciosa*), Mahogany (*Swietenia mahagoni*), Neem (*Azadirachta indica*), Coconut (*Cocos nucifera*), Bnadi (under the Family Juglandaceae), Amra (under the Family Anacardiaceae), Shajna (*Moringa oleifera*), Honagula (*Oroxylum indicum*), Chalta (*Dillenia indica*), Jalpai (*Elaeocarpus spp.*), Gutgutya (*Protium serratum*), Amluki (under the family Euphorbia), Lebu (*Citrus grandis*), Dumar Sumi (*Cajanus cajan*), Tulsi (*Dcimum sanctum*), Agar Wood (*Aquilaria malaccensis*), Betel Nut (*Areca catechu*), Sissu (*Dalbergia sissoo*), bamboo species, and so on.

107. According to Bangladesh Forest Department, Garjan (*Dipterocarpus turbinatus*) and Civit (*Swintonia floribunda Griff*) are unusual trees in the subproject area. Garjan and Civit are vulnerable and not evaluated, respectively, in respect with Red List of Threatened Species by International Union for Conservation of Nature or IUCN.

²⁶ CHTRDP II; <https://www.adb.org/projects/42248-013/main>

²⁷ 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.*



(a)



(b)

Figure 19. Usual scene in Ghagra Cluster Union showing the type of modified habitats, where (a) typical homestead in villages and (b) tree stand composed mostly of Teak (*T. grandis*).

108. The freshwater habitats in the subproject area mainly include Chharas. 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 chharas is 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.

109. 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 Ghagra CI Subproject.

D. Socio-economic Information

110. There is a total of 673 households (HH) in the target eight villages under Ghagra Subproject, where 44 HH are headed by women. The size of the villages varies from 43 to 124 HH, or an average of 84 HHs per village. The total population is 2,959 people, of which 1,517 men and 1,442 women (Table 12).

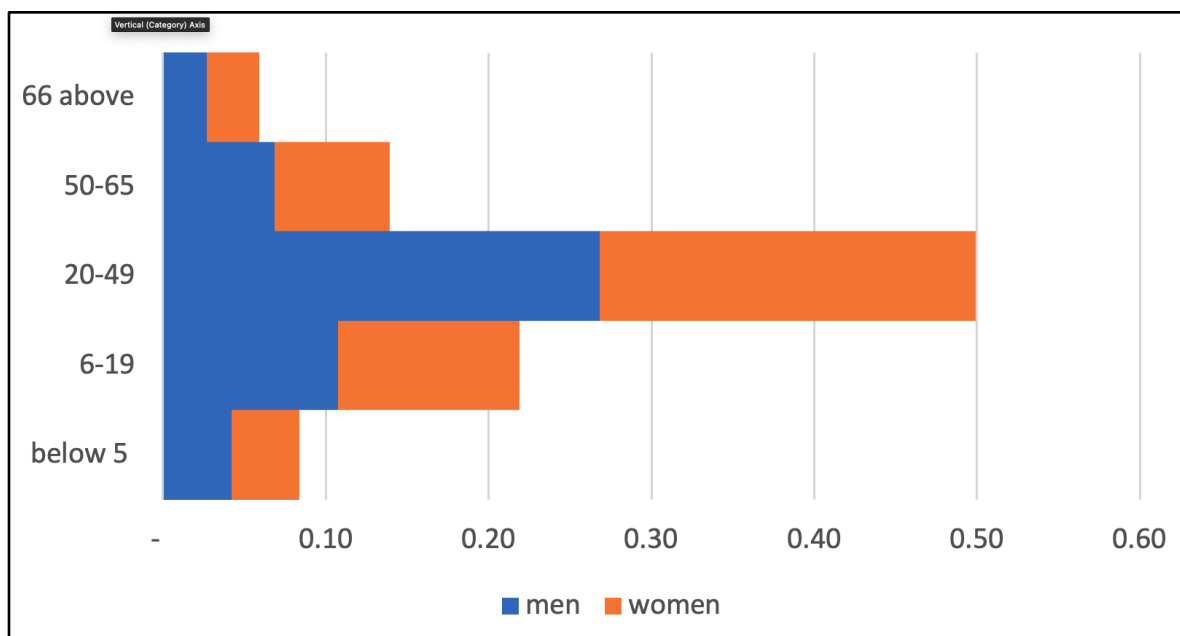
Table 12: Population of eight target subproject paras in Ghagra Union.

Paras name	Total HH	Population		
		Men	Women	Total
Kojoichari Para	118	275	256	531
Harangi Refugee Para	58	133	128	261
Leva Para	57	126	115	241
Badalchari Para	124	262	241	503
Bakchari Para	73	166	162	328
Nowa Para	43	100	98	198
Rajkhali Para	96	221	211	432
Ghagra Chelachara Para	104	234	231	465
Total	673	1517	1442	2,959

Source: Feasibility Study Ghagra Cluster Union

111. The population pyramid (Figure 20) is stable if one would look at an equal distribution of age groups,²⁸ which points to a stabilization of population growth and access to birth control. However, in responses provided to the socio-economic survey the para inhabitants indicated family planning services were not available or used. It strikes that in the 20 - 49 ages group, men are 27% and women 23% of the population. This may point to a high level of maternal mortality and poor access to maternal health services, which is confirmed by responses people provided to the socio-economic profiles according to which almost all made use of government provide maternity and child health services, but mentioned they used them because no alternative was available.

²⁸ Note: the first two cohorts cover 20 years and the third 30 years.



Source: Feasibility Study Ghagra Cluster Union

Figure 20. Population pyramid 8 paras in Ghagra Union

D.1. Ethnicity

112. The villagers mainly belong to the Chakma community with a relatively small number of Marma HHs in three of the eight paras, see table below. About 98% of village people belong to Chakma community, and remainder are Marma.

Table 13. Ethnicity in Ghagra paras

#	Name of Beneficiary Villages	Total HH	Chakma				Marma			
			M	F	Total	HHs	M	F	Total	HHs
1	Kojoichari Para	118	275	256	531	118				
2	Harangi Refugee Para	58	133	128	261	58				
3	Leva Para	57	123	113	236	56	3	2	5	1
4	Badalchari Para	124	262	241	503	124				
5	Bakchari Para	73	145	138	283	63	21	24	45	10
6	Noa Para	43	98	96	194	42	2	2	4	1
7	Rajkhali Para	96	221	211	432	96				
8	Chelachara Para	104	234	231	465	104				
Total		673	1,491	1,414	2,905	661	26	28	54	12

D.2. Socio-economic Status

113. From the para profile it is found that in this village 69.24% are very poor, 20.21% are poor and 10.55% are better off (see Table 14). 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 14. Poverty incidence within eight target subproject paras, Ghagra Union

Category	No of Households	%
Very poor	466	69.24
Poor	136	20.21
Better off	71	10.55
Total	673	100.00

Source: Feasibility Study Ghagra Cluster Union

114. Villages profile survey also indicates, however, that none of the households has sufficient food or income to ensure they have 2-3 meals a day during the lean two to three months period during the February – May period.

115. The very poor include 62 HHs with no land. They fully depend on day agriculture labor for their livelihood. This included land preparation and harvesting on plough land where paddy is grown, jhum cultivation, bamboo and tree cutting for traders, porter services (head and back load carrying) of agricultural goods, and collection of broom materials from wild grasses in winter season. It is same case for the female headed households as well. The very poor who have some land are slightly better conditions than the landless households as they can cultivate some vegetables or paddy for their own consumption, but otherwise also depend on wage labor.

D.3. Gender

116. During community consultations, women and girls were asked separately for a number of questions on gender relations were included in the village profile survey format. Forty female-headed household (FHH) were identified during the survey or 7.4% of the total number of HHs (15 in Kojoichari Para, 5 in Harangi Refugee Para, 4 in Leba Para, 7 in Badolchari Para, 10 in Ghagra Chelachara Para, 1 in Bakchari Para, 5 in Nowa Para, and 3 in Rajkhali Para).

117. Average sex ratio is 49.05% (1,509 men and 1,453 women) compared to a national ratio of 49.45% for Bangladesh as a whole. As mentioned above, a higher mortality of women in childbearing ages due to poor health services may partly explain this.

118. 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).

119. 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.

120. 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. Marna 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.

Table 15. Role of men and women in economic and community activities

Type of activity	Men	Women	Remarks
Marketing Jhum products	4.0	3.4	In 3 paras women are equal to men, in the other 5 they are secondary but clearly have an active role
Marketing Cash Crops (Ginger, Turmeric etc.)	4.0	3.0	Women have an equal role in only one para, secondary role in the other paras
Marketing Fruits	4.0	3.0	Likewise, women are clearly involved.
Marketing Chicken	4.0	2.9	Same
Marketing Livestock	4.0	2.4	Women have a secondary role in 3 paras, and hardly any involvement in 5 paras
Day to day purchases	4.0	2.3	Women have a secondary role in 2 paras, and hardly any involvement in 6 paras
Large Purchases	4.0	1.6	Women have no, or hardly any involvement
Representing Household in Community Decisions	4.0	1.9	Women have no, or hardly any involvement
Local Arbitration	4.0	1.9	Women have no, or hardly any involvement
Community Development	4.0	2.6	In 6 paras women have a secondary role, in the other 2 no or hardly any involvement
Operation & Maintenance of development interventions, Tube wells/Pumps etc	4.0	1.0	Women are not involved

Note: None-1, Very little – 2, Secondary – 3, Primary Role – 4

Source: Feasibility Study Ghagra Cluster Union

121. Women's freedom to move without her husband appears to be substantial. Whether it's to the market, government offices, health facilities, or work within the villages such as collecting water and firewood women are able to do this without male accompaniment.

122. Although Chakma and Marma women work both within and outside their households, there is a clear wage discrimination for wage labour: the wage rate for men is 500 BDT while women get only 250 - 300 BDT, almost 50% less than men.

D.4. Landownership

123. Of the 673 HHs in the 8 paras, 432 of them have both jhum and paddy land, 172 HHs only have jhum land only, 7 HHs only have plough land, and 62 HHs are landless. Only 34 HHs have substantial plots of paddy land, which requires wage labor for land preparation and harvesting.

124. Almost all plough land in this area is titled land, only in Badalchari Para HHs own customary land. With the exception of Harangi Refugee Para, the villages have no common land. There are 24 households take land from other under sharecropping arrangement – mainly for paddy, vegetables and some cash other crops. According to the village profile questionnaire, there are no land related conflicts in these paras.

125. Rajkhali Para has about 150 acres of forest at the lower hilly slopes, which is undeveloped and freely accessible. From there, people collect edible plants, firewood, bamboo, and timber for their own use.

D.5. Housing

126. 549 HHs of the 673 HHs (81.6%) in the 8 paras live in katcha houses, which have a mud floor, bamboo or wooden sheet or mud wall, and a roof with thatch or corrugated iron sheets. There are 113 HHs (16.8%) have semi-pucca house with brick foundations and lower walls, cement floors and wooden/bamboo walls and tin or leave roofs.

127. 11 HHs (1.6%) living in pucca brick houses with concrete cement floors, brick walls with RCC or brick pillars, and corrugated sheet.

D.6. Moveable assets

128. The HHs in the 8 villages have very limited moveable assets. Apart from some furniture, mobile phones are the most common assets, 673 HH owning more than 1,000 phones, some HHs more than one and others none. Television sets are rare, only 64 HHs have one of this. Refrigerators are more rare, where only 20 HHs have one. The lack of electrical appliances is not just related to poverty but also due to the lack of access to electricity. Some HHs own motorized vehicles: there are 29 motorcycles, 22 three-wheeler taxis, and 5 jeeps. This reflects the poor condition of local roads and overall poverty.

129. Livestock is another form of asset HHs own. 91% 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 own consumption and savings.

D.7. Social Capital, Relations with Government

130. The social capital of the villagers is primarily based on relations in their own para and related to kinship, religion (all are Buddhist), in case of wage labourers, relations with landowners, and for farmers relations with traders.

131. Networks with the Union Parishad (UP) are mostly limited to visits to the Union office for administrative matters. Only in two of the eight paras received development works from UP during the past two years. People have no knowledge of the UP's available developmental budget for

their area. In almost all villages there are household who received government support in the form of old age and widow pensions and school stipend. There are 4 paras received support under the 'one house, one firm' scheme, and one for the construction of latrines. This was confirmed by the answers to another question put in the social and economic survey where people indicated government rarely provided water and sanitation services. Crop and livestock extension services were more common but received mixed ratings.

132. There are no NGOs active in the cluster paras, but United Nation Children's Fund is providing support to 32 households. Four villages (i.e. Leba Para, Kojoichari Para, Badalchari Para and Bakchari Para) have a common savings and credit cooperative of which more than 200 households are members. They all deposit savings and are eligible who deposit money and take credit. The villages are.

D.8. Livelihoods

133. Among the 673 HHs, 432 HHs (64%) consider agriculture as their main occupation, 152 HHs (23%) depend on daily wage labor and 115 household (23%) depend on different occupations such as long-term employment, small businesses, shops, driving (compressed natural gas and motorcycle). Most of the day laborers work in agriculture. There is no labour migration outside Ghagra Union, but 318 people including 72 women indicate they are involved in seasonal work outside their own village in other paras of the Union. Most of this is for a few months only during the lean period, especially in months of March – May, which are dry and hot summer months and when most land is fallow in the villages.

D.9. Agriculture

134. Most of the households in the targettarget paras depend on agriculture. mMajority of HHs owning 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. Together the 8 paras have 550 acres of paddy land, which is mostly single cropped (among during the raining season) due to lack of irrigation facilities. However, during the dry season farmers use part of paddy land to cultivate vegetables.

135. Rice is grown for own consumption, and only in emergency cases sold in the market. Besides rice, farming household in the Ghagra cluster also cultivate different vegetables for their own consumption. There are 1,140 acres of horticulture land planted with different fruit trees, of which 80% is meant for the market. On the 320 acres jhum people grow (hill) paddy along with vegetables (like brinjal/aubergines, beans, okra/ladies' fingers) and some cash crops (ginger, turmeric and arum during rainy season). Table 7.5 shows the cropping calendar for the cluster villages.

Table 16. Crop calendar Ghagra Union cluster villages

Name of crop	Planting month	Harvesting month	Selling month
Paddy	Mid-June -mid July	November	N/A
Arum	April-May	October-November	October-December
Turmeric	April -May	January-February	January-March
Ginger	April-May	December-January	December-January
Local potato (Jhum)	April-May	November-December	November
Vegetables (Potato, Radish, Bean, Brinjal, tomato, pea, Chili, popcorn, lades finger, pumpkin, gourd etc)	October	November-January	November-March
Banana	April	After 12-month January- December on 3 years	January-December
Mango	June -July	April-June	April-June
Papaya	April-June	After 6-7 month	January-December
Wood apple	April-June	March-April	March-April
Betel nut	April-June	December-January	December-January
Plum	April-June	December-February	December-February

Source: Feasibility Study Ghagra Cluster Union

136. 91% of families own some form of livestock (cows, goats, and/or pigs), while all HHs own free roaming chickens. Nobody owns a poultry shed with broiler chicken. Livestock is mostly meant for savings, but chicken are both own consumption and savings.

D.10. Mechanization and external inputs

137. Land preparation for paddy and vegetables cultivation is mostly done by in mechanically using power tillers. Only eight households own a power tiller, mostly older (8-10 years), the other households owning ploughland rent power tillers or tractors. Daily rental charges are 2,000 BDT, plus 500 BDT for the operator's wage and the fuel cost. There are 41% of farmers using power threshers and 59% manual threshing of paddy after harvest.

138. Use of hand sprayers for pesticides is common. Weeding is mostly done manually, except for three paras where herbicides are sprayed by farmers, and the rest are doing weeding manually.

D.11. Marketing of Agricultural Produce

139. The farmers from Harangi Refugee Para sell their goods mainly at the Kawkhali bazar, which has a market day on Mondays, as this is close to their village. Others go to Ghagra bazar, which has two market days, Saturday and Wednesday. There are no markets (hats) in the villages themselves.

140. Cash crops sold in the market primarily are wet season products like ginger, turmeric, arum, maize, and winter season vegetables like, radish, cabbage, cauliflower, brinjal (eggplants), bean, potato, peas. Bananas are sold throughout the year. Most of the traders buying agricultural produce are Bengalis from outside the cluster villages. There are only a few small traders in the villages themselves, most of whom deal in vegetables locally or in Rangamati town.

141. For information on prices of agriculture produce, farmers rely first of all on market visits and then on friends, neighbours and relatives. Local traders, shopkeepers or government officials are not very important as a source of price information.

142. As an important trading practice, there are villages entering into a contract with traders to sell crops before harvest.



Source: Feasibility Study Ghagra Cluster Union

Figure 21. A scenery of paddy fields within target paras.

D.12. Water Supply for Drinking

143. Access to drinking water is a major concern for the inhabitants of Ghagra cluster paras. There are no reservoirs or piped water systems. For their water needs the villagers depend on groundwater and streams that flow through the villages. 90% of the households depend on these streams for their water, but these go dry from December to May. There are 15 ring wells, which provide only little water during the dry season. The two bore-wells with motor pumps only serving 30 families.

144. Women and girls are responsible for collecting water. 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.

145. Badalchari Moan (mountain) Para which is located at the middle range of the Furomon Mountain only can be accessed by a footpath. The 27 households are dependent on streams for their water. During the dry season they experience great difficulty in getting water and need to dig holes in dry streams.

146. Conditions in the upper Chelachara village are similarly precarious. The 40 households of this para are fully dependent on stream water. Earlier attempts by DPHE to drill deep tube-well manually all failed. More expensive equipment will be required to drill wells in this rocky area. The Rangamati Hill District Council installed a GFS water supply sourcing water from one of the streams running through the area, but this was damaged in a major natural disaster in 2017. Ever since, the villagers have been suffering from water scarcity also because one of the streams filled with mud and stones and has been dry since 2017. The single ring-well in the village goes dry during the mid-January to mid-April dry period. In these months women need to fetch water from a source 2-3 kilometres outside the village.



Source: Feasibility Study Ghagra Cluster Union

Figure 22. Existing tube well (left) and open water source (right) in Harangi Refugee para

D.13. Sanitation Situation

147. 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. Of the 673 households in the Ghagra cluster, around 10% are using acceptable hygienic latrine. Most latrines are pit latrines, with no water storage. Handwashing with soap is rarely

practiced. Schools in the cluster area have toilets, with boys and girls using the same toilets. These have no running water, which is mostly brought in buckets.



Source: Feasibility Study Ghagra Cluster Union

Figure 23. Latrines in Kozoichara Para (left) and Leba Para (right)

D.14. Access to energy

148. For household lightning, PV solar panels are the most important source of energy in the 8 paras. 59% of the HHs households have solar panels. Another 38% is connected to the grid. Only two villages (Rajkhali and Bakchari) are fully connected to the grid, and Chelachara Para is partly connected. 244 households have both grid connection and PV solar: 75 from Chelachara, 73 households from Bakchari, and 96 households from Rajkhali Para. The 27 HHs of Badalchari Moan Para have no access to the grid nor do they have any PV solar panels as alternative source of lightning. Families without access to electricity depend on kerosene lamps (cherag) for lightning. Given the low number of TVs, radios, and other electrical appliances, it is clear that electricity whether from the grid or PV panels is mainly used for lightning and charging of mobile phones.

149. For cooking and heating firewood is the main source of energy. Firewood is gathered on people's own land and from the forest on the mountain slopes. Firewood is not traded.

D.15. Transport

150. Communities in 3 out of the 8 paras live far from the road, while half of the population of two other paras experience the same problem. As indicated one of the paras, mountain slopes

can only be reached by way of footpath. Motorized tricycles are the most common form of transportation (used in all 8 paras), while motorbikes coming second (in 7 out of 8 paras).

Table 17. Communities reported living far from main roads

Sl no.	Para name	Total HHs	HHs far from the road	%
1	Kojoichari Para	118	118	100%
2	Harangi Refugee Para	58		0%
3	Leva Para	57		0%
4	Badalchari Para	124	60	48%
5	Bakchari Para	73	73	100%
6	Nowa Para	43		0%
7	Rajkhali Para	96	96	100%
8	Ghagra Chelachara Para	104	50	48%
Total		673	397	59%

Source: Feasibility Study Ghagra Cluster Union

151. The inhabitants living on the earthen road to Kojoichari, indicated that due to the current road condition, goods have to be carried as headload. The cost of hiring porter for carrying agricultural goods is around 30 BDT to the main road. For other products, porter cost is 60 – 70 BDT per bag of ginger, turmeric, rice and vegetables. In the target villages, head loading porters are high demand. Small-size goods usually are carried by the villagers themselves.



Source: Feasibility Study Ghagra Cluster Union

Figure 24. At Kojoichari VAR, where people walking to school during dry season

D.16. Cultural Heritage

152. The Chakma communities are Buddhist by faith. They speak their own Chakma language, with the Chittagonian dialect of Bangla functioning as the second language. There is a Kiyang, a

Buddhist temple in each village. Traditional leadership is provided at village level by the karbari . Weaving is a traditional handicraft with women wearing phinon lower part and hadi upper woven cloth as dress. The Chakma have their own music and dance traditions. The Chakma people of Gaghra celebrate the major festivals: Bizu, Alphaloni, and major Buddhist festivals, especially Buddha Purnima. The major socio-religious festival in the annual calendar is the three-day Bizu, which coincides with the Bengali New Year's Day, begins one day before the last day of the month of Chaitra, or the middle of April. This is celebrated with much enthusiasm, houses are decorated with flowers, young children pay special attention to the elderly to win their blessings, festive dishes are prepared for guests, and special dances are performed. House cleaning and decorating it with flowers on the first day, a ritual bath in the river on the second day different socio-religious rituals on the last day, are the core of the festival.

153. The festival coincides with the first major rains when jhum land is being sown. Bizu is believed to contribute to a rich harvest. The second major Chakma festival, Alphaloni, is likewise linked to the agricultural cycle. It coincides falls in the harvest season when everyone takes a break from farming, and animals and weapons are also rested. On this day villagers eat new food, fruits harvested from their jhum land, and offer and share with each other.

154. Like the Chakma, the Marma are also Buddhist and often live close to streams in valleys where they cultivate arable land with plough, while also engaging in shifting cultivation, jhum, and occasional fruit gardening. Marma are found in all districts of the CHT, but the majority live in the Mong and Bohmong Circles, roughly corresponding to Khagrachari and Bandarban Districts.

155. There are two major Marma groups, those under the Mong Circle under the Mong raja residing in the northern portion of Khagrachari District whose residence is in Manikchhari. The southern group's Bohmong chief resides in Bandarban. These rajas were established as tax collectors for the Mughal, East India Company and British administrations. Originating from Myanmar, the Marmas continue to regard Myanmar as the center of their cultural life, with children often learning the Arakanese language. As with the Chakmas, there is an emerging middle class. The Marma in the Ghagra cluster mostly shifted there after intermarrying with local Chakmas and are well integrated.

VIII. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATIONS MEASURES

156. 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

157. Based on intentions of the proposed Project and need of the people, the following benefits will accrue from the interventions:

- Improved water availability at target paras for household use through WASH.
- Improved agricultural production, income and livelihood due to Agri-infra.
- Improved sanitation and water supply will lead to improved health of local community people, which may reduce effluents in surface water.
- Especially in the wet season, VAR will improve access to market, school and health facilities, hence contributing to overall well-being of local people.

B. Negative Impacts

158. This section presents analysis to identify environmental impacts associated with the implementation of CI interventions (i.e. WASH, Agri-infra and VAR). 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 18), and a series of discussions with stakeholders, including community stakeholders, Union Parishads, and relevant government departments.

159. As subproject under CRLIWM-CHT Sector Project, the process of the environmental assessment for the Ghagra CI Subproject²⁹ will be duplicated for the upcoming subprojects for project readiness and implementation of Output 1. The EARF will provide guidance for other environmental safeguards requirements of the proposed Project.

C. Environmental Analysis

160. 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

²⁹ WASH and Agri-infra interventions of Ghagra is sample subproject for those to be identified under Output 1. VAR for Chelachara Para and Kojoichari Para is the sample VAR for the other 27.

affected due to the implementation of CI interventions in all of the target paras. The environmental components for the Ghagra CI Subproject 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.

161. 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 WASH, Agri-infra and VAR 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.

162. A matrix for identification of potential environmental impacts is provided below in Table 18. This reflects the potential impacts due to activities of the subproject, and classification of risks discussed above.

Table 18. Matrix for identification and analysis of potential environmental impacts

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

Activity	Type of Interventions	Potential Negative Impact	Specific Environmental Impact	Classification of Risks			
				Mag	Ext	Dur	Sig
		Risk from storing of petrol, diesel and grease for vehicle and machines	Affect health of workers	M	SS	MT	Mo
Construction Phase							
Physical environment							
Site clearance, and clearing and grubbing	VAR	Alteration of local surrounding	Change in land-use	L	SS	MT	Mo
Excavation and box cutting	VAR	Removal of soil and ground surface	Erosion	M	SS	MT	Mo
			Dust generation and vehicle emission increase	M	SS	MT	Mo
Operation of constructions vehicles for hauling and unloading of construction materials	VAR	Water pollution due spills and leakage of oils and chemicals to water bodies.	Risk of water contamination	M	SS	MT	Mo
Dismantling of road structures such as HBB and drainage	VAR	Generation of construction wastes	Alteration of drainage	M	SS	MT	Mo
		Increase of sedimentation in waterways	Risk of water contamination	L	Lc	MT	Mi
Site clearance	WASH	Alteration of local surrounding	Change in land use	L	SS	LT	Mo
Operation of constructions vehicles for hauling and unloading of construction materials	WASH	Water pollution due to sediment level, spills and leakage of oils and chemicals to water bodies.	Risk of water contamination	M	Lc	MT	Mo
Biological environment							
Site clearance, and clearing and grubbing	VAR	Alteration of local surrounding	Loss of vegetation	M	SS	LT	Mo
Operation of constructions vehicles for hauling and unloading of construction materials	VAR	Increased vibration at target sites	Disturbance to local wildlife	L	SS	ST	Mi
Dismantling of road structures such as HBB and drainage	VAR	Increase of sedimentation in waterways	Disturbance to local wildlife	L	SS	ST	Mi
Site clearance	WASH	Change in land use	Loss of vegetation	L	SS	LT	Mi
Operation of constructions vehicles for hauling and unloading of construction materials	WASH	Increased vibration at target sites	Disturbance to local wildlife	L	SS	ST	Mi
Socio-economic environment							
Site clearance, and clearing and grubbing	VAR	Alteration of local surrounding	Damage to property	M	SS	MT	Mo
		Health and safety issue	Injury and outbreak of diseases	M	SS	MT	Mo
Excavation and box cutting	VAR	Spoil generation	Disruption of road activities	M	SS	MT	Mo
		Health and safety issue	Injury and outbreak of diseases	M	Lc	MT	Mo
Operation of constructions vehicles for hauling and unloading of construction materials	VAR	Air pollution due to dust from exposed surface, from construction equipment and vehicles	Effect on local people and workers health	M	Lc	MT	Mo
		Noise pollution	Disturbance and annoyance around institutions	M	SS	MT	Mo
		Health and safety issue	Injury and outbreak of diseases	M	SS	MT	Mo
	VAR	Generation of construction wastes	Alteration of drainage	M	SS	MT	Mo

Activity	Type of Interventions	Potential Negative Impact	Specific Environmental Impact	Classification of Risks			
				Mag	Ext	Dur	Sig
Dismantling of road structures such as HBB and drainage			Disturbance of road users	M	SS	MT	Mo
		Air pollution due to dust from dismantling activities	Effect on local people and workers health	M	SS	MT	Mo
		Noise pollution	Disturbance and annoyance around institutions	M	SS	MT	Mo
Site clearance	WASH	Alteration of local surrounding	Change in land use	M	SS	LT	Mo
		Health and safety issue	Injury and outbreak of diseases	M	SS	MT	Mo
Operation of constructions vehicles for hauling and unloading of construction materials	WASH	Increased noise levels and vibration at target sites	Disturbance to local people	M	SS	MT	Mo
		Air pollution due to vehicle movement and machine operations	Effect on local people and workers health	M	SS	MT	Mo
		Occupational health and safety issue	Injury and outbreak of diseases	M	Lc	MT	Mo
		Community health and safety issue	Injury and outbreak of diseases	M	Lc	MT	Mo
Boring of ground for deep tube wells	WASH	Increased noise levels and vibration at target sites	Disturbance to local people	M	SS	MT	Mi
		Air pollution due to vehicle movement and machine operations	Effect on local people and workers health	M	Lc	MT	Mi
		Occupational health and safety issue	Injury and outbreak of diseases	M	Lc	MT	Mi
		Community health and safety issue	Injury and outbreak of diseases	M	Lc	MT	Mi
Excavation of pits for latrines	WASH	Increased noise levels and vibration at target sites	Disturbance to local people	L	SS	MT	Mi
		Air pollution due to vehicle movement and machine operations	Effect on local people and workers health	L	SS	MT	Mi
		Occupational health and safety issue	Injury and outbreak of diseases	L	Lc	MT	Mi
		Community health and safety issue	Injury and outbreak of diseases	L	Lc	MT	Mi
Electrical works for submersible water motor pump	WASH	Occupational health and safety issue	Injury from installation	L	Lc	MT	Mo
Operation Phase							
Socio-economic environment							
Closure of equipment yards and camps	VAR	Health and safety issues	Disturbance to locals	L	Lc	MT	Mo
	WASH						
Operation of vehicles and machines for repair and maintenance	VAR	Occupational health and safety issue	Injury and outbreak of diseases	L	Lc	ST	Mi
	WASH	Air, noise and water pollution	Disturbance and annoyance around institutions	M	SS	LT	Mo
Biological environment							
Socio-economic environment							
Operation tube-wells and GFS	WASH	Water pollution	Health issues relevant with contaminated water	H	Lc	LT	Mo
Operation of pumps and tillers	Agri-infra	Health and safety issues	Injury of users	L	SS	LT	Mo

IX. INFORMATION DISCLOSURE, CONSULTATION, AND PARTICIPATION

A. Principles

163. 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.

164. 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.

B. Subproject Stakeholder Consultations

165. After prioritizing selection of paras with local authorities and after consulting the CHTRC, participatory planning processes started by involving local authorities, traditional leaders, and communities. On the first day of the visit at target para, a meeting at the Union headquarters was conducted with elected officers and staff to inform about the project, the participatory approach and safeguards requirements.

166. In the ensuing week, all eight villages were visited twice for half-day sessions and discussed and performed the following:

- Communities received information about the project, participatory approach, possible interventions, and safeguards requirements.
- Work with the community on the preparation of a social map and community profile using participatory methods, such as FGDs. The social and economic profile questionnaire and the social map are the main instruments used for this. During village mapping communities identified their existing infrastructure, arable land, water sources, sanitation, territory of the village, road communication, educational institution, and the overall socio-economic condition of the village.

- Where not yet existent, a PDC³⁰ was constituted. Table 19 shows details of PDC establishment.
- Based on the social mapping, needs of village people were identified. Separate and joint FGDs for men and women were conducted to ensure that women's needs are clearly articulated.
- Based on prioritized needs, interventions were selected in line with the CRLIWM-CHT Sector Project's scope.

167. Meeting venues were chosen by community members to ensure an open communication. In view of COVID-19 prevention, meetings took place outdoors when possible and maintaining social distance. The social mobilization team distributed masks to the participants before starting meetings.

168. During the meetings and discussions, the community people raised their different kinds of problems and shared views. The villagers raised in the meetings and discussions the following:

- lack of all-weather access road communication
- absence of agriculture infrastructure
- scarcity of water sources in for various all major spheres of life (drinking, irrigation, hygiene etc.)
- lack of communication for marketing of cultivated agriculture products,
- poverty and vulnerability of socio-economic conditions of the majority households etc.

169. Villagers requested agriculture and WASH infrastructures, which eventually selected in under the subproject. The villagers of Badalchari, Bakchari and Rajkhali gave their priority in their request for a village access road. But due to limited budget provision, their request could not be considered.

Table 19. Community consultations and PDC formation

Para	Meeting date and participants	Para Development Committee	Remarks
Kojoichari Para	1st meeting: 16/11/21 Total participants-41 (M-24, F-17) 2nd meeting: 17/11/21 Total participants-44 (M-28, F-16)	PDC constituted with 9 members (M-5, F-4)	The social mobilization team presented the TA project's planning and possible interventions including safeguard issues. The villagers shared their present situation of the village. They helped the team finding out problems and lastly proposed the prioritized interventions regarding the problems.
Harangi Refugee Para	1st meeting 1: 15/11/21 Total participants-48 (M-32, F15-) 2nd meeting: 16/11/21 Total participants-49 (M-33, F-16)	PDC constituted with 7 members (M-4, F-3)	During village mapping communities identified their existing infrastructure, arable land, water sources, sanitation, territory of the village, road communication, educational

³⁰ The body representing the community during project implementation.

Para	Meeting date and participants	Para Development Committee	Remarks
Leba Para	1st meeting: 17/11/21 Total participants-50 (M-33, F-17) 2nd meeting: 18/11/21 Total participants-75 (M-47, F-28)	PDC constituted with 7 members (M-4, F-3)	institution, and overall socio-economic condition of the village.
Badalchari Para	1st meeting: 18/11/21 Total participants-64 (M-34, F-30) 2nd meeting: 19/11/21 Total participants-66 (M-41, F-25)	PDC constituted with 11 members (M-6, F-5)	
Bakchari Para	1st meeting: 19/11/21 Total participants-33 (M-24, F-9) 2nd meeting: 20/11/21 Total participants-32 (M-23, F-9)	PDC constituted with 11 members (M-6, F-5)	
Noa Para	1st meeting: 20/11/21 Total participants-29 (M-20, F-9) 2nd meeting: 21/11/21 Total participants-34 (M-24, F-10)	PDC constituted with 9 members (M-5, F-4)	
Rajkhali Para	1st meeting: 21/11/21 Total participants-31 (M-28, F-3) 2nd meeting: 22/11/21 Total participants-34 (M-19, F-15)	PDC constituted with 9 members (M-5, F-4)	
Chelachara Para	1st meeting: 22/11/21 Total participants-33 (M-17, F-16) 2nd meeting: 23/11/21 Total participants-35 (M-27, F-18)	PDC constituted with 9 members (M-5, F-4)	



(a)



(b)

Figure 25. Community consultations outdoors at Badal Chari Para (left) and in the village temple at Harangi Refugee Para (below)

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C. Disclosure Framework

170. 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.

171. 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

172. 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

173. 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

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

175. *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.

176. *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.

177. *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.

178. *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.

179. *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.

180. *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

181. 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.

182. 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.

183. 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.

184. 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.

185. 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.

186. 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

187. 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.

188. 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.

189. 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 26.

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

190. 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.

191. 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.

192. 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*.

193. 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.

194. 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 10 (English version) and/or Annex 11 (Bengali version).

195. 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)

196. 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.

197. 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

198. 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.

199. 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.

200. 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.

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

202. 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

203. 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

204. 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.

205. 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

206. 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.

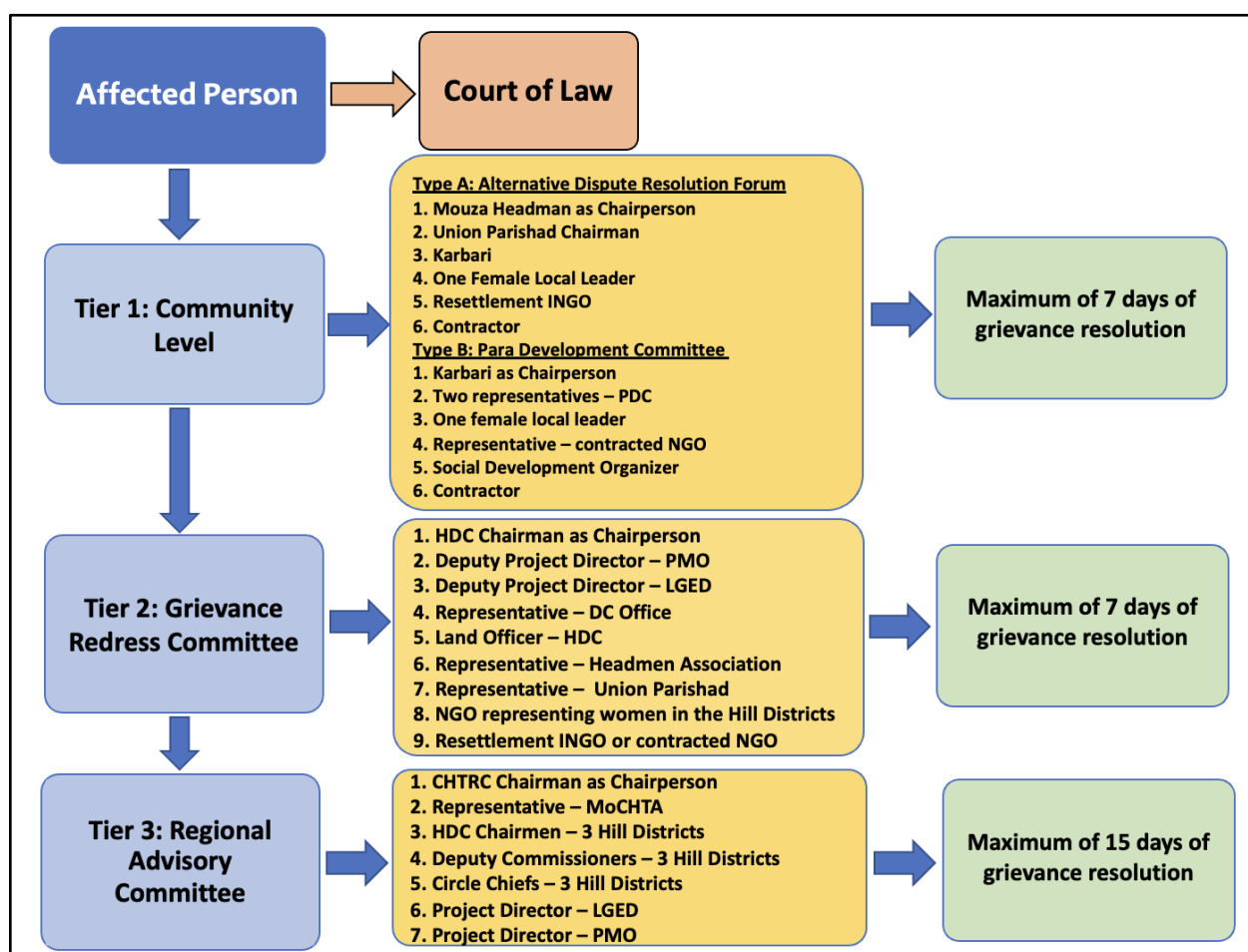


Figure 26. Framework of the GRM for BAN:CRLIWM-CHT Sector Project

C.4. Relevant GRM Activities

207. *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.

208. *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.

209. *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.

210. *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.

211. *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)

212. 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 20 shows the EMP for the different interventions of Ghagra CI Subproject.

Table 20. EMP for Ghagra community infrastructure subproject

Table 20: EIM for Chaga community infrastructure subproject						
Activity Type of Interventions		Potential Negative Impact	Specific Environmental Impact	Mitigation Measures	Responsibility for mitigation measures	
					Implementation	Monitoring/ Support
Pre-Construction Phase						
Physical Environment						
Mobilization of construction	VAR WASH	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 Type of Interventions		Potential Negative Impact	Specific Environmental Impact	Mitigation Measures	Responsibility for mitigation measures	
					Implementation	Monitoring/ Support
Land temporarily required for site offices, material storage, equipment parking, labour accommodation & occupational safety measures for workers	VAR WASH	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>
Biological Environment						
Mobilization of construction	VAR WASH	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						
Mobilization of construction	VAR WASH	Change in local topography from establishment of (i) camp site and (ii) construction material storage areas	Encroachment of agricultural land	<p>Location, layout and basic facility provision of camp site will be submitted to District Project Management Office in CHTRC prior to its construction.</p> <p>Construction campsites will be located away from any local human settlement and properties preferably located on barren areas.</p> <p>The campsites will be provided with adequate water supply, sanitation and all requisite infrastructure facilities.</p>	Contractor	<p>Monitoring: CHTRC PDC/CDC</p> <p>Support: PISC</p>

Activity Type of Interventions		Potential Negative Impact	Specific Environmental Impact	Mitigation Measures	Responsibility for mitigation measures	
					Implementation	Monitoring/ Support
				Agreement with the landowner for use of space for camp site and material storage areas prior establishing.		
		Disturbance at target sites due to mobilization of construction equipment and vehicles	Health and safety risks of workers and village people	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. Workers will use proper personal protective equipment against dust and high noise levels.	Contractor	Monitoring: CHTRC PDC/CDC Support: PISC
		Risk from storing of petrol, diesel and grease for vehicle and machines	Affect health of workers	Workers will use proper personal protective equipment when working on chemicals. Inform Environment, Health and Safety Officer of contractor when spillage occur. 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
Construction Phase						
Physical environment						
Site clearance, and clearing and grubbing	VAR	Alteration of local surrounding	Change in land-use	No forest areas will be developed as access roads. Consult and seek agreement with local communities and District Project Management Office in CHTRC on the alignment of VAR. Natural slope disturbances will be minimized, as much as possible during site clearance Limit use of heavy equipment and machineries to minimize further impact on the landscape. Manual labors would be promoted.	Contractor	Monitoring: CHTRC PDC/CDC Support: PISC
Excavation and box cutting	VAR	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
Operation of constructions vehicles for	VAR	Water pollution due to spills and leakage of	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	Contractor	Monitoring: CHTRC PDC/CDC

Activity Type of Interventions		Potential Negative Impact	Specific Environmental Impact	Mitigation Measures	Responsibility for mitigation measures	
					Implementation	Monitoring/ Support
hauling and unloading of construction materials		oils and chemicals to water bodies.		and oil interceptor instead of directly to surface water. Regular checks, and maintenance of construction equipment and vehicles to keep them in good working.		Support: PISC
Dismantling of road structures such as HBB and drainage	VAR	Generation of construction wastes	Alteration of drainage	Reuse spoil and other materials for construction purposes. Maintain proper material storage system and ensure to control littering of construction materials outside the designated places. Stockpiling site of construction materials and debris will be designated at demarcated places.	Contractor	Monitoring: CHTRC PDC/CDC Support: PISC
		Increase of sedimentation in waterways	Risk of water contamination	Undertake construction during the dry season as much as possible to minimize exposed areas subject to erosion by surface water runoff. Works over or near waterways courses will adopt protection measures to guard against loss of soil that would result in the turbidity of water. Covering storages of sand and spoil with tarpaulin.	Contractor	Monitoring: CHTRC PDC Support: PISC
Site clearance	WASH	Alteration of local surrounding	Change in land use	Consult and seek agreement with local communities and District Project Management Office in CHTRC on the location of WASH. Limit use of heavy equipment and machineries to minimize further impact on the landscape. Manual labors would be promoted.	Contractor	Monitoring: CHTRC PDC Support: PISC
Operation of constructions vehicles for hauling and unloading of construction materials	WASH	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 Support: PISC
Biological environment						
Site clearance, and clearing and grubbing	VAR	Alteration of local surrounding	Loss of vegetation	Cutting trees at the proposed sites will be kept to an absolute minimum, and only be permitted when trees/vegetations are obstruction to VAR. Tree cutting permit is obtained prior to the start of land clearing works where cutting tree cannot be avoided. 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. If there will be removal of vegetation, important tree species to be retained as identified by Forest Department.	Contractor	Monitoring: CHTRC PDC/CDC Support: PISC

Activity Type of Interventions		Potential Negative Impact	Specific Environmental Impact	Mitigation Measures	Responsibility for mitigation measures	
					Implementation	Monitoring/ Support
				Felled trees recovered after cutting will be handed over for use according to the national laws and regulations.		
Operation of constructions vehicles for hauling and unloading of construction materials	VAR	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>
Dismantling of road structures such as HBB and drainage	VAR	Increase of sedimentation in waterways	Disturbance to local wildlife	<p>Undertake construction during the dry season as much as possible to minimize exposed areas subject to erosion and affect waterways.</p> <p>Works near waterways courses will adopt protection measures to guard against loss of soil that would result in the turbidity of water.</p> <p>Dumping of spoils and/or stockpiling of construction materials near waterways are strictly prohibited.</p>	Contractor	<p>Monitoring: CHTRC PDC/CDC</p> <p>Support: PISC</p>
Site clearance	WASH	Change in land use	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 WASH interventions.</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</p> <p>Support: PISC</p>
Operation of constructions vehicles for hauling and unloading of construction materials	WASH	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>	Contractor	<p>Monitoring: CHTRC PDC Forest Department</p> <p>Support: PISC</p>

Activity Type of Interventions	Potential Negative Impact	Specific Environmental Impact	Mitigation Measures	Responsibility for mitigation measures	
				Implementation	Monitoring/ Support
			A record of wildlife sighting shall be kept.		
Socio-economic environment					
Site clearance, and clearing and grubbing	VAR	Alteration of local surrounding	<p>Damage to property</p> <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>
		Health and safety issue	<p>Injury and outbreak of diseases</p> <p>Appoint the contractor's environment, health and safety focal person</p> <p>Provide worker training on health and safety on site clearance, and clearing and grubbing.</p> <p>Workers will use proper personal protective equipment at all times.</p> <p>Ensure all equipment and vehicles used are routinely disinfected.</p> <p>Prepare health and safety plan to manage risks in construction works. (See Annex 12 for reference)</p> <p>Prepare COVID-19 health and safety plan to manage risks. (See Annex 13 for reference)</p> <p>Provide regular briefing/training on disease prevention to workers.</p> <p>Maintain COVID-19 and construction related injuries weekly monitoring and reporting mechanism at the worksite, including any necessary actions to be taken.</p>	Contractor	<p>Monitoring: CHTRC PDC</p> <p>Support: PISC</p>
Excavation and box cutting	VAR	Spoil generation	<p>Disruption of road activities</p> <p>Inform local community of ongoing works along VAR.</p> <p>Dumping of spoils and/or stockpiling of construction materials that will block passage of VAR is strictly prohibited.</p> <p>Maintain proper material storage system and ensure to control spoil dumping along VAR</p>	Contractor	<p>Monitoring: CHTRC PDC/CDC</p> <p>Support: PISC</p>
		Health and safety issue	<p>Injury and outbreak of diseases</p> <p>Provide worker training on health and safety on excavation and box cutting.</p> <p>Workers will use proper personal protective equipment against dust and high noise levels.</p> <p>Ensure all equipment and vehicles used are routinely disinfected.</p> <p>Prepare health and safety plan to manage risks in construction works. (See Annex 12 for reference)</p> <p>Prepare COVID-19 health and safety plan to manage risks. (See Annex 13 for reference)</p>	Contractor	<p>Monitoring: CHTRC PDC/CDC</p> <p>Support: PISC</p>

Activity Type of Interventions	Potential Negative Impact	Specific Environmental Impact	Mitigation Measures	Responsibility for mitigation measures	
				Implementation	Monitoring/ Support
			<p>Provide regular briefing/training on disease prevention to the workers.</p> <p>Maintain COVID-19 and construction related injuries weekly monitoring and reporting mechanism at the worksite, including any necessary actions to be taken.</p>		
Operation of constructions vehicles for hauling and unloading of construction materials	VAR	Air pollution due to dust from exposed surface, from construction equipment and vehicles	<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>
		Noise pollution	<p>Regulating movement of construction vehicles only at designated routes.</p> <p>Construction period will only be at designated time as approved by District Project Management Office in CHTRC.</p> <p>Inform village people on the construction period.</p>	Contractor	<p>Monitoring: CHTRC PDC/CDC</p> <p>Support: PISC</p>
		Health and safety issue	<p>Provide worker training on health and safety on operation of constructions vehicles for hauling and unloading of construction materials.</p> <p>Workers will use proper personal protective equipment at all times.</p> <p>Ensure all equipment and vehicles used are routinely disinfected.</p> <p>Prepare health and safety plan to manage risks in construction works. (See Annex 12 for reference)</p> <p>Prepare COVID-19 health and safety plan to manage risks. (See Annex 13 for reference)</p> <p>Provide regular briefing/training on disease prevention to workers.</p> <p>Maintain COVID-19 and construction related injuries weekly monitoring and reporting mechanism at the worksite, including any necessary actions to be taken.</p>	Contractor	<p>Monitoring: CHTRC PDC/CDC</p> <p>Support: PISC</p>
Dismantling of road structures such as HBB and drainage	VAR	Generation of construction wastes	<p>Alteration of drainage</p> <p>Works on dismantling road structures should be done during dry season to avoid further erosion along VAR.</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/CDC</p> <p>Support: PISC</p>

Activity Type of Interventions		Potential Negative Impact	Specific Environmental Impact	Mitigation Measures	Responsibility for mitigation measures	
					Implementation	Monitoring/ Support
				Stockpiling site of construction materials and debris will be designated at demarcated places. Identify final disposal area as approved by District Project Management Office of CHTRC. Dumping of construction wastes at private properties are strictly prohibited.		
			Disturbance of road users	Inform local community of ongoing works along VAR. Dumping of spoils and/or stockpiling of construction materials that will block passage of VAR is strictly prohibited. Maintain proper material storage system and ensure to control spoil dumping along VAR.	Contractor	Monitoring: CHTRC PDC/CDC Support: PISC
		Air pollution due to dust from dismantling activities	Effect on local people and workers health	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. Workers must use proper personal protective equipment	Contractor	Monitoring: CHTRC PDC/CDC Support: PISC
		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. Whenever possible, noisy equipment will be completely enclosed which can significantly reduce noise levels. Any stationary equipment that produce high noise levels (e.g., portable diesel generators, compressors, etc.) will be positioned as far as is practical from sensitive receptors.	Contractor	Monitoring: CHTRC PDC/CDC Support: PISC
Site clearance	WASH	Alteration of local surrounding	Change in land use	Consult and seek agreement with local communities and District Project Management Office in CHTRC on the location of WASH. Limit use of heavy equipment and machineries to minimize further impact on the landscape. Manual labors would be promoted. Cutting trees at the WASH sites will be kept to an absolute minimum, and only be permitted when trees/vegetations are obstruction.	Contractor	Monitoring: CHTRC PDC Support: PISC
		Health and safety issue	Injury and outbreak of diseases	Provide worker training on health and safety on site clearance at WASH sites. Workers will use proper personal protective equipment against dust and high noise levels.	Contractor	Monitoring: CHTRC PDC Support: PISC

Activity Type of Interventions		Potential Negative Impact	Specific Environmental Impact	Mitigation Measures	Responsibility for mitigation measures	
					Implementation	Monitoring/ Support
				<p>Ensure all equipment and vehicles used are routinely disinfected.</p> <p>Prepare health and safety plan to manage risks in construction works. (See Annex 12 for reference)</p> <p>Prepare COVID-19 health and safety plan to manage risks. (See Annex 13 for reference)</p> <p>Provide regular briefing/training on disease prevention to workers.</p> <p>Maintain COVID-19 and construction related injuries weekly monitoring and reporting mechanism at the worksite, including any necessary actions to be taken.</p>		
<p>Operation of constructions vehicles for hauling and unloading of construction materials</p> <p>Boring of ground for deep tube wells</p> <p>Excavation of pits for latrines</p>	WASH	Increased noise levels and vibration at target sites	Disturbance to local people	<p>Regulating movement of construction vehicles only at designated routes.</p> <p>Avoid nighttime construction works</p> <p>Construction period will only be at designated time as approved by District Project Management Office in CHTRC.</p> <p>Inform village people on the construction period.</p>	Contractor	<p>Monitoring: CHTRC PDC</p> <p>Support: PISC</p>
		Air pollution due to vehicle movement and machine operations	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</p> <p>Support: PISC</p>
		Occupational health and safety issue	Injury and outbreak of diseases	<p>Provide worker training on health and safety.</p> <p>Workers will use proper personal protective equipment against dust and high noise levels.</p> <p>Ensure all equipment and vehicles used are routinely disinfected.</p> <p>Prepare health and safety plan to manage risks in construction works. (See Annex 12 for reference)</p> <p>Prepare COVID-19 health and safety plan to manage risks. (See Annex 13 for reference)</p> <p>Provide regular briefing/training on disease prevention to workers.</p> <p>Maintain COVID-19 and construction related injuries weekly monitoring and reporting mechanism at the worksite, including any necessary actions to be taken.</p>	Contractor	<p>Monitoring: CHTRC PDC</p> <p>Support: PISC</p>

Activity Type of Interventions		Potential Negative Impact	Specific Environmental Impact	Mitigation Measures	Responsibility for mitigation measures	
					Implementation	Monitoring/ Support
		Community health and safety issue	Injury and outbreak of diseases	Regulating movement of construction vehicles and works only at designated areas. Regulating entry of village people into campsites. Workers to always use facemask during construction at WASH sites. Disinfect equipment and machines regularly.	Contractor	Monitoring: CHTRC PDC Support: PISC
Electrical works for submersible water motor pump	WASH	Occupational health and safety issue	Injury from installation	Provide worker training on health and safety. Workers will use proper personal protective equipment against dust and high noise levels.	Contractor	Monitoring: CHTRC PDC Support: PISC
Solar panel installation	WASH	Occupational health and safety issue	Injury from installation	Installation should be done by the experts. Provide worker training on health and safety. Workers will use proper personal protective equipment.	Contractor	Monitoring: CHTRC PDC Support: PISC
Operation Phase						
Physical environment						
Closure of equipment yards and camps	VAR WASH	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
Operation of vehicles and machines for repair and maintenance	VAR WASH	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 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
Solar panel operation	WASH	Occupational health and safety issue	Injury from maintenance	Maintenance and disposal of waste from solar panel system should be done by the experts.	Contractor	Monitoring: CHTRC PDC Support: PISC
		Waste management	Improper handling of waste from solar panel	Workers will use proper personal protective equipment.		
Socio-economic environment						
Operation of road, pumps, tillers, tube-wells	WASH	Water pollution in deep tube wells and GFS	Health issues relevant with contaminated water	Water sources must be always protected to meet water quality standards. Disposal of solid and liquid wastes are strictly prohibited.	DPMO and PISC INGOs PDC	CHTRC PDC

Activity Type of Interventions		Potential Negative Impact	Specific Environmental Impact	Mitigation Measures	Responsibility for mitigation measures	
					Implementation	Monitoring/ Support
				With the community, DPMO and PISC to establish restrictions of activities that can pollute water. Periodic monitoring of water quality. Periodic awareness raising to users on water resources protection and conservation.		
	Agri- infra	Health and safety issues	Increase in accidents	Periodic training of beneficiaries on the proper use and maintenance of tillers and water pumps Record of any injuries caused by using tillers and water pumps Use of appropriate personal protection equipment Accessing grievance redress mechanism whenever there is safeguard concerns	DPMO and PISC INGOs PDC	CHTRC PDC

Table 21. Environmental Management Plan budget for Ghagra community infrastructure 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.	Contractor	LGED	1,50,000/- (Included in the estimated cost)
	Signages that will reflect (i) key information of the scope of works, and (ii) GRM access and process.			
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 22. Environmental Monitoring Plan (EMoP) for Ghagra community infrastructure 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 be 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 be comply with national standards	Project site		Contractor, LGED
Noise Pollution	Noise Level		Test results should be comply with national standards and/or WHO levels	Project site		Contractor, LGED
Soil Pollution	Oil & Grease, Organic Matter		Test results should be comply with national standards	Campsite		Contractor, LGED

B. Environment Safeguard Responsibilities of Project Proponents

213. 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.

214. 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.

215. 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 Engineers³¹ 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;

³¹ There will be a Junior Environmental Engineer for each CHT district, who will be led by the Environment and Climate Specialist.

- 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.

216. The contractor(s)³² is the principal agent to implement EMP and environmental quality monitoring for structural works. Specifically, the contractor/s will:

- 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.

217. 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.

218. 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;

³² Includes any subcontractor(s) of the contractor.

- 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

219. 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 Ghagra Community Infrastructure Subproject under Output 1. The conclusions and recommendations are the following:

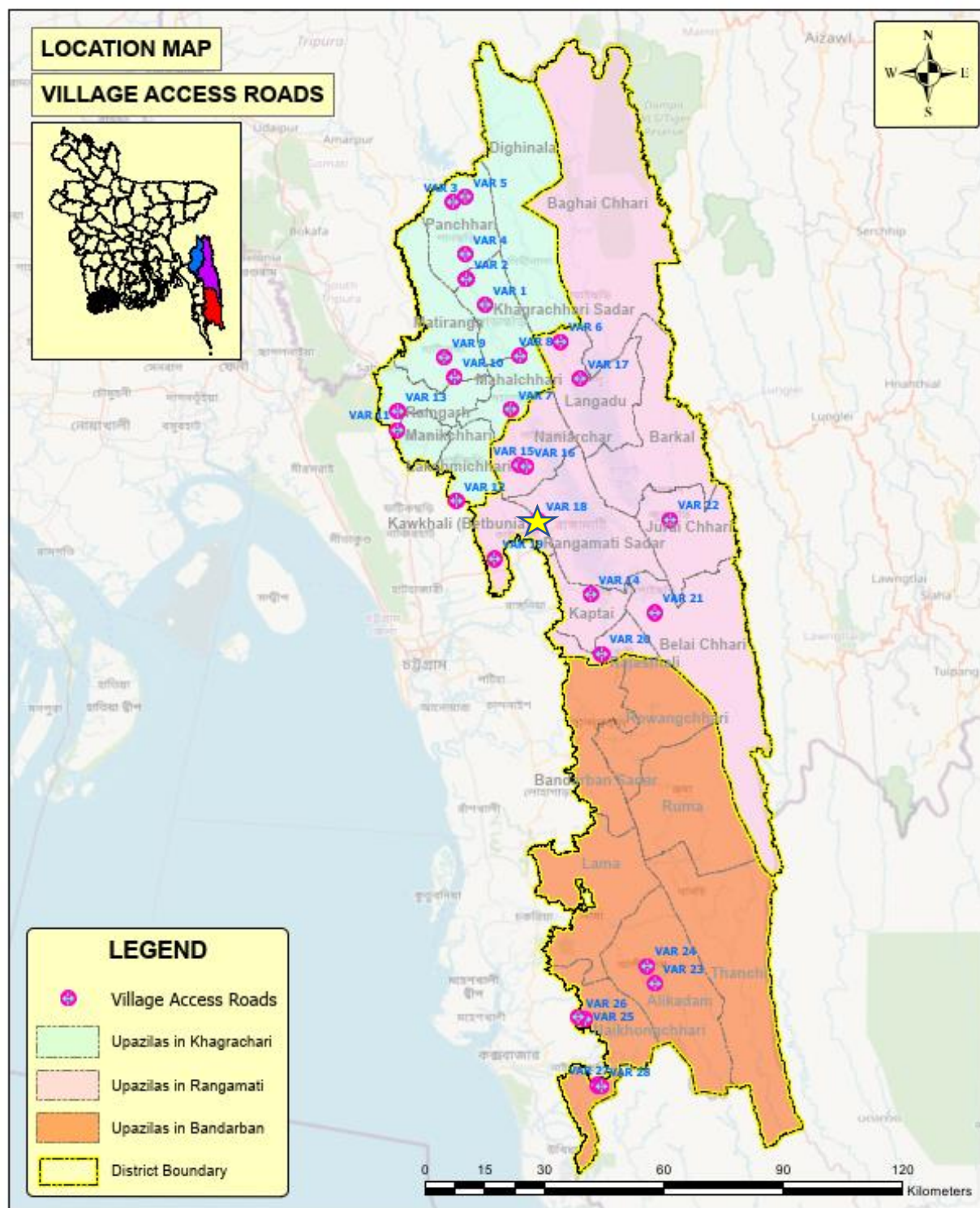
- The IEE for has been prepared in accordance with ADB SPS 2009. This IEE serves as compliance to environmental due diligence requirement of Output 1 for board approval. Further, this IEE serve as sample for upcoming community infrastructure subprojects during project readiness and implementation.
- Different types of interventions will be implemented within the Ghagra Cluster Union covering 673 HHs with a population of 2,959 villagers in 8 paras or villages . The subproject will support infrastructure interventions aimed at improving village access, water supply and sanitation, household renewable energy supply, and agriculture productivity. Interventions are grouped into three categories: (i) VAR – for better access to health services, schools, and markets; (ii) small-scale WASH and renewable energy, and (iii) Agri-infra for procurement of power tillers and lift water pumps.
- 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.
- The EMP is based on conditions of the area and final designs for (i) the VAR at Chelachara-Leba Para and Kojoichari Para, and (ii) WASH that consists of small-sale water supply of ring wells, shallow and deep tube wells, GFS in Chelachara Para, and latrines at household and community buildings, including schools. Agri-infrastructure component would not need and EMP, however, implementing NGO must provide guidance and awareness on the health and safety of users of power tillers and lift water pumps.
- 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. Locational map of VAR of Chelachara-Leba Para to Kojoichari Para (Ghagra Subproject) and other 27 VARs as part of project readiness.



Annex 3. Photographs showing local conditions in Ghagra Union Cluster.



(a)



(b)



(c)

As source of income, few sample crops commonly planted in Ghagra Union Cluster such as (a) variety of banana (*Musa paradisiacum*), (b) Litchi (*Litchi chinensis*) and Elephant Yam (*Amorphophallus konjac*).



(a)



(b)

(a) Livestock grazing, and (b) crop productions within homestead owned by village people.

Annex 4. Attendance in community consultations for Kojoichara VAR. (Photograph resolution of the attendance sheet is intentionally altered to hide personal details that may be used for malicious practices.)

Kojoichara Para VAR CDC
Dhanabon Chakra House
05.02.2021
Chakra
Social mapping and Para Profiling meeting

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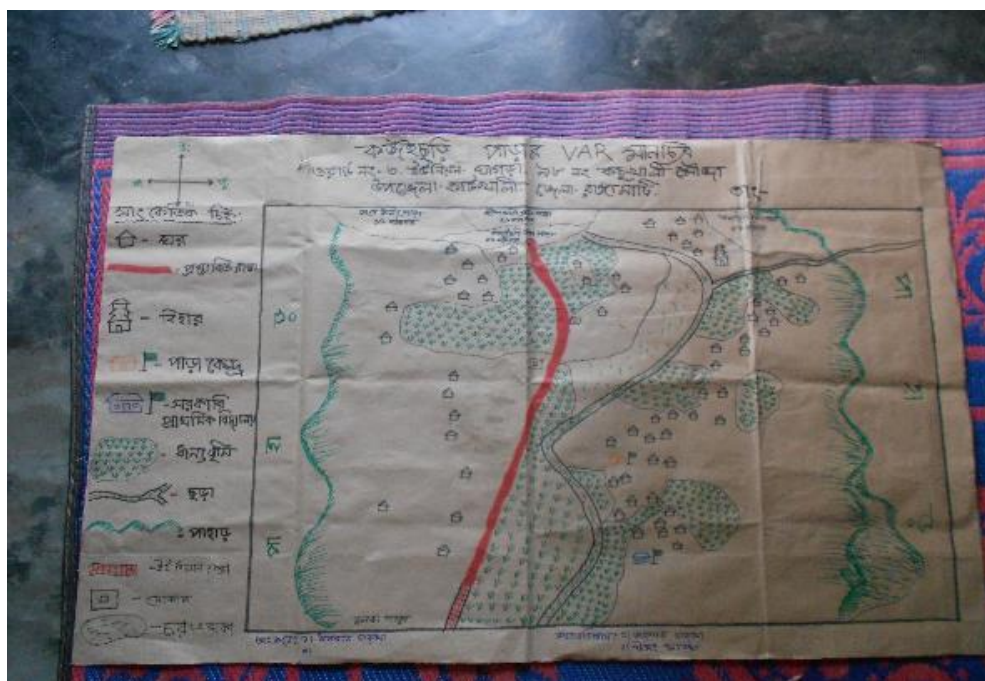
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Annex 5. Minutes of meeting for Village Access Road preparation

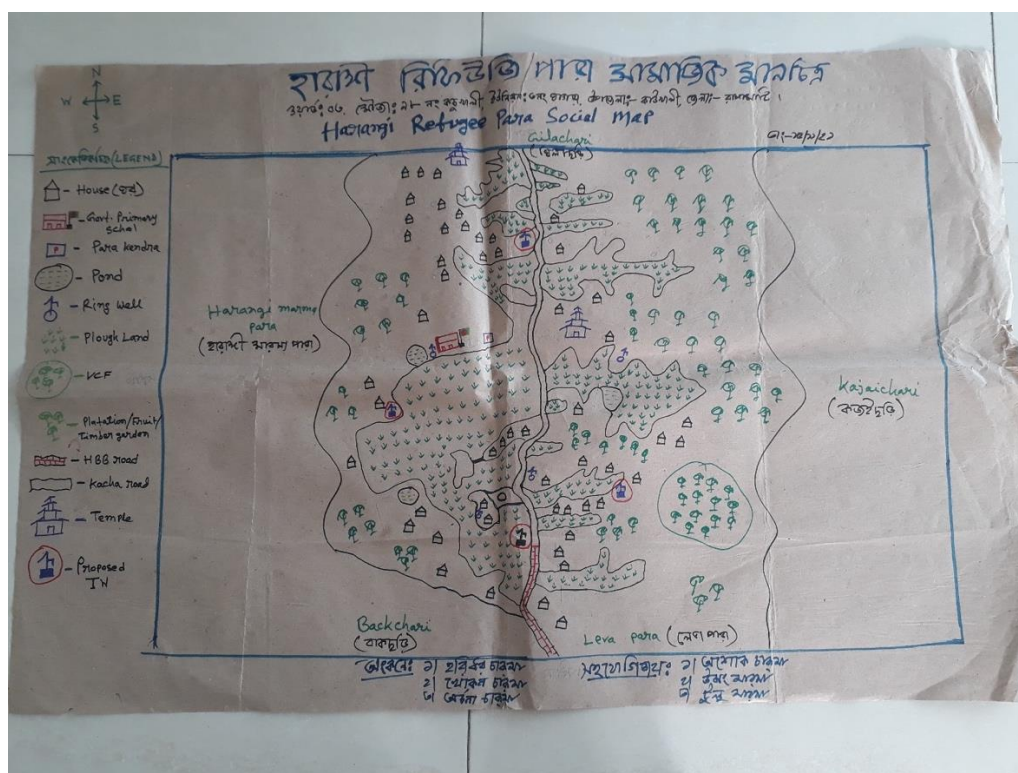
Attended	Agenda and discussion
<p>Consultation meeting held on following dates.</p> <p>1st meeting: 05/10/21 2nd and 3rd meeting held: 06/10/21 4th meeting: 07/10/21</p> <p>The attendance sheets of each consultation meeting are attached.</p>	<ul style="list-style-type: none"> • The facilitation team described the objectives of the meeting: to share safeguard issues like LAR including voluntary land donation, Gender, Environment and IPs. Secondly, to visit existing road alignment jointly (community, local elected representative, traditional leader, social mobilizer team) for taking final technical measurement. Thirdly, to share implementation procedures including use of local unskilled labour and procurement process. Finally, for the project team to to gain a better understanding of socio-economic condition about this area villages. • Regarding need assessment or problem identification, the male group and the female group have been consulted separately to assess their different needs. The male group first stated problem was the existing earthen road. Similarly, the women group also focused on the bad condition of the existing road. After end of two group's problem identification, another combined focus group discussion was held where both male and female group finally decided and prioritized the needs with overwhelming consent for the option of construction of a brick soled (HBB) road as the first priority. • Mr. Among Marma, TRTA social mobilizer, also the team presented safeguard issues. The team shared ADB requirements for any sub project implementation such as at least 30% women in CDC, at least one cheque signing office bearer for bank transaction n and every decision-making process women will get priority. Communities expressed that they are agreed with the process and CDC will be the responsible authority to ensure these requirements are complied with. • The facilitation team then also announced that if there were any complaints or objection or claim regarding the proposed road alignment people should come forward without hesitation. Communities stated that the proposed road is their 1st priority to improve their livelihood. They have no objection to construction of the village access road. They are ready to provide voluntary land donation. However, all the lands on which the present road is going are untitled customary land. Finally, all decided that the CDC and land donor will make an agreement on voluntary land agreement. • Regarding environmental issues, the community said there is an existing road alignment already. He environmental effect of road improvement will be negligible to nil. However, during the construction CDC, the project institutions and ADB will monitor closely.

	<ul style="list-style-type: none"> • Women participants shared road improvement is very important for them for accessing health services (hospital, clinic), children can go to school and college safely, and households can more easily sell their agriculture production on time and goods & products can be transported to the market. • Finally, they agreed to comply with Project as well as ADB requirements and will provide necessary support to implement the subproject activities for the greater good of this area's people. <ul style="list-style-type: none"> - M. Priya Chakma said that, "The school – going students of the village have a hard time during the monsoon season. The school uniform was ruined when slipped road. Many were even injured when they fell." - Mrs. Kalabi Chakma said, "Two or three years ago, in the rainy season, he fell on a slippery road and broke his right arm. Still can't get use that hand. So everyone will benefited if the road is build."
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Annex 6. Village resource mapping



Map prepared with communities of Kojichara Village Access Road



Social map prepared with community of Harangi Refugee para

PUBLIC. This information is being disclosed to the public in accordance with ADB's Access to Information Policy.

Annex 7. Photographs taken during village consultation meeting in Ghagra Union



Community consultation meeting Kojoichari Para in 16 - 17 November 2021



Community consultation meeting in Rajkhali Para on 21 - 22 November 2021





Community consultation meeting in Noa Para on 20 - 21 November 2021



Community consultation meeting Bakchari Para 19 - 20 November 2021



Community consultation meeting at Badalchari Para 18 - 19 November 2021



Community consultation meeting Leba Para 17 - 18 November 2021



Community consultation meeting Harangi Refugee para, 15 - 16 November 2021

Annex 8. Attendance sheets for Gaghra Union WASH and Agri-Infra consultation (Photograph resolution is intentionally altered to hide details that may be used on malicious practices.)

Kojoichara Para

The image displays four handwritten attendance sheets for Kojoichara Para, Gaghra Union. Each sheet is titled with the location and date of the meeting. The sheets are arranged in a 2x2 grid. The top-left sheet is dated 6/2022, the top-right is dated 16/2022, the bottom-left is dated 7/2022, and the bottom-right is dated 7/2022. Each sheet lists names in Bengali and marks attendance with checkmarks and purple ink marks. The sheets are titled 'Kojochara Para', 'Gaghra Union', and 'Village mapping and Para Profile meeting'.

Top-Left Sheet (6/2022):

Kojochara Para
Gaghra Union
Village mapping and Para Profile meeting
6/2022

Top-Right Sheet (16/2022):

Kojochara Para
Gaghra Union
Village mapping and Para Profile meeting
16/2022

Bottom-Left Sheet (7/2022):

Kojochara Para
Gaghra Union
Village mapping and Para Profile meeting
7/2022

Bottom-Right Sheet (7/2022):

Kojochara Para
Gaghra Union
Village mapping and Para Profile meeting
7/2022

Harangi Refugee Para

Harangi Refugee Para
Harangi Refugee Para Buddhalu Bhor 5 2 21
Changra Kankhalu
Village mapping and Para profiling meeting

Sl. No.	Name	Age	Sex	Religion	Marital Status	Education	Occupation	Remarks
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Harangi Refugee Para
Harangi Refugee Para Buddhalu Bhor 5 2 21
Changra Kankhalu
Village mapping and Para profiling meeting

Sl. No.	Name	Age	Sex	Religion	Marital Status	Education	Occupation	Remarks
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Harangi Refugee Para
Harangi Refugee Para Buddhalu Bhor 6 2 21
Changra Kankhalu
Buddhalu Identification and Report Submission meeting

Sl. No.	Name	Age	Sex	Religion	Marital Status	Education	Occupation	Remarks
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Harangi Refugee Para
Harangi Refugee Para Buddhalu Bhor 6 2 21
Changra Kankhalu
Buddhalu Identification and Report Submission meeting

Sl. No.	Name	Age	Sex	Religion	Marital Status	Education	Occupation	Remarks
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Leva Para

Leva Para
More Dhor Chakra House 7 2 2
Chakra Kacikhal
V Hage mapping and team briefing meeting

Sl. No.	Item	Done	Remarks
1	1. V Hage mapping	✓	
2	2. Team briefing	✓	
3	3. V Hage mapping	✓	
4	4. Team briefing	✓	
5	5. V Hage mapping	✓	
6	6. Team briefing	✓	
7	7. V Hage mapping	✓	
8	8. Team briefing	✓	
9	9. V Hage mapping	✓	
10	10. Team briefing	✓	
11	11. V Hage mapping	✓	
12	12. Team briefing	✓	
13	13. V Hage mapping	✓	
14	14. Team briefing	✓	
15	15. V Hage mapping	✓	
16	16. Team briefing	✓	
17	17. V Hage mapping	✓	
18	18. Team briefing	✓	
19	19. V Hage mapping	✓	
20	20. Team briefing	✓	

Leva Para
More Dhor Chakra House 7 2 2
Chakra Kacikhal
V Hage mapping and team briefing meeting

Sl. No.	Item	Done	Remarks
1	1. V Hage mapping	✓	
2	2. Team briefing	✓	
3	3. V Hage mapping	✓	
4	4. Team briefing	✓	
5	5. V Hage mapping	✓	
6	6. Team briefing	✓	
7	7. V Hage mapping	✓	
8	8. Team briefing	✓	
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10	10. Team briefing	✓	
11	11. V Hage mapping	✓	
12	12. Team briefing	✓	
13	13. V Hage mapping	✓	
14	14. Team briefing	✓	
15	15. V Hage mapping	✓	
16	16. Team briefing	✓	
17	17. V Hage mapping	✓	
18	18. Team briefing	✓	
19	19. V Hage mapping	✓	
20	20. Team briefing	✓	

Leva Para
More Dhor Chakra House 6 2 2
Chakra Kacikhal
Production Identification and Final selection meeting

Sl. No.	Item	Done	Remarks
1	1. Production Identification	✓	
2	2. Final selection	✓	
3	3. Production Identification	✓	
4	4. Final selection	✓	
5	5. Production Identification	✓	
6	6. Final selection	✓	
7	7. Production Identification	✓	
8	8. Final selection	✓	
9	9. Production Identification	✓	
10	10. Final selection	✓	
11	11. Production Identification	✓	
12	12. Final selection	✓	
13	13. Production Identification	✓	
14	14. Final selection	✓	
15	15. Production Identification	✓	
16	16. Final selection	✓	
17	17. Production Identification	✓	
18	18. Final selection	✓	
19	19. Production Identification	✓	
20	20. Final selection	✓	

Badalchari Pura
 Sarma Kanti Chandra Home
 Chagra
 Kankhadi
 Provision Identification and Project selection meeting

Sl. No.	Name of the Beneficiary	Gender	Age	Marital Status	Education	Occupation	Income Source	Assets	Remarks
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Badalchari Pura
 Sarma Kanti Chandra Home
 Chagra
 Kankhadi
 Provision Identification and Project selection meeting

Sl. No.	Name of the Beneficiary	Gender	Age	Marital Status	Education	Occupation	Income Source	Assets	Remarks
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Bakchari Para

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 Sakchura Pora Dudd Sah... 9 200
 Chingra
 Kankash
 V Hage mapping and Pora Profing meeting

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1. Sakchura Pora	✓		
2. Sakchura Pora	✓		
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19. Sakchura Pora	✓		
20. Sakchura Pora	✓		

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Rudhira Mahatya and						M. S. S. S.	
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- Bachman Para
 - Bachman Paddles/boiler
 - Ghagha Kestrel
 - Padian Inda Yfo - or Project solution meeting

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- Inda Yfo or Project solution meeting

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Rajya Kanti Chakra 20 2 2

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Rajkhali Para

Rajkhali Para
Rajkhali Para Buddhabahar
Aghara
Kamkhali
Village rapping and P. Panchayat meeting

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Rajkhali Para
Rajkhali Para Buddhabahar
Aghara
Kamkhali
Village rapping and P. Panchayat meeting

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Rajkhali Para
Rajkhali Para Buddhabahar
Aghara
Kamkhali
Problems Identification and Report submission meeting

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Rajkhali Para
Rajkhali Para Buddhabahar
Aghara
Kamkhali
Problems Identification and Report submission meeting

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Annex 10. 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 11. 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 ক্রিকোয়েন্সি (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 12. 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 13. 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=1gM8OwM4d7Y3ZEXclIM07wRorVwAetrhD>



- 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=1Jb173nC8Q_HwtrTfqCdT5UaE8rzYAgL1



- 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.

References

- CDC - "Use of Cloth Face Coverings": <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/diy-cloth-face-coverings.html>
- CwC WG CXB - "Strategy, Key Messages and IEC Materials for COVID-19" (host and Rohingya communities): <https://drive.google.com/open?id=1Wjng-27m9QB5qZo9OKDdcdIAQoltkdl>
- Health Sector CXB – "Infection Prevention and Control measures at non-medical workplaces to minimize the spread of the COVID-19 Recommendations to all humanitarian partner organizations in Cox's Bazar Rohingya Response": <https://drive.google.com/open?id=1u8CtLmEm7YN0WN9KM-ij4XcpjBMZISy>
- WaSH Sector CXB – "Technical guidance on disinfection procedures for COVID-19 response (non-health settings) - v. 02": <https://drive.google.com/open?id=1gM8OwM4d7Y3ZEXcJiM07wRorVwAetrh>
- WHO Bangladesh – "Guidance on wearing homemade cloth masks": https://drive.google.com/open?id=1Jbl73nC8Q_HwtrTfqCdT5UaE8rzYAgLI
- WHO - "Coronavirus disease (COVID-19) advice for the public: When and how to use masks": <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public/when-and-how-to-use-masks>
- WHO – "Rational use of personal protective equipment for coronavirus disease 2019 (COVID-19)": https://drive.google.com/open?id=1W6_4fT5FhgFwsjAPZRhouVx8Mlv0Z9cC