

Environmental Assessment and Review Framework

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Bhutan: Green and Resilient Affordable Housing Sector Project

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CURRENCY EQUIVALENTS

(as of 20 August 2021)

Currency unit	–	Bhutanese Ngultrum (Nu)
Nu1.00	=	\$0.01
\$1.00	=	Nu74.43

ABBREVIATIONS

ADB	-	Asian Development Bank
EIA	-	environmental impact assessment
EMP	-	environmental management plan
FNCA	-	Forest and Nature Conservation Act
GRM	-	grievance redress mechanism
IEE	-	initial environmental examination
OHS	-	occupational health and safety
NEC	-	National Environmental Commission
NEPA	-	National Environment Protection Act
NHDCL	-	National Housing Development Corporation Limited
O&M	-	operation and maintenance
PIAC	-	project implementation assistance consultant
PIU	-	project implementation unit
PMU	-	project management unit
PPE	-	personal protective equipment
REA	-	rapid environmental assessment
RGOB	-	Royal Government of Bhutan
SPS	-	safeguard policy statement
TOR	-	terms of reference

NOTE

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

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I. INTRODUCTION

A. Background

1. The Green and Resilient Affordable Housing Sector Project (GRAHSP) will assist the Royal Government of Bhutan (RGOB) establish infrastructures (i.e., shelters and recycled waste livelihood facilities) and provide services [i.e., business development, child care centers (crèches), integrated services for survivors of gender based violence (GBV)] for vulnerable women (victims/survivors of violence, poor working mothers caring for children and marginalized informal sector workers) in Thimphu and Phuentsholing municipalities (*thromde*) while also adopting climate adaptation and disaster risk reduction in housing projects. The Project is in line with ADB's Strategy 2030, the Country Partnership Strategy (2019-2023) and the 12th Five-Year Plan's national key result area (NKRA) of gender equality and sustainable human settlements. NKRA aims to remove barriers (including GBV) that limit the opportunities and potentials of women and girls by creating enabling policies and providing adequate support services.¹ The Project is also aligned with the Disaster Management Act (2013) and supports a systematic approach to disaster risk management.

2. Bhutan is located in the eastern Himalayas, where the Indian and Eurasian plates collide makes the country highly exposed to seismic risk. The two earthquakes of 2009 and 2011 with magnitudes 6.1 and 6.9 respectively had severe impacts across the country, resulting in losses of US\$52 million and US\$24.46 million. Houses, public buildings, critical infrastructure and cultural heritage structures were damaged. Recent research shows that after its last major earthquake of M7.5-8.5 in 1714, Bhutan could experience an earthquake of magnitude over M8 with shallow hypocenter depths ranging from 10-15 km.²

3. Landslides are prominent and devastating natural disasters in Bhutan, and can cause significant loss of lives, damage to infrastructure, and loss of agricultural land. A study of a global database of landslide occurrences between 2004–2016³ showed that 75% of landslides occurred in Asia, with significant occurrences in the Himalayan arc. The study also showed that the majority of landslides are shallow, are triggered by rainfall and that their incidence is likely to increase in the future due to a growing population, increased construction activities, and exploitation of natural resources.⁴ Given the abovementioned challenges, it is crucial to integrate innovative approaches to enhance resilience to geophysical events and extreme weather events in housing projects.

4. The proposed Green and Resilient Affordable Housing Sector Project will (a) serve as a strategic entry point towards transforming the current urban planning framework in Bhutan, within the broader context of livable cities aimed at achieving social development objectives, including SDG5. (b) demonstrate and institutionalize technology application in construction as a means to achieve sustainability and disaster-resilient human settlements; and (c) show that partnership between RGOB, municipalities, private land developers, and corporations is a key to development of a comprehensive and sustainable housing program.

¹ Gross National Happiness Commission. 2019. Twelfth Five-Year plan. 2018-2023. Thimphu.

² World Bank Project Report: Improving Resilience to Seismic Risk (P144054) - December 3, 2018

³ Global fatal landslide occurrence from 2004 to 2016 – Research Study by Melanie J. Froude and David N. Petley, Department of Geography, University of Sheffield, Sheffield, S10 2TN, UK.

⁴ Probabilities are determined considering rainfall and landslide data over a time period. Singular (rainfall intensity, rainfall duration and event rainfall) along with a combination (rainfall intensity and rainfall duration) of precipitation parameters are considered to determine the probabilities for landslide events.

B. Purpose of the Environmental Assessment and Review Framework

5. This EARF sets guidance on environmental safeguard screening, environmental assessment, institutional arrangements, consultations, information disclosure, reporting and other processes to be followed for the future subproject and/or components, where final detailed design will take place after ADB Board approval of the loan. Selection of these future subprojects and/or components will be in accordance with the environmental project selection criteria as outlined in this EARF. The government agrees with ADB on the guidance provided in this EARF to ensure compliance with the requirements specified in ADB SPS and relevant government laws, rules and regulations.

6. In particular, this EARF:

- (i) provides the overall description of the project, and its subprojects and components;
- (ii) explains the general anticipated environmental impacts of the subprojects and components to be financed under the project;
- (iii) specifies the requirements that will be followed in relation to future screening and categorization, assessment, and planning, including arrangements for meaningful consultation with affected people and other stakeholders and information disclosure requirements and, where applicable, safeguard criteria that are to be used in selecting the sites;
- (iv) assesses the adequacy of capacity of National Housing Development Corporation Limited (NHDCL), as the executing/implementing agency, to comply with ADB SPS environmental requirements and applicable national and international laws, and identify needs for capacity building;
- (v) specifies implementation procedures, including budgeting, institutional arrangements, and capacity development;
- (vi) specifies monitoring and reporting requirements; and
- (vii) describes the responsibilities of NHDCL, PMU and its consultants, and ADB in relation to the preparation, implementation, and progress review of safeguard documents of subprojects.

II. THE PROJECT AND ITS SUBPROJECTS AND/OR COMPONENTS

7. Improved livability, safety, and sustainability of human settlements through access to adequate affordable housing is a national priority of the Royal Government of Bhutan.⁵ The project will help the government in fulfilling this priority by delivering affordable housing in selected subproject locations in Bhutan. The project will also help strengthen policies, institutions, and regulatory framework of the housing sector in Bhutan.

8. The project is aligned with the following impact: livability, safety, and sustainability of human settlements ensured (footnote 1). The project will have the following outcome: access to green and resilient affordable housing for low-income households improved.

9. **Output 1. Climate- and disaster-resilient, energy-efficient, and affordable housing units and public facilities for low-income households constructed.**⁶ Output 1 will support the NHDCL in building about 1,000 rental units, three integrated community service centers, and two

⁵ Government of Bhutan, Gross National Happiness Commission. 2019. [Twelfth Five-Year Plan, 2018–2023: Just, Harmonious and Sustainable Society through Enhanced Decentralization](#). Thimphu. Affordable housing is defined as the ability for households to meet housing costs within 30% of gross monthly income.

⁶ Resilient housing design incorporates climate change and disaster risk-reduction measures to avoid, minimize, and/or recover from a disaster in a timely and efficient manner.

recycled waste stations connected to services, in support of SDG 1. The government selected high-priority investments as subprojects.⁷ The increase in the supply of affordable rental housing is expected to immediately relieve the housing shortage and benefit lower-income civil servants (about 10%) and non-civil servants (about 90%), including marginalized municipal waste workers. The NHDCL will select beneficiaries most in need by applying a beneficiary eligibility and selection criteria, with gender equality considered as part of the eligibility criteria as defined in the project administration manual (PAM). The building designs incorporate gender-inclusive features; enhanced safety against earthquake and fire hazards; and resource efficiency, making greater use of locally available materials.⁸ The building structures will employ reinforced-concrete frames and innovative pre-engineered structures. The project design has identified and incorporated climate and disaster resilience features, considering multiple hazards. The project will support green building certification through the International Finance Corporation’s Excellence in Design for Greater Efficiencies (EDGE).⁹ The housing designs reflect local cultural heritage values and traditional architecture.¹⁰ Additional subprojects will be selected during project implementation in line with the NHP using the eligibility criteria set out in the PAM.

10. Output 2. Institutional capacities, policy, and regulatory framework of the housing sector strengthened. This output will (i) strengthen the NHDCL’s housing design, construction, and management capacity—informed by climate and disaster risks and affordability considerations; (ii) review the building code and regulations; (iii) develop climate- and disaster-resilient building designs and related solutions to improve safety, resource efficiency, and gender and disability inclusiveness; (iv) conduct awareness training and a capacity building program for key project stakeholders on climate- and disaster-resilient design and the building code; (v) enhance the NHDCL’s business model, strengthening its O&M capacity, and developing partnerships with the private sector; (vi) strengthen the housing management information system of the MOWHS by expanding it to include tenancy data and better understand and prepare evidence-informed policy updates to address demand and supply-side bottlenecks in the sector; (vii) develop a gender and socially inclusive national homeownership strategy, including a rent-to-own mechanism; and (viii) provide project implementation support, including supervision, and set up a safeguard unit in the NHDCL.

11. Due to the large demand of housing units in the country, NHDCL plans to carry out the construction in a phased manner with the project considered as “Phase 1” comprising of about 1,026 – 1,062 housing units spread over 9 subprojects in six dzongkhags (districts) and sub-districts. These are prioritized in terms of pressing demand and availability of land and funds. Table 1 below shows a summary of the subprojects. Based on experiences under the project, subsequent phases may be planned by the government in the future.

Table 1: Proposed Subprojects

	Location	District	Area (Acres)	Typology	Housing blocks	No. of Units	Service Centers
1	Tading	Samtse	9.00	G+2	37/34	444/408	
2	Amochu (Bangay)	Phuentsholing	0.98	G+5	5	120	

⁷ Priority subprojects are located in Nganglam; Phuentsholing (Amochu, Rinchening and Drungpa’s Residence); Samtse (Tading); Samdrup Jongkhar (Dradulthang and Toed); Thimphu (Semtoka); and Trashiyangtse.

⁸ The gender-inclusive considerations include a preference for households headed by women and tenancy agreements signed by both spouses. In addition, the service centers will include childcare facilities, shelter for women, and offers employment opportunities. The green features include insulated walls, improved windows, use of timber and stone, water-efficient faucets.

⁹ [EDGE](#).

¹⁰ Government of Bhutan, MOWHS. 2014. [Bhutanese Architectural Guidelines](#). Thimphu.

3	Rinchending	Phuentsholing	5	G+2	18	108	Yes
4	Drungpa Residence Area	Phuentsholing	0.85	G+5	4	96	
5	Dradulthang	Samdrup Jongkhar	0.8	G+3	4	32	
6	Samdrup Jongkhar Toed	Samdrup Jongkhar	2	G+3	11	88	Yes
7	Nganglam	Pema Gatshel	2.82	G+1	8	32	
8	Semtokha	Thimphu	1.93	G+4	8	110	Yes
9	Trashiyangtse	Trashiyangtse	2.48	G+1	8	32	
			25.86		103/100	1,062/1,026	

A. Key Exclusion and Environmental Criteria for Subprojects

12. Subproject will be selected based on key exclusion and specific environment safeguards criteria. Any subproject which does not fully meet the key exclusion and specific environmental safeguards criteria listed below may be rejected.

Table 3 summarizes the key exclusion criteria while Table 4 summarizes the specific environmental safeguards criteria.

Table 2: Key Exclusion Criteria

Exclusion criteria includes but is not limited to:	Remarks
(i) Category A subprojects per ADB SPS. Triggers include impacts that are considered diverse, irreversible and unprecedented, and/or subprojects being highly complex and sensitive. ¹¹	<ul style="list-style-type: none"> For future subprojects, efforts shall be exerted by the government to consider only those that do not trigger environmental or involuntary resettlement category A per ADB SPS. In unavoidable circumstances that a future subproject is deemed as environment or involuntary resettlement category A, a major change in scope of the entire project shall be proposed for ADB approval.¹² Bidding and awarding of contracts for such subproject shall not proceed without ADB approval of the proposed major change in scope.
(ii) Activities listed in ADB's Prohibited Investment Activities List (Appendix 5 of ADB SPS). These activities do not qualify for ADB's financing. See Appendix 1 hereof for complete list.	
(iii) Involves components, processes and technologies that pose significant threat to public health and the environment, such as incinerators, etc.	

¹¹ Projects that ADB deems as highly risky or contentious or involve serious and multidimensional and generally interrelated potential social and/or environmental impacts.

¹² In a proposed major change in scope due to stricter environmental categorization of a proposed subproject than the approved environmental categorization, ADB Safeguard Policy Statement (SPS), 2009 requires the following: (i) conduct of new environmental impact assessment and prepare an environmental impact assessment (EIA) report; (ii) submit EIA report to ADB for review, which will include a peer-review among relevant departments within ADB; and (iii) disclose on ADB website the new EIA report 120 days prior to the approval by ADB of the proposed major change in scope for the project.

Exclusion criteria includes but is not limited to:	Remarks
(iv) Involves work within or near environmentally sensitive locations (must be at minimum distance of 500m), including sites with national or international designation for nature conservation, cultural heritage, or any other purposes. ¹³	
(v) Results in destruction of or encroachment onto physical cultural resources such as archaeological monuments; heritage sites; and movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance.	
(vi) Leads to degradation of cultural properties, and loss of cultural heritage values and tourism revenues.	
(vii) Located in flood zones and/or adjacent to natural water courses (must not be within 30 meters from the edge of major streams, and or within 15 meters from the edge of small streams).	
(viii) Leads to alteration of surface water hydrology of streams/waterways through diversion of flow or reclamation.	
(ix) Located in areas that can cause adverse impact on human health, such as but not limited to the following: <ul style="list-style-type: none"> - municipal solid waste dumps (must be at least 1 km away), - STPs (must be at least 500 m away), - industrial area with polluting industries (must be at least 500 m away or at a distance wherein pollutants will not affect the ambient air quality at the site, whichever is more strict), - high-tension cables (distance must be in compliance with the guidelines of the Bhutan Power Corporation and/or Bhutan Electricity Authority to avoid long term exposure to high electromagnetic fields (EMF)). 	<p>These distances shall be minimum where possible. This restriction may be reviewed depending on site availability and stakeholder consultation, and provision of design measures to ensure impacts of these areas to the housing site is avoided.</p> <p>The distance from high tension cable should ensure that the EMF is reduced to safe exposure level.¹⁴</p>
(x) Leads to significant involuntary resettlement impacts. ¹⁵	

¹³ If in the future corresponding development control regulations similar to Thimphu's DCR-2016 is promulgated in future subproject areas, the subprojects shall comply with these local regulations particularly on sanctions pertaining to allowed locations for housing developments.

¹⁴ US EPA: Questions and Answers About Electric and Magnetic Fields (EMFs).

¹⁵ The involuntary resettlement impacts of an ADB-supported project are considered significant if 200 or more persons will experience major impacts, which are defined as (i) being physically displaced from housing, or (ii) losing 10% or more of their productive assets (income generating). The level of detail and comprehensiveness of the resettlement plan are commensurate with the significance of the potential impacts and risks (OM/F1, para 9).

Table 3: Environmental Safeguards Criteria for Housing Development Subprojects

Component	Criteria	Remarks
All proposed housing subprojects / housing complex including all ancillary facilities	Complies with all requirements of relevant national, state and local laws, rules and regulations.	See Section IV of this EARF.
	Complies with all requirements of ADB SPS, 2009 and follow procedures set out in the EARF.	See Section IV of this EARF.
	Complies with all requirements of ADB SPS, 2009 and follow procedures set out in the RF.	See Chapter IV of Resettlement Framework
	The area shall have sufficient space for all allied infrastructures. If there is no centralized septage management in the town, the area shall have sufficient space for septic tanks/chambers designed to accommodate target number of occupants.	
	Avoid areas with risk of landslides, unstable lands, etc. based on historical data, including geotechnical studies, if possible.	Where there are unavoidable cases due to nature of terrains in Bhutan, geotechnical measures to avoid or minimize these risks should be integrated into the design.
	Avoids removal of trees where possible.	When mature trees must be removed, new trees must be planted following the compensatory replacement required by the government.
	Areas that are included in territorial jurisdiction of the target municipality/town/city, compliant with land use regulations, and any urban development plans or master plans of the national or local government.	Subprojects located in areas not covered by any urban development plan or master plans will require further due diligence if it meets the key exclusion criteria and subscribes to the environmental guidelines for subproject selection.
	Areas where access to basic services can be practically built or established. These basic services include water supply, sewerage system, electricity, telecommunication, sanitation/solid waste management, etc.	
	If areas are outside the periphery of urban centers, these areas should be accessible via public transport and/or have road infrastructures leading to civic centers, markets, institutions such as hospitals, schools, etc.	
Shall not adversely affect the existing community resources/facilities, such as roads, sanitation services, water supply, solid waste management, power supply, parking spaces, etc.		

Component	Criteria	Remarks
	<p>Project design shall ensure that the subproject will not lead to depletion of water supply and degradation of groundwater and surface water in the area. The following should be considered:</p> <ul style="list-style-type: none"> - Conservation measures integrated into the design. - Water supply is sufficient during the operation phase. Liaising with water supply provider should be part of the consultation and assessment; - Not to overburden the sewerage system and other infrastructures in the area. 	<p>During operation phase, more consumption of water supply in the area is expected. However, the level of consumption should not lead to depletion or unsustainable reduction of water supply.</p>
	<p>Avoids significant involuntary resettlement impacts</p>	<p>The involuntary resettlement impacts of an ADB-supported project are considered significant if 200 or more persons will experience major impacts, which are defined as (i) being physically displaced from housing, or (ii) losing 10% or more of their productive assets (income generating). The level of detail and comprehensiveness of the resettlement plan are commensurate with the significance of the potential impacts and risks (OM/F1, para 9).</p>

ADB = Asian Development Bank, EARF = environmental assessment and review framework, SPS = safeguard policy statement

III. GENERAL ANTICIPATED ENVIRONMENTAL IMPACTS

13. The housing development project is not likely to have significant adverse environmental impacts that are irreversible, diverse or unprecedented. Potential impacts are unlikely to affect areas far beyond the sites or facilities subject to physical works. These impacts are site-specific and local in nature, and few, if any of them, are irreversible. Planning principles, selection criteria, and design considerations will be reviewed and incorporated into the site planning and design process wherever possible; thus, environmental impacts as being due to the project design or location will not be significant. For any potential significant impacts during the construction phase (e.g., dust, noise, vibration, water pollution, etc.), mitigation measures will be developed to reduce all negative impacts to acceptable levels. In most cases, mitigation measures can be designed with uncomplicated measures commonly used at construction sites and known to civil works contractors. Potential environmental impacts during operation phase (or period when these housing facilities are already occupied), particularly with regard to water pollution and solid waste disposal, are avoided through inclusion in the design of sub-facilities that will handle these impacts.

14. More evident impacts for housing development projects are expected during construction phase when mobilization by contractors and execution of civil works take place. While considered as smaller civil works relative to other infrastructure projects, the nature of these works will still generate impacts, issues and concerns prior to construction, during construction and during operation phase when the housing facilities are already in use by intended occupants.

15. Table 4 below outlines some of the potential impacts, issues, and concerns from planning, construction and operation of housing projects. Other impacts may be identified during the implementation phase, and the lists in the table are only indicative. Therefore, the future environmental assessment and corresponding assessment reports shall consider and reflect those newly identified impacts.

Table 4: Potential Environmental Impacts, Issues, and Concerns Related to Housing Development Projects
(No Mitigation Measures Scenario)

Design	Construction	Operation and Maintenance
(i) Impact of climate change such as extended heavy precipitation could trigger flooding of housing complexes or units.	(i) Interference with other utilities and blocking of access to residential establishments and/or other community facilities.	(i) Risks and vulnerabilities related to community health and safety due to improper maintenance of the housing facilities.
(ii) Potential loss of trees within and around areas of proposed sites.	(ii) Dislocation or involuntary resettlement of people.	(ii) Discharge of untreated household wastewater into drains and/or receiving bodies of water.
(iii) Potential loss of other types of vegetations at proposed sites due to surveying activities and site clearance prior to construction activities, including pre-construction investigations (boreholes, soil testing, etc.).	(iii) Disproportionate impacts on the poor, women and children, or other vulnerable groups in the communities.	(iii) Contamination of ground waters due to lack of maintenance of septic tanks.
(iv) Conflict on land use associated with the development of the housing project.	(iv) Noise and vibration due to vehicle mobilization and maneuvering, and execution of other civil works.	(iv) Impact on daily traffic.
(v) Selection and sourcing of raw materials for construction. Extraction of raw materials needed for construction could impact the environment at the source. For example, sources of gravel and sand sourced from quarrying activities along river banks, etc.	(v) Dust due to excavation, other civil works, and vehicle mobilization and maneuvering.	(v) Positive impacts - improved housing amenities, utilities and sanitation conditions which will enhance people's well-being.
(vi) Damage to existing infrastructures such as underground and other community utilities.	(vi) Air pollution due to emissions from construction vehicles and heavy equipment.	
(vii) Disproportionate impacts on the poor, women and	(vii) Risks and vulnerabilities related to occupational health and safety due to physical, chemical, and biological hazards.	
	(viii) Potential infection of workers and community people from emerging infectious diseases, including COVID-19.	
	(ix) Road blocking and temporary flooding due to land excavation during the rainy season.	

Design	Construction	Operation and Maintenance
<p>children, or other vulnerable groups in the communities.</p> <p>(viii) Environmental pollution (surface water, groundwater, soil, land, odor, noise, etc.) due to inadequate facilities in the housing project design.</p>	<p>(x) Disturbance to pedestrian traffic due to transport of construction materials and wastes, and road closures or re-routing due to construction works.</p> <p>(xi) Temporary silt runoff.</p> <p>(xii) Population increase that causes increased burden on social infrastructure (such as sanitation system) in the area.</p> <p>(xiii) Social conflicts between construction workers from other areas and community workers.</p> <p>(xiv) Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals.</p> <p>(xv) Community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community.</p> <p>(xvi) Clearance of existing land, vegetation or structures.</p> <p>(xvii) Use of resources (materials, water, energy, etc.).</p> <p>(xviii) Changes in occurrence of disease or affect disease vectors (e.g. insect or water-borne disease) due to worker's camp.</p> <p>(xix) Solid wastes such as spoils, overburden, etc.</p> <p>(xx) Solid wastes from workers' camps.</p> <p>(xxi) Emission from burning of waste in open air (e.g. worker's camp, slash materials, construction debris).</p> <p>(xxii) Impact to biodiversity.</p> <p>(xxiii) Pollution of river systems or receiving bodies of water.</p>	

Design	Construction	Operation and Maintenance
	(xxiv) Impact on physical cultural resources and other material assets such as archaeology. (xxv) Destruction of national parks, protected areas, buffer zones of protected areas, biological corridors, and landscape aesthetics. (xxvi) Increased traffic in the area. (xxvii) Impact of flooding.	

IV. ASSESSMENT OF LEGAL FRAMEWORK AND INSTITUTIONAL CAPACITY

16. ADB will not finance any project if it does not comply with ADB SPS, 2009 nor will it finance any project if it does not comply with its host country's environmental and social safeguard laws. Where discrepancy between ADB and Government of Bhutan policies exist, the stricter policy will prevail. Moreover, ADB SPS, 2009 applies to all ADB-financed and/or ADB-administered sovereign projects, and their components regardless of the source of financing, including investment projects funded by a loan; and/or a grant; and/or other means.

A. ADB Safeguard Policy Statement

17. ADB SPS, 2009 requires borrowers to meet a set of requirements (Safeguards Requirements 1) when delivering environmental safeguards for projects supported by ADB. The objectives are to ensure the environmental soundness and sustainability of projects, and to support the integration of environmental considerations into the project decision-making process. Hence, the project is required to comply with these requirements. Summary of the step-by-step process is discussed below in this section. Detailed discussions are provided in the ADB SPS, 2009.¹⁶

18. **Screening and Categorization.** Every proposed housing infrastructure is to be screened for their expected environmental impacts and are assigned to a specific category . Categorization is to be based on the most environmental sensitive component. Infrastructure component(s) that can trigger Category A or with potentially significant adverse impacts that are diverse, irreversible, or unprecedented cannot be implemented under the project. For all subprojects, NHDCL, through PMU, shall examine alternatives to the infrastructure's location, design, technology, and components that would avoid, and/or minimize adverse environmental impacts and risks. The rationale for selecting the location, design, technology, and components will be properly documented, including, cost-benefit analysis, taking environmental costs and benefits of the various alternatives considered into account. The "no action" alternative will be also considered.

19. **Environmental Assessment.** NHDCL, through PMU, shall undertake environmental assessment that will include description of environmental and social baseline to provide an understanding of current conditions forming the benchmark against which impacts are assessed. Environmental impacts and risks will be analyzed for all relevant stages of the project cycle, including design and planning stage, construction, and operations. If applicable, the assessment will also include analysis for environmental impacts and risks during decommissioning and post-closure activities such as rehabilitation or restoration. For Category B projects or undertaking,

¹⁶ ADB. 2009. [Safeguard Policy Statement](#). Manila.

documentation of environmental assessment is done through an initial environmental examination (IEE) report. The structure and composition of the typical IEE report is provided in Appendix 2.

20. **Environmental Planning and Management.** NHDCL, through PMU, shall prepare environmental management plan (EMP) to be included in the IEE report. The EMP shall describe and address the potential impacts and risks identified by the environmental assessment. The level of detail and complexity of the EMP and the priority of the identified measures and actions will be commensurate with the identified impacts and risks. The EMP shall include the proposed mitigation measures, environmental monitoring and reporting requirements, emergency response procedures, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators.

21. **Public Disclosure.** NHDCL, through PMU, shall submit to ADB for disclosure on ADB website the following reports so affected people, other stakeholders, and the public can provide meaningful inputs into the project's design and implementation:¹⁷

- (i) final IEE upon receipt;
- (ii) a new or updated IEE and corrective action plan prepared during implementation, if any; and
- (iii) environmental monitoring reports, including corrective action plan, if any, submitted during implementation upon receipt.

22. **Consultation and Participation.** PMU and the other local implementing units under the project shall carry out meaningful consultation¹⁸ with affected people and other concerned stakeholders, including civil society, and facilitate their informed participation. The consultation process and its results are to be documented and reflected in the environmental assessment report.

23. **Grievance Redress Mechanism.** NHDCL, through PMU, shall utilize the grievance redress mechanism (GRM) discussed in detail in Section VI below. The GRM will aim to receive and facilitate resolution of affected peoples' concerns, complaints, and grievances about the project's environmental performance.

24. **Monitoring and Reporting.** NHDCL, through PMU, shall monitor, measure and document the progress of implementation of the EMP. If necessary, PMU will identify the necessary corrective actions, and reflect them in a corrective action plan that is time-bound, budgeted and agreed between ADB and NHDCL. PMU will prepare and submit to ADB semi-annual environmental monitoring reports that describe progress with implementation of the EMP and compliance issues and corrective actions, if any. Reporting will continue until ADB issues a completion report for the project.

¹⁷ Per ADB SPS, 2009, prior to disclosure on ADB website, ADB reviews the "borrower's/client's social and environmental assessment and plans to ensure that safeguard measures are in place to avoid, wherever possible, and minimize, mitigate, and compensate for adverse social and environmental impacts in compliance with ADB's safeguard policy principles and Safeguard Requirements 1-4."

¹⁸ Per ADB SPS, 2009, meaningful consultation means a process that (i) begins early in the project preparation stage and is carried out on an ongoing basis throughout the project cycle; (ii) provides timely disclosure of relevant and adequate information that is understandable and readily accessible to affected people; (iii) is undertaken in an atmosphere free of intimidation or coercion; (iv) is gender inclusive and responsive, and tailored to the needs of disadvantaged and vulnerable groups; and (v) 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.

25. **Unanticipated Environmental Impacts.** Where unanticipated environmental impacts become apparent during implementation, NHDCL, through PMU, shall update the environmental assessment and EMP or prepare a new environmental assessment and EMP to assess the potential impacts, evaluate the alternatives, and outline mitigation measures and resources to address those impacts.

26. **Pollution Prevention and Control Technologies.** During the design, construction, and operation of the project, NHDCL, through PMU, shall apply pollution prevention and control technologies and practices consistent with international good practice, as reflected in internationally recognized standards such as the World Bank Group's Environmental, Health and Safety Guidelines.¹⁹ These standards contain performance levels and measures that are normally acceptable and applicable to the project infrastructures. When the government's regulations differ from these levels and measures, the project shall achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, NHDCL, through PMU, will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

27. **Occupational Health and Safety.** NHDCL, through the PMU,²⁰ shall ensure that workers²¹ are provided with a safe and healthy working environment, considering risks inherent to the sector and specific classes of hazards in the project work areas, including physical, chemical, biological, and radiological hazards. PMU shall ensure to take steps to prevent accidents, injury, and disease arising from, associated with, or occurring during the course of work by (i) identifying and minimizing, so far as reasonably practicable, the causes of potential hazards to workers; (ii) providing preventive and protective measures, including modification, substitution, or elimination of hazardous conditions or substances; (iii) providing appropriate equipment to minimize risks and requiring and enforcing its use; (iv) training workers and providing them with appropriate incentives to use and comply with health and safety procedures and protective equipment; (v) enforcing appropriate protocols necessary to prevent the spread of communicable diseases, including emerging infectious diseases such as the 2019 corona virus disease (COVID-19); (vi) documenting and reporting occupational accidents, diseases, and incidents; and (vii) having emergency prevention, preparedness, and response arrangements in place.

28. PMU shall ensure to apply preventive and protective measures consistent with international good practice, as reflected in internationally recognized standards such as the World Bank Group's Environmental, Health and Safety Guidelines (footnote 190).

29. **Community Health and Safety.** NHDCL through PMU shall ensure to identify and assess the risks to, and potential impacts on, the safety of affected communities during the design, construction, and operation of the project infrastructures, and will establish preventive measures and plans to address them in a manner commensurate with the identified risks and impacts. PMU shall also include and enforce additional protocols to prevent the spread of communicable diseases to communities, including emerging infectious diseases such as COVID-19. A guideline that can be followed is in Appendix 3. This guideline shall be updated from time to time based on new developments on managing COVID-19 by the government.

¹⁹ World Bank Group. 2007. *Environmental, Health, and Safety General Guidelines*. Washington, D.C.

²⁰ In case where responsibility is delegated to contractors during construction phase, PMU shall ensure that the responsibilities on occupational health and safety as described herein are included in the contract documents.

²¹ Including nonemployee workers engaged by NHDCL through contractors or other intermediaries to work on project sites or perform work directly related to the project's core functions.

30. **Physical Cultural Resources.** NHDCL, through PMU, shall locate and design the housing infrastructures that will avoid significant damage to physical cultural resources. Such resources likely to be affected by the project activities or infrastructures will be identified, and qualified and experienced experts will assess the potential impacts on these resources using field-based surveys as an integral part of the environmental assessment process. When the proposed location of an infrastructure is in areas where physical cultural resources are expected to be found as determined during the environmental assessment process, chance finds procedures shall be included in the EMP.

31. **Biodiversity.** NHDCL, through PMU, shall assess the significance of the project's impacts and risks on biodiversity and natural resources as an integral part of the environmental assessment process. The assessment will focus on the major threats to biodiversity, which include destruction of habitat and introduction of invasive alien species, and on the use of natural resources in an unsustainable manner. PMU will need to identify measures to avoid, minimize, or mitigate potentially adverse impacts and risks and, as a last resort, propose compensatory measures, such as biodiversity offsets, to no net loss or a net gain of the affected biodiversity.

32. **Environmental Audit.** When the project involves existing activities or facilities, NHDCL, through PMU, shall ensure that relevant external experts will perform environmental audits to determine the existence of any areas where the project infrastructure may cause or is causing environmental risks or impacts. If the project does not foresee any new major expansion, the audit constitutes the environmental assessment for the project.

33. **Bidding and Contract Documents.** The IEE reports and EMPs are to be included in bidding and contract documents and verified by the PMU. PMU shall also ensure that bidding and contract documents include specific provisions requiring contractors to (i) comply with all other conditions required by ADB,²² and (ii) to submit to PMU, for review and approval, a SEMP, including (a) proposed sites/locations for construction work camps, storage areas, hauling roads, lay down areas, disposal areas for solid and hazardous wastes; (b) specific mitigation measures following the approved EMP; (c) monitoring program as per EMP; and (d) budget for SEMP implementation. Due to relatively small footprint and very site-specific nature of the housing infrastructures, there may be instances when the EMPs developed as indicated in the IEE reports are considered site-specific. No works can commence prior to approval of EMP or approved SEMP. A copy of the EMP and/or approved SEMP will be kept on site during the construction period at all times. Non-compliance with, or any deviation from, the conditions set out in the EMP and/or SEMP constitutes a failure in compliance and shall require corrective actions.

34. **Conditions for Award of Contract and Commencement of Work.** NHDCL, through PMU, shall not award any works contract for a proposed infrastructure under the project until (i) relevant provisions from the EMP are incorporated into the works contract; (ii) the IEE is updated to reflect infrastructure's detailed design and PMU has obtained ADB's clearance of such IEE report; and (iii) government-approved IEE (i.e. IEE in compliance with government regulations) and other necessary permits from relevant government agencies have been obtained. For "design, build, and operate" type contracts, PMU shall ensure no works for a proposed infrastructure component which involves environmental impacts shall commence until (i) relevant provisions from the EMP are incorporated into the works contract, and (ii) the IEE report is

²² Contractors to comply with (i) all applicable labor laws and core labor standards on (a) prohibition of child labor as defined in national legislation for construction and maintenance activities; (b) equal pay for equal work of equal value regardless of gender, ethnicity, or caste; and (c) elimination of forced labor; and with (ii) the requirement to disseminate information on sexually transmitted diseases, including HIV/AIDS, to employees and local communities surrounding the project sites.

updated to reflect infrastructure's detailed design and PMU has obtained ADB's clearance for such IEE report.

B. National Environmental Assessment Law of Bhutan

1. Environmental Assessment Act, 2000

35. The Environment Assessment Act, 2000 (EAA) outlines procedures for assessing the potential impact of projects on environment and formulates policies and measures to reduce potential adverse effects on the environment. Based on the above premise, the environmental clearance is required prior to the execution of any project that may entail adverse impacts on the environment. To this effect, the National Environmental Commission (NEC) is empowered to implement the EAA by setting out guidelines for securing an environmental clearance for a project. The EAA is applicable to this subproject considering foreseeable impacts on the surrounding environment.

2. National Environmental Protection Act, 2007

36. The National Environmental Protection Act, 2007 (NEPA) established the role of the Competent Authority within Ministries, Thromdes or Districts to screen, review and issue or deny environmental clearance, a mandatory requirement for any development activity. Specific guidance is given in a series of sectoral guidelines, prepared in 1999 and revised with ADB assistance in 2006. The Competent Authority to assess any project depends on the project's type, environmental sensitivity, and location. To determine the required level of assessment and documentation, there is a list of activities the Competent Authorities can screen and issue Environmental Clearance and another list of activities that do not require Environmental Clearance. Activities or projects in this list are classified into three categories, namely: Green, Blue or Red. Those in the Green category do not need to undertake any environmental assessment process, while those in the Blue category require an initial environmental examination (IEE). Those in the Red category are required to conduct EIA based on an approved TOR from the National Environment Commission. In addition, all other sectoral clearances must be obtained for all categories, if required (e.g. building consent/forest clearance).

37. Apart from providing the framework for environmental assessment of projects, NEPA, 2007 also provides an effective system of conserving and protecting the environment of Bhutan. This system comprises NEC or other designated Competent Authorities and advisory committee members responsible for regulating and promoting sustainable development in an equitable manner. It creates a framework for developing measures and standards to protect environmental quality of the country. The renewable (e.g., forest, water, air, biodiversity) and non-renewable (soil and rocks/minerals) natural resources shall not be fully compromised in order to just achieve sustainable development. The Act governs sustainable use of resources and guides to reduce waste generation while also adopting sound management plan for safe and proper disposal of wastes. The Act fixes accountability to the person polluting environment or causing ecological harm for the cost of containment, avoidance, abatement, medical compensation, mitigation, remediation and restoration.

3. Regulation for Environmental Clearance of Projects 2016

38. The Regulation for Environmental Clearance of Projects, 2016 (RECOP, 2016) repeals RECOP, 2002 and any instruments, notifications, circulars adopted there under which are inconsistent with this regulation. RECOP, 2016 outlines procedures and responsibilities for

implementing and supplementing the Environmental Assessment Act, 2000 to issue environmental clearances. The NEC along with other competent authorities are the agencies tasked for administering and granting environmental clearance under the current legal framework. This regulation ensures that this project is implemented in compliance with the sustainable development policy of the government so that potential damage to the environment is mitigated and that the local community to benefit from this project. The regulation mandates establishment of an environmental unit under the project, conduct public consultation, and obtain environmental clearance within the specified period.

4. Environmental Assessment Process

39. **Project Formulation and Competent Authorities.** During the formulation, review or modification of any project, a key requirement is to ensure that environmental concerns are taken into consideration. The framework for this is provided by the Environmental Assessment Act (2000) as described above, which establishes procedures for prior consideration, assessment and documentation of all potential environmental and social impacts during project formulation. After enacting the Environmental Assessment Act, NEC adopted the RECOP, 2002 (revised in 2016) as the implementing rules and regulations.

40. NEPA, 2007 established the role of a Competent Authority (CA) within Ministries, Thromdes or Districts to screen, review and issue or deny environmental clearance, which is a mandatory requirement for any development activity. Specific guidance is given in a series of sectoral guidelines, prepared in 1999 and revised with ADB assistance in 2006.

41. Basically, approval or issuance of environmental clearance is dependent on (i) project type/activity and (ii) project location, which in turn dictates the level of environmental sensitivity and assessment required, the Competent Authority that will review, and the required clearance process to be followed.

42. **Project Category.** Proponents must check with RECOP the list of activities that the Competent Authorities can screen and issue Environmental Clearance and the list of activities not requiring Environmental Clearance to determine the required level of assessment and documentation.

43. As described above, the environmental assessment for each category is summarized in the following table.

Table 5: Summary of Categorization and Assessment Requirements

Project category	Environmental assessment process	Competent Authority	Remarks
GREEN	Exempted from Environmental Assessment (EA) process	Not required.	The proponent must obtain approvals/clearance s/development consents from concerned agencies as required under relevant Legislation
BLUE	Activity shall be assessed at Initial Environmental Examination(IEE) level	Designated Competent Authority or NEC as applicable	
RED	Activity will have to undergo Environmental Impact Assessment (EIA)	EIA shall be reviewed and assessed by NEC.	
Unlisted activity or lack of Environment Officer		Activity shall be assessed at IEE level,	

	and shall be reviewed and assessed by NEC	
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Source NEC- National Environment Commission website: <http://www.nec.gov.bt/services/environmental-clearance-services>

44. Per the project categorization under RECOP, the development of housing estates and colonies (#40) is listed in the Blue Category, requiring an IEE with the Ministry of Works and Human Settlement as the Competent Authority. However, as the MOWHS does not have an environmental officer, the IEE will be reviewed by the NEC.²³

45. **Project location.** Where developmental projects are located within the Municipality/Thromde, they are also governed by the Thromde Act of Bhutan, 2007 and the Thromde Rules 2011 (see below discussions on Other National Environment-Related Laws, Rules and Regulations). The designated Competent Authority to grant development clearance is the Thromde. All construction works within the municipal limits must be in line with the respective structural plans and development control regulations for the particular thromde, if available. For instance, developmental activities within Thimphu city must be in line with the Thimphu Structural Plan, 2004 and the Thimphu Municipal Development Control Regulations, 2016.

C. Other National Environment-Related Laws, Rules and Regulations

46. At the national policy level, environmental protection and conservation is a constitutional mandate and is required to (i) protect, conserve, and improve the pristine environment, (ii) safeguard biodiversity, and (iii) prevent pollution and ecological degradation. The policy, legal, and administrative frameworks relevant to the environmental assessment of water related infrastructure projects in Bhutan have been established by the following laws and regulations.

1. Constitution of the Kingdom of Bhutan 2008

47. Article 5 of the Constitution of Bhutan outlines the responsibilities of government and people to protect and conserve the pristine environment and safeguard Bhutan's wildlife. The Constitution states that it is the fundamental duty of every citizen to protect, conserve, and improve the pristine environment and safeguard the biodiversity, reduce pollution and prevent ecological degradation, and promote ecologically balanced sustainable development while also pursuing environmentally friendly economic and social development. The government stands by the policy of maintaining a minimum of 60% forest cover all the time to ensure sustainable conservation of natural resources and reduce degradation of the ecosystem. The citation of Constitution is relevant as the project requires clearing of the State Reserved Forest (SRF) in some areas and also with regard to pollution by the project.

2. Forest and Nature Conservation Act 1995

48. The enactment of the Forest and Nature Conservation Act (FNCA) in 1995 supersedes the first environmental legislation in Bhutan, i.e., the Forest Act of 1969. The FNCA, 1995 contains policies prohibiting certain activities in the forested areas and allow other activities under special permits from the Department of Forests and Park Services (DFPS). Clause 10 (a) (i) – (x) outlines types of activities, e.g., forest clearing, tree felling, wildlife hunting, and polluting that are prohibited in the SRF. Clause 22 mentions that all wild animals whether enlisted under Schedule I (totally protected species) or not, cannot be hunted and killed, injured, captured, or collected

²³ NEC website. <http://www.nec.gov.bt/necs/wp-content/uploads/2021/03/Project-Categorisation.pdf>

unless conditions requiring self-defense and other genuine reasons exist. The FNCA recognizes all forests in Bhutan are part of the SRF and prohibits development works unless permissible by law. This Act will be applicable to the proposed subprojects.

3. Forest and Nature Conservation Rules and Regulations, 2017

49. The Forest and Nature Conservation Rules and Regulations of Bhutan (FNCRR), 2017 came into force from 1st January 2017. The FNCRR, 2017 superseded the FNCR, 2006, guidelines, notifications and circulars existing as of December 31, 2016.

50. FNCRR, 2017 provides rules for many of the activities that will be undertaken in the project, such as clearing and felling of trees, blasting and others. Clause 14 (1) to (14) describes criteria for forestry clearance to allot land from the State Reserved Forest (SRF) for the purpose of Kidu land, Rehabilitation land, Substitute land, Exchange, Government Institutions, Gerab Dratshang and Lease. Clauses 15 and 16 describe the general procedure for forestry clearance. Clause 237 prohibits hunting, killing, poisoning, trapping, transporting, capturing, breeding, cultivating, possessing or keeping as pet of any species listed as protected species. Clause 238 also prohibits hunting, killing, destroying, poisoning, trapping, transporting, capturing, breeding, collecting, possessing or keeping as pet of all other species not included in totally protected species.

51. Fishing in any stream, river, lake or other water bodies shall be governed by FNCRR, 2017. Clause 273 states that DFPS shall declare and designate restricted areas for fishing. Fishing in non-restricted area shall be permitted with a valid permit/license. Clause 278 states that fishing license shall be issued by the Chief Forestry Officer of the area on payment of the prescribed fees.

52. These rules and regulations are applicable to the proposed subprojects since some subproject sites are implemented through the State Reserved Forest Land. This regulation requires obtaining of forestry clearance prior to the clearing and felling of trees.

4. Land Act, 2007

53. The Land Act of 1979 provides the basis for land tenure in Bhutan. It was revised in 2007 to restructure many provisions in the Land Act. This revision happened with the establishment of National Land Commission Secretariat (NLCS), an autonomous agency mandated to deal with matters pertaining to land registration. The other major change under this revision is the categorization of land from 20 to 7 including (i) chuzhing (wetland), (ii) kamzhing (dry land) including orchard, (iii) khimsa (residential land), (iv) industrial land, (v) commercial land, (vi) recreational, and (vii) institutional land. Under this revision, an authority on land management (resolve disputes, process land transactions, and convert land categories) has been decentralized to local governance, e.g., Geog Tshogde, Dzongkhag Tshogdu, and Thromde Tshogde.

54. The Act reserves the right to acquire the land by the government if the land is deemed important for the country. When this happens, the affected individual, family, or community will be entitled for full compensation in the form of substitution from the same Dzongkhag or cash compensation depending on the type of land. This project will involve leasing of government land and hence the applicability of this Act.

5. Bhutan Building Regulation 2018

55. This regulation defines the set of rules that specify the minimum acceptable level of safety for building infrastructures in Bhutan. It has various specific objectives, which include, among others the following: (i) prescribe standards for the construction and demolition of buildings, (ii) prescribe requirements for the design and siting of single dwellings and associated buildings, (iii) prescribe standards and matters relating to the maintenance of fire safety and safety measures, (iv) provide for matters relating to the accreditation of building products, construction methods, designs, components and systems connected with building work, and (v) prescribe qualifications and provide for other matters relating to registration of building practitioners.

6. Building Code of Bhutan 2018

56. This Building Code has been issued as part of and to ensure the effective implementation of the Bhutan Building Regulation 2018. It sets out the technical requirements, standards and design considerations which shall apply to construction of buildings in Bhutan. The Code ensures safety of buildings, protect public health and general welfare related to building constructions and its occupancy. The Code consists of three chapters. The first chapter sets out all technical requirements such as building dimensions, floor area, circulation space, lighting and ventilation, water supply and sanitary control, electrical, fire safety, access, telephone and vehicular parking. It also details out references to other structural design codes, standards and specifications to ascertain structural integrity and safety of buildings. The second chapter contains the standards and other technical requirements applicable specifically for rural areas. The third chapter sets out the design consideration for differently abled persons to ensure that buildings and in particular institutions and public spaces are accessible and can be used by all people.

7. Bhutan Green Building Guidelines, 2013

57. This Guidelines was issued by the Ministry of Works and Human Settlements to introduce for the basic concepts, sustainable green principles and approaches that will be practical for consideration in the design and construction of future buildings in Bhutan. It aims to inspire positive change in the built environment of Bhutan; motivate policies, regulations, standards, and projects that will minimize negative impacts of the built environment on the natural environment of the country while enhancing the positive impacts of sustainable building design and construction practices for the present and future generations.

58. The Guidelines provides information that are not prescriptive in nature, but rather a guidance to building construction professionals on how to integrate sustainable and environment friendly designs in building projects, such as the use of low energy construction methods and many others.

8. Bhutanese Architecture Guidelines 2014

59. The Guidelines was issued by the Ministry of Works and Human Settlements to be used as a reference to understand the various elements of Bhutanese architecture and its values while providing a guide to what could be appropriate for new design and construction in Bhutan according to the values found in traditional architecture of Bhutan.

60. The main objectives of the Guidelines are to: (i) update and revise the exiting Guidelines of Traditional Bhutanese Architecture; (ii) ensure the sustainable development of the built environment in Bhutan without sacrificing local cultural heritage traditions and values that have been passed down over many generations and are integral to the social harmony and the tangible

expression of the people of Bhutan; and (iii) provide an easy reference on the intricate elements of local Bhutanese architecture for all architects, engineers and other stakeholders who will be influencing the built environment of Bhutan so that they will be equipped to incorporate local Bhutanese architectural elements into their new design and constructions accurately and appropriately according to these traditions.

9. Road Act of the Kingdom of Bhutan 2013

61. Road Act of 2013 was re-enacted after repealing the Road Act of 2004 to plan and establish safe and efficient system of road network in the country. Because this project will also involve construction of access road and internal road network, this Act will come into play when planning, designing, surveying, and obtaining approval from respective agencies.

10. Waste Prevention and Management Act of Bhutan, 2009

62. Waste Prevention and Management Act of Bhutan, 2009 contains the holistic institutional framework to prevent and manage waste in Bhutan. This Act recognizes principles, mechanisms, and responsibilities for reducing, segregating and disposing wastes. The NEC as the apex regulatory body for waste prevention and management monitors whether the wastes are managed in an environment friendly manner or not, as well as prohibit the manufacture of products that are associated with generation of hazardous wastes.

11. The Local Government Act of Bhutan, 2009

63. The Local Government Act has provisions to undertake activities consistent with other relevant laws and policies of the country that are formulated towards conserving environment within its jurisdiction and reduce the impact on public health and accelerate socio-economic development. This Act has relevance to the project in terms of protection of local population from health hazards, if any, and brings socio-economic upliftment in the local area. It is also the principal document for delineation of power between the local governments and the national agencies.

12. National Strategy and Action Plan for Low Carbon Development, 2012

64. During the 15th Session of Conference of Parties (COP15) of the United Nations Framework Convention on Climate Change (UNFCCC) in Copenhagen, the Royal Government of Bhutan made a pledge to remain carbon neutral. This meant that greenhouse gas (GHG) emissions in the country will remain below the sequestration capacity of its forests for all times. This followed the preparation of National Strategy and Action Plan for Low Carbon Development, a document presenting a long-term national strategy and action plan for low carbon development. This includes interventions and action plans to fulfill commitments to remain carbon neutral through the promotion of green growth.

65. At the current juncture, the total land area under forest cover stands at about 70% which is more than what the Constitution of Kingdom of Bhutan mandates, i.e., minimum of 60% forest cover of the total area at all times. This strategy is relevant to this project since it would be necessary to deal with any potential forest clearing or tree cutting at selected project areas, and undertake enhancement or compensatory measures to counterbalance carbon emission.

13. Rules and Regulations on Occupational Health and Safety and Welfare, 2012

66. This regulation contains legal requirements that must be met by all workplaces within the coverage of Labour and Employment Act, 2007 that come under the inspectorial jurisdiction of the Department of Labour, Ministry of Labour and Human Resources.

67. The purpose of this regulation is to establish standards on occupational health, safety and welfare on premises, instruments, vessels, appliances, apparatus, tools, devices, electrical safety and other hazardous conditions. It is to ensure safety, health and welfare for employees as well as other persons at workplaces, from work related risks to their health, safety and wellbeing as provided in Chapter IX of the Labour and Employment Act, 2007.

68. The Regulation aims to assure safe working environment for employees at the project site and relevant during the construction and operation phases of the project.

14. Waste Prevention and Management Regulation, 2012

69. This regulation identifies roles of the Implementing Agency (the Thromdes) to introduce appropriate waste management system beginning from every organization level concerning collection, segregation, treatment, storage, transportation, recycling and safe disposal of solid, liquid and gaseous wastes. This regulation shall control and prohibit haphazard dumping of waste. This regulation will ensure disposal of waste at designated site and uphold initiatives to segregate, reuse and recycle.

15. The Water Regulation of Bhutan, 2014

70. This regulation shall ensure the protection, conservation and management of watersheds for sustainable water supply and minimize other environmental side effects. This regulation is relevant given projects have potential to pollute water and changing of water course and also for watershed protection.

71. Aside from environmental laws and regulations, the 2004 Penal Code of Bhutan also includes a provision on environmental pollution wherein Article 409 states that a defendant shall be guilty of the offense of environmental pollution if such defendant knowingly or recklessly pollutes or contaminates the environment including air, water, and land and makes it noxious to public health and safety.

16. Thromde Rules, 2011

72. This is the principal document that prescribes the working procedures of Thromdes in Bhutan through implementation of the Local Government Act of 2009, and other related acts and regulations. The rules cover on how Thromdes should be formed, managed, regulated and also covers on property valuations and assessments for pooling or compensation.

17. Land Compensation Rates, 2017

73. The land compensation rates 2017supersedes land compensation rates 2009 and it covers compensation for land and structures falling both within urban and rural areas when acquired by the government.

74. The rural land is categorized into four classes viz. (1) Kamzhing (dry land); (2) Chuzhing (paddy land); (3) NgulthoDumra (cash crop land); and (4) Class A1 (rural land close to Thromdes). The urban area compensations are different for each class of Thromde. The document also

provides implementation procedures. The land compensation rate 2017 is applicable to the proposed subprojects.

18. Disaster Management Act, 2013

75. The Disaster Management Act, 2013 repeals the 2006 National Disaster Risk Management Framework. This Act establishes a new framework to strengthen the institutional capacity for disaster management of the country and to better mainstream disaster risk reduction strategies at relevant institutions. The purpose of this Act is to provide for: (i) the establishment and strengthening of institutional capacity for disaster management; (ii) mainstreaming of disaster risk reduction; (iii) an integrated and coordinated disaster management focusing on community participation; and (iv) matters incidental thereto. The Act describes the composition, function and powers of the different authorities, including in relation to the private sector, and prioritizes mainstreaming disaster risk reduction into development plans, policies, programs and projects as well as ensuring agencies receive adequate budget.

76. Through this Act, Dzongkhag Disaster Management Planning Guidelines was issued to guide the Dzongkhags, through the Dzongkhag Disaster Management Committees, to plan, develop and implement their respective Dzongkhag Contingency Plan. The planning process is expected to include hazard mapping to identify the most hazard-prone areas of the Dzongkhag so that future developments, interventions, and risk mitigation measures can be planned accordingly.

77. This Act is particularly relevant to the project because the sites of housing subprojects need to consider the respective disaster risk assessment to ensure that measures to avoid or minimize the identified risks are integrated in the overall design of the subprojects.

19. COVID 19 Pandemic Measures and Protocols

78. In Bhutan, the first patient tested positive for COVID 19 was in March 2020. A year after the pandemic, less than 1,000 positive cases were reported (921 as of April 12, 2021), of which there are 45 active imported cases. So far one death is linked to the virus. Since the detection of the first COVID-19 positive case, several measures have been undertaken. At the national level, there is a National COVID-19 Task Force (NC19TF) chaired by the Prime Minister. This is the highest decision-making body in the country on all policy matters related to COVID-19 management. There are three multi-sectoral Regional COVID-19 Task Force and district and sub-district COVID-19 Task Force in each district. There is also a Health Emergency Management Committee (HEMC) tasked with decision-making regarding the matters related to health emergency management including the surveillance, quarantine and testing based on the scientific evidence.

79. The government, through the Ministry of Health (MOH), has a Media and Risk Communication team responsible for communication and information dissemination to the general public.²⁴ Measures have been undertaken to prevent the import, transmission, contain and manage the disease are summarized below.

- (i) Creation of COVID-19 Taskforce and zonation in municipalities and districts;

²⁴ WHO, 2020. Bhutan Decision making for social and movement measures in the context of COVID-19 SNAPSHOT AS OF NOVEMBER 2020. Retrieved from https://www.who.int/docs/default-source/hgf/bhutan.pdf?sfvrsn=ce5445da_9

- (ii) Mandatory 21-day quarantine for all in-coming travels arriving in the country from abroad under a designated quarantine facility, and 7-day quarantine for travelers to the border districts;
- (iii) 2 nationwide lockdowns to prevent community transmission, and restrictions on movement after 9PM;
- (iv) Installation and use of Druk Trace App or registry in all public places including public transport, hand wash stations and mandatory use of mask and regular advocacy and dissemination for social distancing through print, broadcast and social media. Protocols for shops, schools and offices;
- (v) Temporary closure of schools and introduction of online classes;
- (vi) Compulsory pre-registration online for all inter-district travel on the Check Post Management System, and quarantine for travelers; and
- (vii) First vaccination of all eligible persons in April 2021.

80. The government also has its COVID 19 Strategies and Protocols (e.g. for import and export of goods, protocols for testing, lockdown, movement with pass, containment of outbreak, containment, decontamination and disinfection, management of dead bodies). Specific standard operating procedures (SOPs) or guidelines are included in the following issuances that can be found on the MOH website, which are being updated from time to time depending on COVID-19 situation in the country.²⁵ These SOPs or guidelines are applicable to the project.

- (i) MOH, 2020a. SOP for decontamination and disinfection of COVID-19 contaminated area. March 2020;
- (ii) MOH, 2020b. SOP for Safe and Dignified Management of Dead body of Suspected or Confirmed COVID-19, March 2020;
- (iii) MOH, 2020c. Containment of COVID-19 outbreak in Cluster Surveillance 2nd-Sept-2020;
- (iv) MOH, 2020d. Additional Measures to prevent and contain local transmission in high-risk areas. May 2020;
- (v) MOH, 2020e. Strategy for Engaging High-Risk Communities for COVID Prevention & Control, April 2020; and
- (vi) MOH, 2020f. National COVID 19 Testing Protocols, December 2020.

D. International Environmental Agreements

81. International conventions are also part of the environmental framework since Bhutan is a party to some international conventions, treaties and agreements on the principles and actions necessary for sustainable development and environmental protection. It has ratified the Convention on Biological Diversity (CBD) and the United Nations Framework Convention on Climate Change (UNFCCC) (25th of August 1995). These international conventions explicitly reference the application of environmental assessment to address the effects of human activities. The CBD, in particular, promotes the use of appropriate procedures requiring environmental impact assessment of proposed projects that are likely to have significant adverse effects on biological diversity.

E. Gaps in Legal and Guiding Instruments

82. The ADB SPS and national environmental laws are aligned with screening to determine the potential impact of a project on the environment, followed by appropriate environmental

²⁵ <http://www.moh.gov.bt/covid-19-strategies-protocols-and-guidance/>

assessment, preparation of environmental management plans to avoid, mitigate, minimize and offset environmental impacts. While minor gaps are identified in terms of the other more specific ADB SPS requirements vis-à-vis the national environmental laws, gap-filling measures are available and can be readily complied with by the government through NHDCL as implementing agency. See Table 6.

83. The national procedures are comprehensive to ensure that any developmental activity/enterprise in sensitive and critical habitats/ecosystems, and affected rare or endangered species, or extraction of resources in large quantities are avoided from the screening stage. This includes impacts on religious and cultural sites as well.

84. Once a project is approved, it requires the proponent to comply to the terms and conditions of the approved Environmental Clearance with compliance monitoring and reporting during implementation of the EMP by the proponent. The project may also be independently monitored by the competent authority or NEC.

Table 6: Comparison of ADB SPS Requirements and National Environmental Regulations

	ADB SPS Principles	National requirements	Extent of Equivalence or Gaps	Gap-filling Measures
1	Conduct screening to determine the extent and type of required environmental assessment	Projects are screened into Green, Blue and Red categories that determine whether the level of environmental assessment If the development is within the E-1 (environmental conservation), E-2 (forest environments) precincts, the application has to be accompanied by a no objection certificate from the National Environment Commission (NEC).	No gaps	None required
2	Conduct environmental assessment	Green project – No environmental assessment Blue project- initial environmental examination (IEE) is required Red project- environmental impact assessment (EIA) is required	No gaps	None required
3	Examination of project alternatives	Under RECOP, Annex 3, Sections 6 and 8, the project must provide a detailed analysis of the negative and positive impacts of the proposed project and its alternatives including the “alternative of not undertaking the project”.	No gaps	None required
4	EMP preparation is part of IEE and EIA Process	The Environmental Assessment Act (EAA) provides for the formulation of environmental management plans (EMPs). The EMPs must identify environmental risks and address means of avoiding or minimizing adverse impacts (including direct, indirect and cumulative effects) and enhancing positive impacts. Applicants must also set out a monitoring program (both baseline and compliance monitoring) and are responsible for all project monitoring. Project monitoring is undertaken by the Competent Authority (CA) or NEC. The RECOP provides that: (i) “the CA shall be responsible for monitoring compliance” for projects requiring development consent and environmental clearance (EC), and (ii) the Secretariat [of NEC] shall monitor projects “that do not require development consent”.	No gaps	None required
5	Conduct meaningful consultation with affected people	Public consultation is mandatory for any IEE/EIA. Under the EAA, applicants have a duty to inform and consult with “concerned people” and organizations before submitting the	No gaps	None required

	ADB SPS Principles	National requirements	Extent of Equivalence or Gaps	Gap-filling Measures
		environmental assessment documents to the CA where the project is classified as a “significant project”. NEC or the CA is authorized to “ensure that concerned people are given adequate opportunity to express their views on the project and that their views are adequately taken into account.”		
6	EMP implementation and monitoring (with corrective actions, when needed)	<p>The EAA mentions that Applicants must [also] set out a monitoring program (both baseline and compliance monitoring) and are responsible for all project monitoring (project monitoring is undertaken by CA or NEC).</p> <p>RECOP requires that EMPs include the proposed mitigation measures, the need to budget mitigation measures, supervision, monitoring and evaluation requirements for the construction, operation and maintenance phases of the project cycle.</p> <p>RECOP provides that: (i) “the CA shall be responsible for monitoring compliance” for projects requiring development consent and EC, and (ii) the Secretariat [of NEC] shall monitor projects “that do not require development consent”.</p> <p>The Environmental Assessment Act states that “compliance monitoring of projects” is undertaken by the Secretariat [of NEC]...on becoming aware of non-compliance with the terms or other activities related to a project that may be dangerous to the environment.”</p>	No outstanding gaps in terms of policy. However, EMPs are not normally included in Contractor’s contracts to ensure implementation of EMPs.	Include EMP into Contracts and ensure compliance monitoring and submission of environmental monitoring reports.
7	Establish Grievance Redress Mechanism (GRM)	Different agencies have different GRMs.	Partial gap due to lack of specific guidelines that can be followed by projects.	To ensure equivalence, the project needs to establish a GRM process that could be adopted from the site level to the agency level, including option for access to country’s legal system

	ADB SPS Principles	National requirements	Extent of Equivalence or Gaps	Gap-filling Measures
				independently and regardless of the outcome of the project GRM process.
8	Appropriate public disclosure of EIA/IEE and EMP	Not mandatory to disclose, but documents are available in relevant government agencies.	Partial gap due to lack of specific directives or guidelines requiring mandatory disclosure of environmental assessment documents.	To ensure equivalence, the project needs to disclose the IEE through any means that could reach the general public.
9	Do not implement project activities in areas of critical habitats.	<p>Forest and Nature Conservation Act, 1995; Forest and nature Conservation Rules, Sections 62, 70 and EAA and RECOP relate to this issue.</p> <p>Under Bhutan's laws and regulations, it is prohibited to undertake any human activities within the core zone of a protected area unless determined necessary by forest/protected area officials to achieve nature conservation objectives. Outside the core area, no construction is allowed except with a written permit or authorization from the MoA, acting as CA under the EAA. A permit for land clearance may be granted in private lands under strict conditions but not to alter protected area status, water catchment areas and areas containing high forest.</p>	No gaps	None required
10	Apply pollution prevention and control technologies and practices consistent with international good practices as reflected in internationally recognized standards such as the World Bank Group's Environmental, Health and	The NEC sets the permissible emission standards for a) ambient water quality, Industrial Effluent Discharge Standard, Sewage Treatment Plant (STP) Discharge Standards, Ambient Air Quality, Workplace Emission Standards, Vehicular Emission and Noise Limit Standards, Noise Level Limits but this is monitoring is not mandatory for construction	No gaps in terms of availability of national standards. However, the implementation of regulations pertaining to these standards is an issue. Further, the	To ensure equivalence, the project should: (i) comply with the stricter internationally recognized standards or provide justification

	ADB SPS Principles	National requirements	Extent of Equivalence or Gaps	Gap-filling Measures
	Safety Guidelines. Adopt cleaner production processes and good energy efficiency practices.	The Vehicle fitness test must be done annually by the vehicle owner. The agency responsible for this is The Road Safety and Transport Authority (RSTA)	values of the national standards are less strict than the internationally recognized standard values. Partial gap in terms of the legislation having no explicit requirement for adopting cleaner processes and good energy efficiency practices, although it might be considered implicit in the legislation	if the option under the project is to use the national standards; and (ii) require the adoption of cleaner technologies and energy efficiency measures.
11	Safe working conditions	The Labour and Employment Act, 2007 governs employment and Occupational health and safety (OHS), including physical or mental health problems related to work. The Regulation on Occupational Health and Safety for Construction Industry, 2012 and the Regulation on Occupational Health, Safety and Welfare, 2016 have detailed requirements for contractors to follow to ensure the safety, health and welfare for employees and other persons at workplaces.	No gaps	None required
12	Conserve physical cultural resources Provide for the use of “chance find” procedures.	Any development activity within a heritage precinct requires a No objection certificate from the Ministry of Home and Cultural Affairs (MH&CA) Any valuable cultural property discovered must be immediately reported to the Department of Culture, Ministry of Home and Cultural through the concerned Dzongkhag.	Partial gap due to the absence of legislation or regulations to protect “chance finds”.	To ensure equivalence, the project should include chance finds procedure that will be used during the implementation.

F. Applicable Environmental Standards

85. Following requirements of ADB SPS, the project shall apply pollution prevention and control technologies and practices consistent with international good practice, as reflected in EHS Guidelines. When the government regulations differ from these levels and measures, the executing agency shall achieve whichever is more stringent. 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, 2009. In view of this, Table 7, Table 8, Table 9, and Table 10 show the ambient air quality standards, noise level standards, applicable effluent standards, and drinking water quality standards to be followed by the project. Other applicable standards are also provided in Table 11, Table 12, and Table 13.

Table 7: Ambient Air Quality Standards

Parameter	Averaging Period*	Bhutan's Ambient Air Quality Standard, 2010**(µg/m ³)			WHO Air Quality Guidelines (µg/m ³)	
					Global Update [^] 2005	Second Edition ^{^^} 2000
		Industrial Area	Mixed Area ^{***}	Sensitive Area ^{****}		
TSP	Annual	360	140	70	-	-
	24-hour	500	200	100	-	-
PM ₁₀	Annual	120	60	50	20	-
	24-hour	200	100	75	50	-
PM _{2.5}	1-year	-	-	-	10	-
	24-hour	-	-	-	25	-
SO ₂	Annual	80	60	15	-	-
	24-hour	120	80	30	20	-
	10-minute	-	-	-	500	-
NO ₂	Annual	80	60	15	40	-
	24-hour	120	80	30	-	-
	1-hour	-	-	-	200	-
CO	8-hour	5,000	2,000	1,000	-	10,000
	1-hour	10,000	4,000	2,000	-	-
	15-minute	-	-	-	-	100,000

* Due to short term duration of civil works, the shortest period will be more practical to use.

** Taken from Environmental Standards, National Environment Commission, Royal Government of Bhutan, November 2010.

*** Mixed Area means area where residential, commercial or both activities take place.

**** Sensitive Area means area where sensitive targets are in place like hospitals, schools, sensitive ecosystems.

[^] Source: Environmental, Health and Safety General Guidelines, 2007. International Finance Corporation, World Bank Group.

^{^^} Source: Air Quality Guidelines for Europe, Second Edition, 2000; WHO Regional Office for Europe, Copenhagen

Table 8: Noise Level Standards

Receptor/ Source	National Noise Standard Guidelines, 2012* (dB)		WHO Guidelines Value For Noise Levels Measured Out of Doors** (One Hour LA _q in dBA)	
	Day***	Night****	07:00 – 22:00	22:00 – 07:00
Industrial area	75	65	70	70
Mixed area	65	55		
Sensitive area	55	45	55	45

* Taken from Environmental Standards, National Environment Commission, Royal Government of Bhutan, November 2010.

** Guidelines for Community Noise, WHO, 1999. Source: Environmental, Health and Safety General Guidelines, 2007. International Finance Corporation, World Bank Group.

*** Day time is from 0600 hours to 2200 hours (human activities).

**** Night time is from 2200 hours to 0600 hours (no human activities).

Table 9: Effluent Standards

	Parameters	Unit	NEC Standards, mg/l ^a
3	Biochemical Oxygen Demand	mg/l	30.0
28	Total Suspended Solids	mg/l	100
29	Fecal Coliform	CFU/100ml	1,000
30	pH	pH scale	6.5 – 9.0
31	Chemical Oxygen Demand	mg/l	125

Source: Environmental Standards, NEC 2020

^a Standards for Sewage Treatment Plant Effluent

86. Table 9 provides the standards for effluent for sewage treatment plant which may be the one applicable standards for any potential discharges (overflows) from septic systems (septic tanks and soak pits) of the housing subprojects. In addition, the septic system should comply with the recommendations of World Bank's Environmental, Health, and Safety (EHS) Guidelines, as follows:

- (i) Properly designed and installed in accordance with local regulations and guidance to prevent any hazard to public health or contamination of land, surface or groundwater;
- (ii) Well maintained to allow effective operation;
- (iii) Installed in areas with sufficient soil percolation for the design wastewater loading rate; and
- (iv) Installed in areas of stable soils that are nearly level, well drained, and permeable, with enough separation between the drain field and the groundwater table or other receiving waters.

Table 10: National Drinking Water Quality Standards, 2016

Group	National Drinking Water Quality Standards, 2016* (for Urban Drinking Water Supply)			WHO Guidelines for Drinking-Water Quality, 4 th Edition, 2011**
	Parameter	Unit	Max. Concentration Limits	
Physical	Turbidity	NTU	5	-
	pH		6.5 – 8.5	none
	Color (TCU)	Hazen Unit	15	none
	Taste and Odor		Non- objectionable	-
Chemical	Iron	mg/l	0.3	-

Group	National Drinking Water Quality Standards, 2016* (for Urban Drinking Water Supply)			WHO Guidelines for Drinking- Water Quality, 4 th Edition, 2011**
	Parameter	Unit	Max. Concentration Limits	
	Manganese	mg/l	0.4	-
	Arsenic	mg/l	0.01	0.01
	Fluoride [^]	mg/l	1.5	1.5
	Lead	mg/l	0.01	0.01
	Nitrate	mg/l	50	50
	Calcium	mg/l	75	-
	Mercury	mg/l	0.006	0.006
	Residual Chlorine	mg/l	0.2 - 0.5	5 ^{^^}
	Sulphate	mg/l	250	-
Microbiological	E-coli	CFU/100ml	0	Must not be detectable in any 100 ml sample

* Taken from Bhutan Drinking Water Quality Standard, 2016, National Environment Commission, Royal Government of Bhutan, 8 March 2016.

** Health-based guideline values

[^] To be tested for ground and spring water only.

^{^^} From WHO (2003) Chlorine in Drinking-water, which states that this value is conservative.

Table 11: Workplace emissions standards

Parameter	Period	Unit of measure	Standard
Total suspended particulate matter TSPM	8-hour average	mg/m ³	10
Respirable suspended particulate matter RSPM (PM ₁₀)	8-hour average	mg/m ³	5
PM _{2.5} *	24-hour average	mg/m ³	25
	1 Year average	mg/m ³	10
Sulfur dioxide (SO ₂)	8-hour average	mg/m ³	1
Nitrogen Oxide (NO _x)	8-hour average	mg/m ³	1
Carbon monoxide (CO)	1 hour average	mg/m ³	5
Pb 17**	1 hour average	mg/m ³	0.0005
Ozone***	8-hour average	mg/m ³	0.08

Source: Environmental Standards, National Environment Commission, Royal Government of Bhutan, November 2010.

PM 2.5 *- Gravimetric/light-scattering/beta attenuation-based instruments

**National Institute of Occupational Safety and Health (NIOSH) Method 7303

***UV Photometric/Chemiluminescence/Chemical Method

Table 12: Motor vehicle emission standards

Fuel Type	Vehicle registered prior to Jan 1, 2005	Vehicle registered after Jan 1, 2005	Vehicle registered prior to Jan 1, 2021	Vehicle registered after Jan 1, 2021 (Approval type: Euro 6/BS VI)
Petrol (%CO)	4.5%	4.0%	4.0%	0.5%
Diesel (%HSU)	75%	70%	70%	50%

Source: Environmental Standards, National Environment Commission, Royal Government of Bhutan, November 2010.

Table 13: Vehicular noise level limits

Sl. #	Type of Vehicle	Noise level limits dB(A)
	Two-Wheeler	
1.1	Displacement up to 80cc	75
1.2	Displacement more than 80cc but up to 175cc	77
1.3	Displacement more than 175cc	80
2	Vehicles used for carriage of passengers and capable of having not more than nine seats including the driver's seat	74
3	Vehicles used for carriage of passengers and capable of having more than nine seats, including the driver's seat and a maximum gross vehicle weight (GVW) of more than 3.5 tonnes	
3.1	With engine power less than 150 KW	78
3.2	With engine power more than 150 KW	80
4	Vehicles used for carriage of passengers and capable of having more than nine seats, including the driver's seat: vehicles used for carriage goods	
4.1	With maximum GVW not exceeding 2 tonnes	76
4.2	With maximum GVW greater than 3 tonnes but not exceeding 3.5 tonnes	77
	Vehicles used for carriage of transport of goods with a maximum GVW exceeding 3.5 tonnes	
5.1	With engine power less than 75 KW	77
5.2	With engine power more than 75 KW or above but not less than 150 kv.	78

Source: Environmental Standards, National Environment Commission, Royal Government of Bhutan, November 2010.

V. ENVIRONMENTAL ASSESSMENT FOR SUBSEQUENT SUBPROJECTS

87. This section provides the general steps of environmental assessment for future subprojects that will be funded under the project. In this section, assessment procedures are discussed, in accordance with the requirements of ADB SPS and the environmental assessment and clearance procedures of the government. Per Section 4 hereof, an environmental clearance is issued by the Competent Authority having jurisdiction over a particular type of project. In the case of this project, the Ministry of Works and Human Settlements (MOWHS) is the mandated Competent Authority that will screen and issue environmental clearance. However, as MOWHS does not have an Environmental Officer, the NEC will screen and issue the environmental clearance. Consultation has been conducted with MOWHS and NEC personnel, and confirmed the government environmental assessment and procedures as outlined and discussed below in this section.

A. Environmental Assessment Process for Future Subprojects

88. The project must comply with ADB SPS and relevant national laws and regulations (Section IV). Therefore, each future subproject needs to undergo environmental assessment process and obtain the necessary environmental clearance from NEC. The steps to be followed are shown in Table 14.

89. Environmental assessment process must be properly documented. In this case, IEE reports shall be prepared to reflect the details of environmental assessment done on the proposed infrastructures. The IEE reports shall include environmental management plans (EMPs) which describe and address the potential impacts and risks identified by the environmental assessment. The EMPs included proposed mitigation measures, environmental monitoring and reporting

requirements, emergency response procedures, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators. The basic outline for an IEE report is presented in Appendix 2.

90. The IEE reports that contain the EMPs will be included in bidding and contract documents with specific provisions requiring contractors to (i) comply with all other conditions required by ADB,²⁶ (ii) submit a Health and Safety COVID-19 Plan as part of the overall Health and Safety Plan of the project, in accordance with the relevant government regulations and guidelines on COVID-19 prevention and control, or in the absence thereof, to international good practice guidelines such as World Health Organization,²⁷ and (iii) submit a site-specific environmental management plan (SEMP), including (a) proposed sites/locations for construction work camps, storage areas, hauling roads, lay down areas, disposal areas for solid and hazardous wastes; (b) specific mitigation measures following the approved EMP; (c) monitoring program per EMP; and (d) budget for SEMP implementation. If the EMPs in the IEE reports are already finalized as site-specific, the contractors shall use and implement these EMPs instead.

91. In addition to ADB SPS and government guidelines, assessment of impacts shall follow other internationally accepted guidelines such as World Bank's EHS guidelines on construction and decommissioning.²⁸

Table 14: ADB and Environmental Safeguards Procedures Per ADB SPS and Government of Bhutan Laws

Project Stage	ADB	Government of Bhutan
Infrastructure Identification/ Categorization	Housing buildings and allied infrastructures are in line with the EARF selection criteria.	Projects are screened and categorized into either Green or Blue or Red categories. The categorization will determine the level of environmental assessment. Depending on the classification, the following are the required level of assessment: (i) Green project – No Environmental assessment required. (ii) Blue project – IEE is required. (iii) Red project – EIA is required.
	REA checklist is completed and environmental categorization is carried out at the earliest stage when sufficient information is available for this purpose. Any REA checklist prepared and completed by PMU shall be submitted to ADB for concurrence or clearance. REA checklist applicable to the project is attached in Appendix 4. Category A components will not be considered under the project.	
Detailed Design and IEE Preparation	Environmental Assessment. Detailed design and environmental assessment shall be in line with the EARF.	The overall project is categorized as "Blue". This requires the preparation of IEE, with the results of which will be

²⁶ Contractors to comply with (i) all applicable labor laws and core labor standards on (a) prohibition of child labor as defined in national legislation for construction and maintenance activities; (b) equal pay for equal work of equal value regardless of gender, ethnicity, or caste; and (c) elimination of forced labor; and with (ii) the requirement to disseminate information on sexually transmitted diseases, including HIV/AIDS, to employees and local communities surrounding the project sites.

²⁷ Considerations for public health and social measures in the workplace in the context of COVID-19. 2020. Geneva. Available here: <https://www.who.int/publications-detail/considerations-for-public-health-and-social-measures-in-the-workplace-in-the-context-of-covid-19>.

²⁸ IFC World Bank Group. 2007. [Environmental, Health, and Safety \(EHS\) Guidelines – General EHS Guidelines: Construction and Decommissioning](#).

Project Stage	ADB	Government of Bhutan
		<p>included in the application for EC from MOWHS.</p> <p>In addition, if the development is within the E-1 (environmental conservation), E-2 (forest environments) precincts, the application has to be accompanied by a no objection certificate from the NEC.</p>
	<p>Public Consultation: Consultation will be carried out in a manner commensurate with the impacts on affected communities. The consultation process and its results are to be documented and reflected in the environmental assessment report.^a</p>	<p>Public consultation is mandatory for any IEE/EIA.</p>
	<p>IEE and EMP Preparation. Drafting of IEE and EMP follow the outline of ADB, which include the following: (i) results of baseline information gathering, (ii) assessment of environmental impacts and mitigation measures, (iii) development of an EMP, (iv) EMP implementation budget, (v) institutional arrangements, (vi) results of public consultations done and future consultation plans, (vi) GRM, (vii) capacity assessment, and (viii) monitoring and reporting arrangements, among others.</p>	<p>While EMP preparation is part of IEE and EIA process, the government regulations do not prescribe specific outline of IEE or EMP.</p>
	<p>Disclosure: Disclosure by ADB on its website the following: (i) EARF before project appraisal, and (ii) final IEE reports after securing government endorsement of the reports.</p> <p>Disclosure by government on its website or any accessible place all environmental information and documents such as IEE reports in a form or language understandable to affected people and other stakeholders. For illiterate people, other suitable communication methods will be used.</p>	<p>Disclosure is not mandatory.</p>
	<p>Mitigation measures specified in the IEE study incorporated in project design.</p> <p>EMP implementation and monitoring responsibilities incorporated in the bid and contract documents.</p>	<p>EMP is not usually included in Regular Contracts, and not monitored.</p>
Approval	<p>After review of IEE, executing agency will forward to ADB for review. Cleared IEE is sent back to executing agency for endorsement. Cleared and endorsed IEE is required prior to approval and issuance of tender documents and shall form part of the said tender documents.</p>	<p>Within prescribed period, NEC or Competent Authority (in the case of the project, MOWHS) will approve the IEE and issue the environmental clearance, or reject the application giving reasons for its decision.</p>

Project Stage	ADB	Government of Bhutan
Procurement/ Contract Award	No contract award until: (i) Environmental clearances required by the Government have been obtained; (ii) IEE has been finalized, cleared by ADB, and disclosed to public; (iii) IEE and other safeguard requirements are included in bidding documents and civil works contracts; and (iv) EMP implementation is reflected in PAM.	The environmental assessment laws and rules have no reference to procurement and contract rules.
Implementation	ADB supervision missions shall review effective EMP implementation. Executing agency will submit to ADB the following documents for disclosure on ADB's website: (i) updated/final IEE (if updated/finalized due to change in scope and/or detailed design); (ii) corrective action plan prepared during project implementation, if any; and (iii) semi-annual environmental monitoring reports.	EMP not usually included in Regular Contracts and not monitored. However, the EC must be renewed every year, and application for renewal should be made at least one month prior to expiry.

ADB = Asian Development Bank, EARF = environmental assessment and review framework, EC = Environmental Clearance, EIA = environmental impact assessment, EMP = environmental management plan, IEE = initial environmental examination, MOWHS = Ministry of Works and Human Settlements, NEC = National Environmental Commission, REA = rapid environmental assessment

^a ADB requires meaningful consultation, which is defined as a process that (i) begins early in the project preparation stage and is carried out on an ongoing basis throughout the project cycle; (ii) provides timely disclosure of relevant and adequate information that is understandable and readily accessible to affected people; (iii) undertaken in an atmosphere free of intimidation or coercion; (iv) gender inclusive and responsive, and tailored to the needs of disadvantaged and vulnerable groups; and (v) 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. This is required of all projects.

VI. CONSULTATION, INFORMATION DISCLOSURE, AND GRIEVANCE REDRESS MECHANISM

A. Consultation

92. ADB SPS, 2009 requires meaningful consultation with affected people that:
- (i) begins early in the project preparation stage and is carried out on an ongoing basis throughout the project cycle;
 - (ii) provides timely disclosure of relevant and adequate information that is understandable and readily accessible to affected people;
 - (iii) is undertaken in an atmosphere free of intimidation or coercion;
 - (iv) is gender inclusive and responsive, and tailored to the needs of disadvantaged and vulnerable groups; and
 - (v) 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.

93. As a minimum, stakeholders of each subproject will be consulted regarding the scope of the environmental study and will then be informed during environmental assessment about the likely impacts of the subproject and proposed mitigation measures. The report will record the views of stakeholders and indicate how these have been taken into account in project development. A variety of approaches for consultations include public meetings, focus group discussions, workshops, and public information campaigns. Public consultations may include newspaper advertisement in the local and national newspapers well before the consultations giving brief project description, location, and specific contact data (including telephone numbers). In the meetings, presentations will be provided about the subproject's potential environmental and social impacts. Consultation sessions must have attendance sheets prepared and included as part of the documentation. See Table 15 below for the template.

Table 15: Template of Attendance Sheet for Consultation Meetings

S.N.	Name of Attendees	Sex (M/F)	Age	Affiliation and Position	Signature

94. Public consultation and involvement will be given highest priority in the implementation of mitigation measures. Public consultation will take place, and on the basis of decision of the consultation meeting, implementation of mitigation measures will be prioritized and will be carried out with the involvement of the local people.

95. **Approach for Consultations during COVID-19 Pandemic.** Meaningful consultations will continue even as the COVID-19 pandemic prevails. Consultations will be undertaken through a combination of online, virtual and in-face consultations. Field consultations will be undertaken only when necessary, but following safety guidelines to ensure project team members and participants are not put at high risk of contracting COVID-19. A set of guidelines has been developed for the project to ensure that the conduct of consultations will be a safe activity for the organizers and participants (see Appendix 5). This set of guidelines may be adopted wholly or adjusted depending on the prevailing local and national guidelines on COVID-19.

B. Information Disclosure

96. Information will be disclosed through public consultation and more formally by making documents and other materials available in a form and at a location in which stakeholders can easily access. This will involve making reports available at public locations within the vicinity of the sites and providing a mechanism for the receipt of comments and making documents available more widely by lodging them on the ADB and NHDCL websites.

97. NHDCL, through the PMU, will submit to ADB the following documents for disclosure on ADB website:

- (i) environmental assessment and review framework;
- (ii) the final IEE report for each subproject (per location);
- (iii) new or updated IEE reports and corrective action plan prepared during project implementation, if any; and
- (iv) semi-annual environmental monitoring reports.

98. PMU will provide relevant environmental information, including information from the relevant documents in a timely manner, in an accessible place and in a form and language(s)

understandable to affected people and other stakeholders. For illiterate people, other suitable communication methods will be used. For the benefit of the community, the summary of the IEE will be translated in the local language (Dzongkha) and made available at: (i) offices of PMU; and (ii) offices of the supervising/implementing unit or office.

99. Hard copies of the IEE will be available in the PMU and local supervising/implementing units, and accessible to citizens as a means to disclose the document and at the same time creating wider public awareness. On demand, the person seeking information can obtain a hard copy of the complete IEE document at the cost of photocopy from these offices. Electronic version of the IEE reports will be placed in the official website of NHDCL after approval of the documents by Government and clearance from ADB. Where possible, PMU will issue notification on the disclosure mechanism in local or national newspapers, ahead of the initiation of implementation of the project, providing information on the project, as well as the start dates, etc. This will create awareness of the project implementation among the public. PMU will consider other additional means of information disclosure depending on practicability, such as the distribution of posters to community billboards within the vicinity of the subproject sites to mass campaign the basic tenets of the IEE.

C. Common Grievance Redress Mechanism

100. The project will adopt a three-tier Grievance Redress Mechanism (GRM) in implementing the project. The GRM will receive, evaluate, and facilitate the resolution of social, environmental or any other project related grievances. The GRM will aim to provide a time-bound and transparent mechanism to voice and resolve social and environmental concerns linked to the project. The GRM described below has been developed in consultation with stakeholders. Public awareness campaign will be conducted to ensure that awareness on the project and its grievance redress procedures is generated and shared with affected persons and other stakeholders. The campaign will ensure that the poor, vulnerable and others are made aware of the need for and process in availing the GRM.

101. The GRM provides an accessible, inclusive, gender-sensitive and culturally appropriate platform for receiving and facilitating resolution of affected persons' grievances related to the project. A sample grievance redress form is in Appendix 6. The three-tier GRM for the project is outlined below, each tier having time-bound schedules and with responsible persons identified to facilitate and address grievances at each stage, as required. Public awareness campaigns will ensure that awareness on grievance redress procedures is generated through the campaign. The Environmental and Social Safeguard Officer of PMU will have the overall responsibility for timely grievance redress on environmental and social safeguards issues.

102. **Who can file a complaint:** A complaint may be registered by stakeholders who may be, directly or indirectly affected by the project. A representative can register a complaint on behalf of the affected person or group, provided that the representative is identified by the affected person or group and submits evidence of the authority to act on their behalf.

103. **What type of grievance/complaint:** Any comments, complaints, queries and suggestions pertaining to safeguard compliance - environment, involuntary resettlement, and indigenous people, design related issues, compensation, service delivery or any other issues or concerns related to the project can be registered. The complaint must indicate the name, date, address/contact details of the complainant, location of the problem area, along with the problem.

104. **Where and how to file a complaint:** The contractor's site office will be the primary point for receiving and lodging any complaint. Apart from that, grievances/suggestions/queries from affected persons can be dropped into suggestion boxes or conveyed through phone or e-mails. Affected persons or any complainant will also be able to register grievances on social, environmental or other related issues, personally to the Complaint Cell at PIU level.

105. **Process and Timeframe:** The grievance redress process and timeframe involved in the GRM is described below:

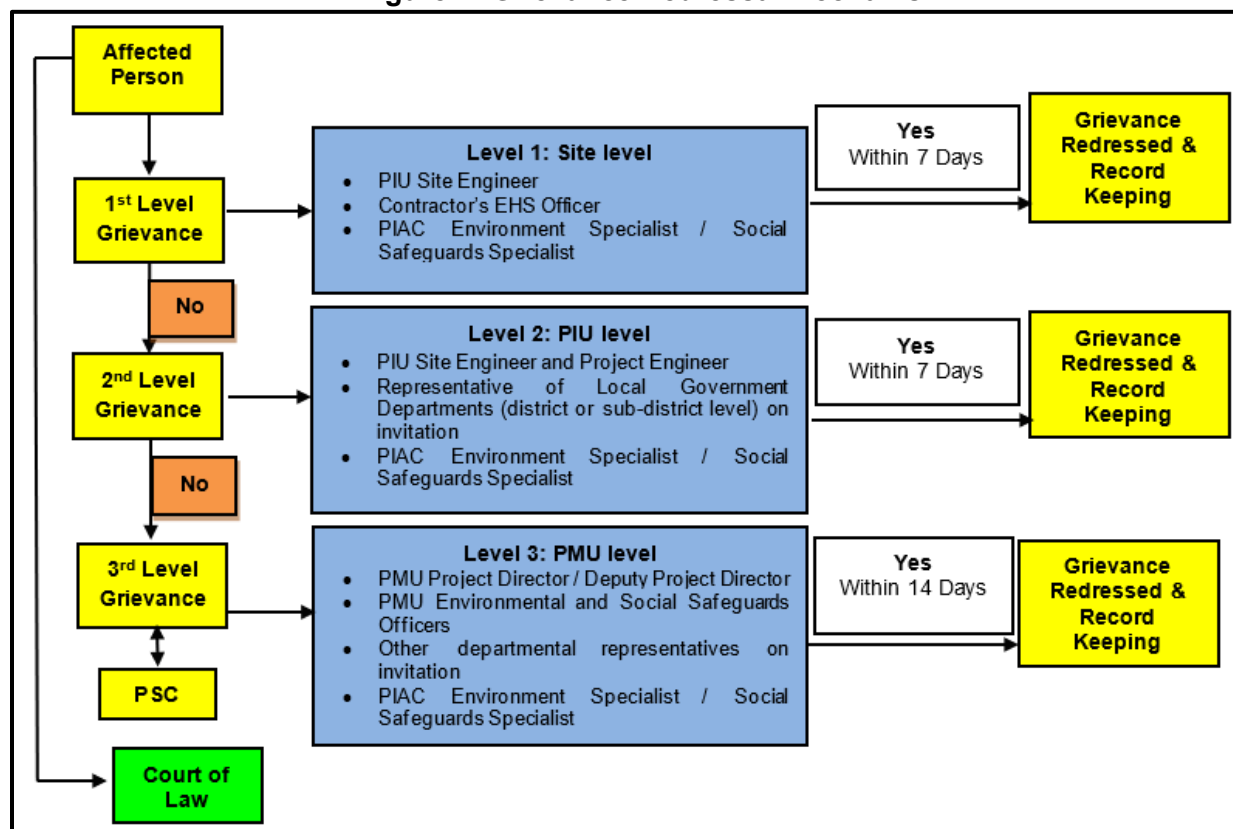
- (i) **1st Level Grievance (Field Level):** In case of grievances that are immediate and urgent in the perception of the complainant, concerned officer of PIU will direct the contractor to resolve the complaint and ensure that it is resolved. If the grievance is not under the contractor's scope, the Project Implementation Assistance Consultant (PIAC) will resolve this issue with the support of respective PIU. Efforts will be made to resolve all grievances within two days from the date of receipt of a complaint / grievance. Relevant government representatives from the respective districts and sub-districts, where the subproject will be implemented, can be consulted as and when required.
- (ii) **2nd Level Grievance (PIU):** Grievances that cannot be redressed at first level within two days will be brought to the notice of the Complaint Cell at PIU level. The Project Engineer will try to resolve the grievance/ complaint within a timeframe of 14 days of receiving the complaint from the first level. The PIU may consult/seek the assistance of the Environment and Social Safeguard Officers at the PMU level. Government representatives from the respective districts and sub-districts where the subproject will be implemented can be consulted as and when required. Any unresolved complaint at the second level will be taken up to the third level.
- (iii) **3rd Level Grievance (PMU):** All the grievances that are not addressed at 2nd level by PIU will be brought to the third level. The third level will meet once a month and determine the merit of each grievance/s brought to the committee. The third level grievance redress committee will resolve the grievance within 14 days of receiving the complaint from the second level. The Environmental Safeguards Officer or Social Safeguards Officer, PMU will provide feedback to the complainant. Any critical or unresolved matter may be taken to the Project Steering Committee (PSC) for solution.

106. MOF will chair the PSC which will comprise government officials from the Ministry of Works and Human Settlement (MOWHS), National Land Commission (NLC), the Gross Happiness Commission (GHNC), the National Commission for Women and Children (NCWC), the NHDCL, and representatives of selected subproject districts. The PSC will be established to oversee the project implementation and provide strategic and policy guidance and will meet at least biannually and as required.

107. The GRM notwithstanding, an aggrieved person shall have access to the country's legal system at any stage, such as Thromde or court of law in the respective district. This can run parallel to accessing the GRM and is not dependent on the negative outcome of the GRM.

108. The process of the project GRM is given in Figure 1.

Figure 1: Grievance Redressal Mechanism



EHS = environmental health and safety, NHDCL=National Housing Development Corporation Limited, PIAC = project implementation assistance consultant, PIU= project implementation unit, PMU =project management unit, PSC= project steering committee

109. The timeframes within which to resolve the issues may be adjusted accordingly during extraordinary circumstances, such as lockdowns or travel restrictions imposed by local or national governments due to the ongoing COVID-19 pandemic. The adjustment will depend on the period of interruption during these events and will be decided upon by the PMU.

110. **Information Dissemination Methods about GRM.** Periodic community meetings will be held by PIUs, and PIAC with affected communities to understand their concerns and help them through the process of grievance redress (including translation from local dialect/language, recording and registering grievances of non-literate affected persons and explaining the process of grievance redress) if required. The above Grievance Redress Process will be discussed with the different stakeholders during stakeholder consultation meetings. These meetings will be held with affected persons and community members (beneficiaries) and the concerned local government representatives where civil works are proposed. The process and timelines for grievance redress and contact details of the persons responsible for grievance redress will be shared in the stakeholder meetings. Action taken in respect of all complaints will be communicated to the complainant by letter, over phone or e-mail or text messaging.

111. **Consultation Arrangements for GRM.** This will include group meetings and discussions with affected persons, to be announced in advance and conducted at the time of day agreed on with affected persons and conducted to address general/common grievances; and if required with the Environment/Social Specialist of PMU/PIU for one-on-one consultations. Non-literate affected

persons/vulnerable affected persons will be assisted to understand the grievance redress process, at the site office of the contractor and at PIU level, the official appointed to receive grievances will assist the non-literate affected persons to register complaints and follow-up with actions at different stages in the process.

112. **Record Keeping.** Records of all grievances received, including contact details of complainant, date of receiving complaint/grievance, nature of grievance, agreed actions and measures, the date these were affected, and outcome will be kept by PIU. The number of grievances recorded and resolved, and the outcomes will be displayed/disclosed in the PIU office, and on the website of PMU, as well as reported in the semiannual social and environmental monitoring reports to be submitted to ADB. The Environmental Officer and the Social Safeguard Officer will be responsible for maintaining the grievance record. Suggested template for record-keeping of grievances is in Appendix 7.

113. **Periodic Review and Documentation of Lessons Learned.** The PMU, and PIUs, supported by the PIAC specialist will periodically review the functioning of the GRM and record information on the effectiveness of the mechanism, especially on the PIU's ability to prevent and address grievances.

114. **Costs.** All costs involved in resolving the complaints (meetings, consultations, communication, and reporting/information dissemination) will be borne by the PMU.

115. **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 (CRO) at ADB headquarters. Before submitting a complaint to the Accountability Mechanism, it is recommended that affected people make effort in good faith effort to resolve their problems by working with the concerned ADB operations department (in this case, the Bhutan Resident Mission (BHRM)). 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, as part of the project GRM.

VII. INSTITUTIONAL ARRANGEMENT AND RESPONSIBILITIES

A. Overall Project Institutional Arrangement

116. The Ministry of Finance (MOF) is the executing agency and the National Housing Development Corporation Limited (NHDCL) is the implementing agency of all outputs of the proposed Bhutan AGreen and Resilient Affordable Housing Sector Project. MOF and NHDCL will engage relevant government agencies²⁹ and NGOs in designing and operationalizing the project. International and national consultants will be recruited to provide expert assistance. A central project steering committee (PSC) set up under the project will facilitate and ensure adequate coordination among relevant stakeholders and provide guidance for PMU and PIUs for this proposed project. In particular, the PSC will: (i) meet at least semi-annually or more frequently if required; (ii) provide guidance for and ensure the implementation of government and ADB policies for the proposed Project; (iii) assist in resolving any interagency implementation problems; (iv)

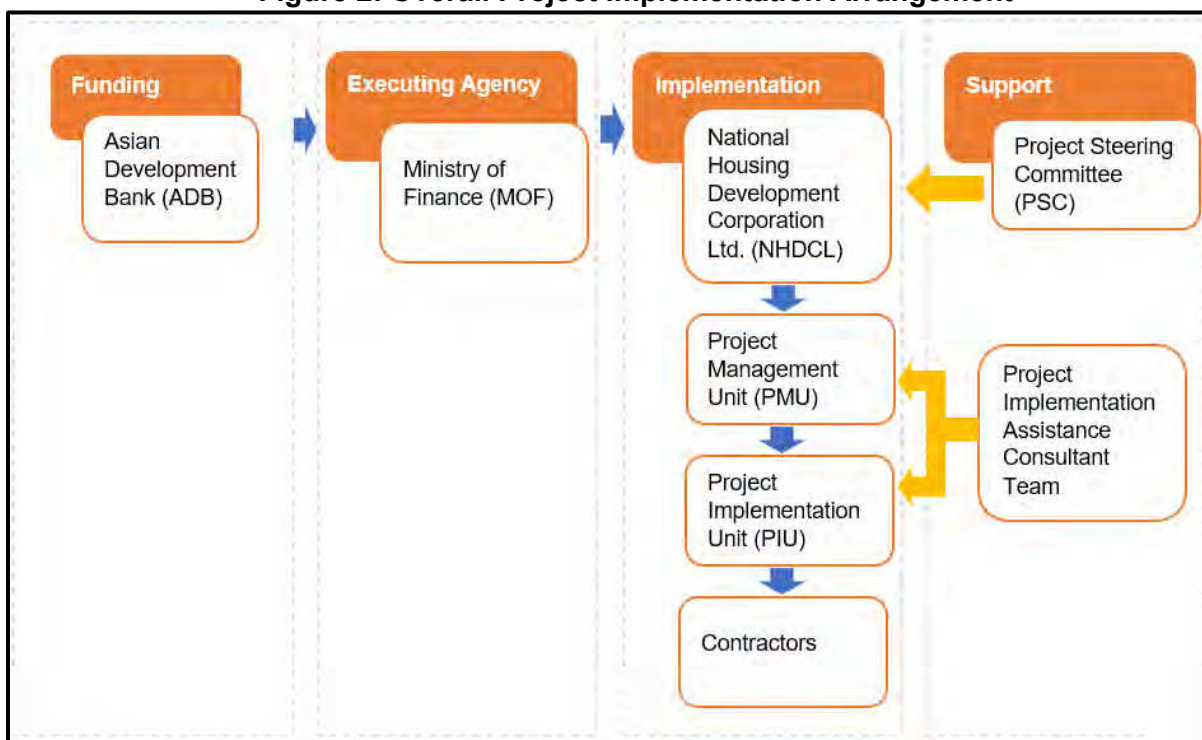
²⁹Department of Disaster Management (Ministry of Home and Cultural Affairs); Department of Engineering Services; Department of Geology and Mines; etc.

review relevant reports and audit statements from PMU and PIUs, as and when required; and (v) ensure that conditions of the Loan Agreement with ADB are met.

117. NHDCL being the implementing agency for the project, will be responsible for management, coordination and execution of all activities funded under the loan. A PMU at NHDCL will be created, which will be responsible for implementing the affordable housing project. The PMU will be headed by a Project Director and supported by PIUs at the district and/or sub-district levels.

118. The PMU and PIUs will be further supported by a Project Implementation Assistance Consultant (PIAC) in project management and implementation. Figure below details the responsibilities for the project preparation, construction and operation.

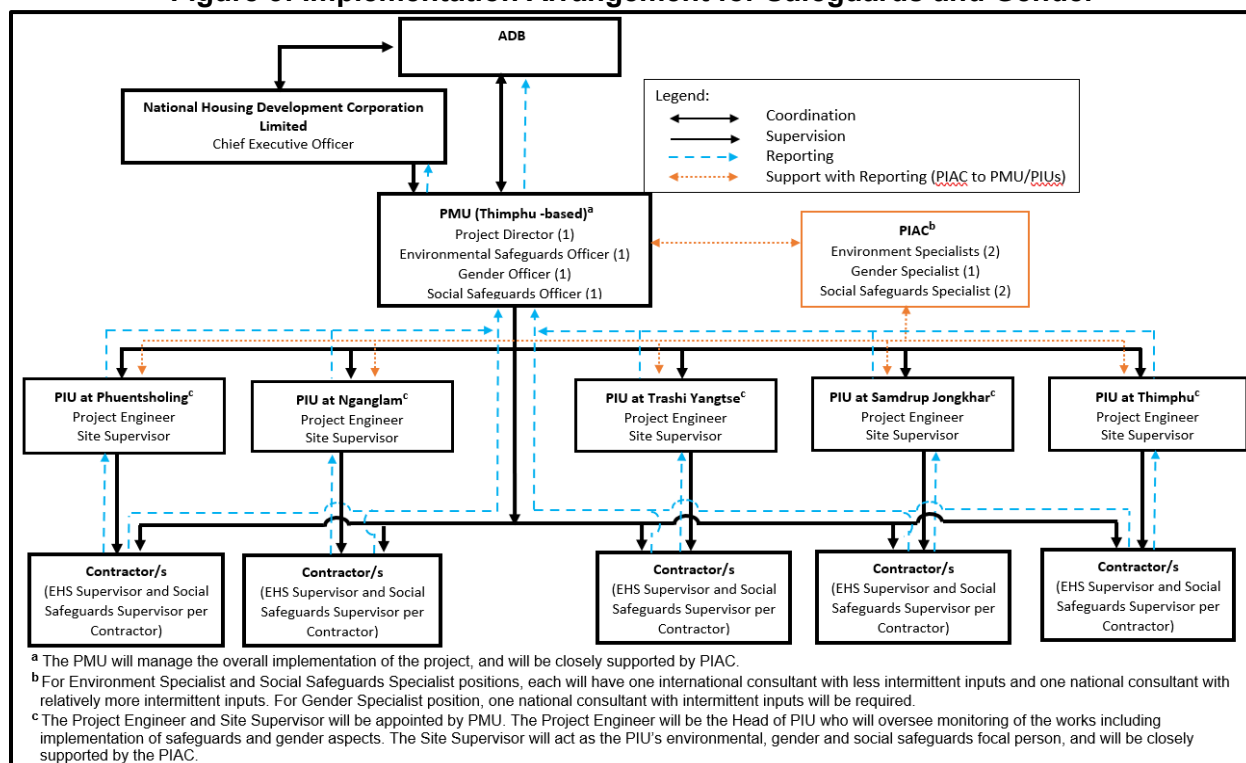
Figure 2: Overall Project Implementation Arrangement



B. Specific Institutional Arrangement for Environmental Safeguards

119. Figure below depicts the implementation arrangement for safeguards (environmental and social), including gender-related aspects of the project.

Figure 3: Implementation Arrangement for Safeguards and Gender



ADB = Asian Development Bank, EHS = environmental, health and safety, PIAC = project implementation assistance consultant, PIU = project implementation unit, PMU = project management unit.

120. Project Management Unit (PMU). The PMU will be staffed with at least one (1) environmental safeguards officer who will lead the efficient overall implementation of environmental safeguards. With support from PIAC, the environmental safeguards officer will:

- (i) ensure subproject compliance with the national and local statutory and legal environmental requirements, ADB SPS 2009, and the project EARF and loan covenants;
- (ii) ensure subprojects conforms to exclusion criteria and subproject selection guidelines as stipulated in this EARF;
- (iii) review and approve subproject category for environment
- (iv) review and approve subproject IEE reports including EMPs; ensure that updated subproject IEEs and EMPs reflect the final subproject detailed designs and submit to ADB for approval prior to commencement of related construction activities;
- (v) ensure that the IEEs including EMPs are updated in case of changes in detailed design that may occur during implementation phase;
- (vi) ensure that EMPs are included in bidding documents and civil works contracts;
- (vii) ensure that Health and Safety Plans including COVID-19 H&S Plans are included in bidding documents and civil works contracts;
- (viii) review and provide recommendations on the approval of site-specific EMPs (SEMPs) of contractors;
- (ix) provide oversight on environmental management aspects of the project, and ensure SEMP and EMPs are implemented by contractors;
- (x) establish a system to monitor environmental safeguards of the project including monitoring the indicators set out in the monitoring plan of the EMP;

- (xi) facilitate timely and ensure overall compliance with all national and local government rules and regulations regarding site and environmental permits/clearances/approvals as well as any other environmental requirements as relevant;
- (xii) review, monitor and evaluate effectiveness with which the SEMP, EMPs, and Health and Safety Plans are implemented, and recommend necessary corrective actions to be taken;
- (xiii) with support from PMU consultants, consolidate quarterly monitoring reports from the PIU and submit semi-annual environmental monitoring reports (SEMRs) to ADB;
- (xiv) ensure availability of budget for safeguards activities;
- (xv) ensure adequate awareness campaigns, information disclosure among affected communities and timely disclosure of final IEEs/EMPs and SEMRs, including corrective action plans, if any, in project website and in a form accessible to the public;
- (xvi) address any grievances brought about through the grievance redress mechanism (GRM) described in this EARF in a timely manner;
- (xvii) undertake regular review of safeguards-related loan covenants, and the compliance during project implementation; and
- (xviii) organize periodic capacity building and training programs on safeguards for stakeholders, PMU, PIUs and contractors.

121. **Project Implementation Unit (PIU).** The PIUs will be responsible for the day-to-day activities of project implementation in the field and will have direct supervision to all contractors at subproject sites. Each PIU will be headed by a Project Engineer who will oversee the overall implementation of the project including safeguards. Each PIU will also appoint a Site Engineer who will oversee and monitor the day-to-day progress and implementation of the environmental provisions in the EMP. With support from PIAC, the Site Engineer will:

- (i) Ensure compliance with government and ADB requirements on environmental safeguards;
- (ii) Conduct regular site visits, including spot checks, to ensure the EMPs and/or SEMP are properly implemented;
- (iii) Review monthly reports from contractors;
- (iv) Prepare quarterly reports on all aspects concerning environmental assessment, management, and monitoring;
- (v) Obtain approval of the quarterly reports from the Project Engineer, and submit approved reports to PMU;
- (vi) Address any grievances brought about through the GRM described in this EARF in a timely manner; and
- (vii) Support all other environmental safeguards-related activities and tasks of the PMU as may be needed.

122. **Environment Specialist Consultant.** An Environment Specialist Consultant will be hired as part of the PIAC. This consultant will assist PMU in implementing the EMPs of all subprojects, including the review and updating of all necessary environmental safeguard documentation as required by ADB SPS and national laws, regulations, policies and guidelines applicable to each subproject. Specific tasks of the consultant are to assist PMU are as follows:

- (i) Conduct of consultations/discussions with environmental regulatory agencies and other stakeholders;

- (ii) Identify all applicable and relevant national laws, regulations, policies and guidelines and preparing environmental assessment;
- (iii) Environmental categorization for the proposed future subprojects;
- (iv) Ensure that subprojects comply with key exclusion criteria and subproject selection guidelines stipulated in this EARF; Work closely with design teams to include environmental considerations in subproject location, design and technical specifications;
- (v) Carry out environmental assessment (IEE) for the proposed future subprojects and formulating environmental management plans (EMPs) for the different components of the civil works in line with ADB and national requirements;
- (vi) Undertake assessment of existing safeguards system under the project, identifying areas for improvement, and development of appropriate safeguards implementation arrangement. This assessment will form part of the IEE, and results will be included in the IEE report;
- (vii) Carry out (a) environmental baseline data collection, (b) assessment of project hazards and risks that may be posed to the environment and people, (c) EMP development or formulation, (d) meaningful consultations with project-affected people; and (e) other preparatory activities necessary for finalizing the subprojects' environment safeguard documents;
- (viii) Prepare IEE report, environmental management plans (EMPs) as required by country's environmental legal frameworks and ADB SPS;
- (ix) Ensure that the relevant provisions of EMPs, including costs of implementing the EMPs, are fully included in bid and contract documents, particularly in the bill of quantities and cost line items;
- (x) Review designs, bidding documents, BOQ, and safeguard documents to ensure environment, health and safety considerations including issues related to COVID 19 pandemic, are adequately covered and costed;
- (xi) Calculate and provide the indicative cost estimate to implement EMPs, environmental monitoring programs, awareness programs, etc.;
- (xii) Update the subproject IEE studies and reports and EMPs to reflect any changes in subproject detailed design or implementation.; the IEE shall reflect the final subproject design; the IEE shall also be updated in case of any unanticipated impacts;
- (xiii) Assisting with awareness campaigns for and meaningful consultations with affected communities;
- (xiv) Identify and conduct capacity building activities for PMU, PIU and contractors,;
- (xv) Ensure quality and format of IEE reports, and other environmental safeguard documents following ADB Handbook of Styles and Usage;
- (xvi) Ensure compliance with ADB's disclosure requirements as per the SPS;
- (xvii) Review contractor's EMP/SEMP for approval of PMU and PIU;
- (xviii) Provide guidance on resolving issues pertaining to effective and efficient implementation of proposed environmental mitigation measures per EMPs/SEMPs during construction phase;
- (xix) Carry-out periodic site visits and monitor implementation of EMPs/SEMPs;
- (xx) Assist the PIU in the preparation of environmental safeguards compliance/EMP implementation updates in the quarterly reports to PMU;
- (xxi) Monitor required environmental parameters and prepare semi-annual environmental monitoring report per the requirement of ADB;
- (xxii) Prepare all necessary environmental reports per requirement during implementation of the civil works contracts; and

- (xxiii) Support all other environmental safeguards-related activities and tasks of the PMU and PIUs as may be needed.

123. **Civil Works Contracts and Contractors.** The IEEs with EMPs will form part of bidding and contract documents and verified by PMU. Each contractor will be required to designate an environment, health and safety supervisor to ensure implementation of EMP during civil works. Contractors are to carry out all environmental mitigation and monitoring measures outlined in their contract. The contractor will be required to submit to PMU, for review and approval, a SEMP including (i) proposed sites/locations for construction work camps, storage areas, hauling roads, lay down areas, disposal areas for solid and hazardous wastes; (ii) specific mitigation measures following the approved EMP; (iii) monitoring program per EMP; and (iv) budget for SEMP and EMP implementation. No works can commence until SEMP is approved by PMU. The contractor will also be required to prepare site-specific health and safety management plan including COVID-19 H&S plan/measures for approval of the PMU prior to commencement of construction activities. Other specific requirements include the following:

- (i) implement PMU/PIU- approved CEMP/SEMP and SHSMP;
- (ii) report to PIU if any new impacts surface during construction and seek guidance from PIU to ensure that any potential environmental impact or concern will be avoided/mitigated;
- (iii) attend training and capacity building sessions on environmental safeguards, and conduct orientation and daily briefing sessions for workers on EHS;
- (iv) ensure safe working environment at the construction sites.
- (v) provide appropriate worker facilities (workers accommodation/camps) and personal protective equipment (PPE).
- (vi) maintain records of work-related accidents and undertake remedial actions to mitigate/minimize recurrence.
- (vii) Conduct environmental monitoring activities as per approved monitoring plan;
- (viii) Prepare monthly EMP monitoring reports and submit to the PIU
- (ix) Address any grievances in an effective and timely manner

124. A copy of the EMP/approved SEMP will be kept on-site during the construction period at all times. Non-compliance with, or any deviation from, the conditions set out in the EMP/SEMP constitutes a failure in compliance and will require corrective actions.

125. PMU will ensure that bidding and contract documents include specific provisions requiring contractors to comply with: (i) all applicable labor laws and core labor standards on (a) prohibition of child labor as defined in national legislation for construction and maintenance activities; (b) equal pay for equal work of equal value regardless of gender, ethnicity, or caste; and (c) elimination of forced labor; and with (ii) the requirement to disseminate information on sexually transmitted diseases, including HIV/AIDS, to employees and local communities surrounding the proposed project infrastructure sites.

Table 16: Environmental Safeguards Roles and Responsibilities

Project Management Unit	Environment Specialist Consultant	ADB
Pre-construction stage		
Environmental officer of the PMU, with assistance from the environment specialist consultant, to conduct Rapid Environmental Assessment (REA) for each site of	Environment Specialist Consultant will assist PMU and conduct IEE (or update existing IEE) for all subprojects, which will include an	ADB to review the REA checklists and reconfirm the categorization.

Project Management Unit	Environment Specialist Consultant	ADB
proposed subprojects using checklist available from ADB. Based on the REA, categorize the project based on ADB SPS. Submit all categorization forms to ADB.	EMP. The environmental expert and other consultants will work with the design team to ensure all relevant environmental considerations are included in the design. The PMU consultants (environment and social) will assist PMU in the conduct of public consultations during IEE process and incorporate consultation findings into project designs and IEE.	
Based on its review, PMU will approve the IEE and send to ADB for review and clearance before contract award. The IEE also made available on request. Ensure IEE with the corresponding EMP is part of contract documents for category B subprojects. If the proposed infrastructure is classified as category C, the PMU to provide generic mitigation measures, if any, to be implemented. For Category C, no IEE/EIA is required, and only a review of the environmental implications is necessary.	After the approval of IEE by PMU and clearance by ADB, the Environment Specialist Consultant will assist PMU in disseminating the IEE to public for information as required by ADB SPS.	ADB will review and provide clearance of IEE/EMPs before award of contracts. ADB will disclose cleared and government-endorsed IEEs on its website.
Environmental officer of PMU to provide guidance to the PMU consultant team to ensure compliance of all undertakings with regulatory requirements with regard to environment. This shall include guidance in preparation of the documents as required for the issuance of environmental clearance and other necessary clearances such as for example forest clearances if required, submission of application forms, and liaising with agencies towards obtaining these clearances from relevant government agencies. Environmental officer of PMU shall notify the ADB on obtaining of these clearances, including the conditions specified if any in the clearances, and integration of these into the contracts/EMP.	The Environment Specialist Consultant shall support the PMU environmental safeguards officer in compiling the necessary information required for submission of application forms for clearances, obtaining NOC from local authorities, etc., including coordinating with the NEC/MOWHS on a regular basis and provide necessary documentation and clarifications as required until the environmental clearance is issued.	ADB to ensure that the clearance requirements are included in the contract provisions/EMP.
Environmental officer of PMU to ensure that the IEE containing the EMP of each subproject is included in the bid and contract documents. At the same time, the Environmental officer of PMU to ensure that the total budget for implementing the EMP is included in the bid and contract documents.	The Environment Specialist Consultant will support the PMU environmental safeguards officer in ensuring that each contractor: (i) prepares its SEMP based on the EMP in the IEE, and (ii) has budget allocated for the implementation of the SEMP.	
Construction stage		
PMU to review the monthly monitoring reports from the environment specialist consultant to ensure that all mitigation measures are implemented. PMU to	Contractors to conduct environmental monitoring and implement SEMP/EMPs. The Environment Specialist Consultant	ADB to review the reports and provide necessary

Project Management Unit	Environment Specialist Consultant	ADB
consolidate the monthly reports and submit semi-annual reports to ADB for review. Corrective actions to be undertaken if needed.	will assist the PMU environmental officer in (i) review and approval of contractors' implementation plans such as EMPs/SEMPs, and (ii) monitor the implementation of mitigation measures in the EMPs/SEMPs by contractors. The Environment Specialist Consultant will also prepare monthly progress reports including a section on implementation of the mitigation measures and submit to PMU for review.	advice/guidance needed to the PMU.
Operation Stage		
PMU to conduct monitoring, as specified in the environmental monitoring plan of EMP. NHDCL to monitor the performance, if required and as specified in monitoring plan of EMP.		ADB to review semi-annual environmental monitoring report and disclose on its website. ADB to prepare Project Completion Report
PMU to continue submission of semi-annual environmental monitoring report to ADB until ADB issues a Project Completion Report.		

ADB = Asian Development Bank, EIA = environmental impact assessment, EMP = environmental management plan, IEE = initial environmental examination, NHDCL = National Housing Development Corporation Limited, NOC = no objection certificate, PMU = project management unit, REA = rapid environmental assessment, SEMP = site-specific environmental management plan, SPS = safeguards policy statement.

D. Capacity Development

126. The PMU consultants (Environment Specialist and Social Safeguards Specialist) will support PMU in training the stakeholders, including contractors. Training modules will need to cover safeguards awareness and management in accordance with both ADB and government requirements as specified below:

- (i) Environmental Safeguards
 - (a) sensitization on ADB's safeguard policy on environment;
 - (b) introduction to environment and environmental considerations in the project;
 - (c) review of IEEs and integration into the project detailed design;
 - (d) community and occupational health and safety considerations;
 - (e) consultation and participation requirements;
 - (f) project GRM and ADB's Accountability Mechanism;
 - (g) improved coordination within nodal departments; and
 - (h) monitoring and reporting system. The contractors will be required to conduct environmental awareness and orientation of workers prior to deployment to work sites.
- (ii) Social Safeguards
 - (a) sensitization on ADB's policies on Involuntary Resettlement and Indigenous People;
 - (b) introduction to social safeguards assessment and document requirements;

- (c) consultation and participations requirements;
- (d) project GRM and ADB's Accountability Mechanism; and
- (e) monitoring and reporting system.

E. Staffing Requirement and Budget

127. Costs required for implementing the EARF will cover the following activities:

- (i) Manpower resources such as consultants or experts required;
- (ii) Administrative expenses, such as costs of application for Environmental Clearance and other statutory clearances/permits, etc.;
- (iii) Conducting environmental assessments of future subprojects, preparing and submitting reports and meaningful consultations and disclosure; and
- (iv) Implementation of EMP and any other activities necessary for effective compliance with the requirements of the EARF.

128. For budgeting purposes, it is assumed that all future subprojects will be classified by ADB as Category B (requiring IEE), and that the report will also be deemed satisfactory by NEC or MOWHS. Some undertakings may require a simpler environmental review, but this is discounted for budgeting purposes. PMU will aim to produce a single document that is acceptable to both ADB and NEC/MOWHS to avoid duplication of effort.

129. Each IEE report to be prepared may involve approximately two working weeks equivalent of effort by an experienced environmental specialist, conducting the following activities: (i) site visit to assess environmental conditions and potential impacts of the scheme; (ii) liaison with the local government agencies to obtain any environmental/social data that might be available locally (e.g. population figures, designated sites, etc.); (iii) consultation with the local community to inform them about the project and the subprojects and identify their views and concerns; (iv) assessment of impacts and development of mitigation; and (v) desk study and report preparation.

130. Each subproject is generally straightforward to build and complete. Environmental monitoring during construction will also be straightforward and will involve periodic site observations and interviews with workers and others, plus checks of reports and other documents. This will be conducted by the Environment Specialist Consultant and will be supervised by the PMU environment officer.

131. The cost of mitigation measures and surveys during construction stage will be incorporated into the contractor's costs, which will be binding upon the contractor. Any surveys required will be conducted by the contractor.

132. The operation phase mitigation measures are again of good operating practices, which will be the responsibility of the housing association (or equivalent) assigned to take over the management of completed housing projects. All monitoring during the operation and maintenance phase will be conducted by and costs borne by NHDCL.

133. The indicative costs of EARF implementation are shown in Table 17.

Table 17: Indicative Cost of Environmental Assessment and Review Framework Implementation

Component	Description	Number	Cost Per Unit (\$)	Cost (\$)	Source of Funds
A. Consultant Cost					
Environmental Expert	Responsible for preparation of IEEs for future subprojects and updating of future IEEs, if necessary, based on detailed design. Responsible for monitoring implementation of environmental safeguards of all subprojects during the pre-construction and construction phases.	12-person months ^a	\$3,000	\$72,000	Remuneration and budget for travel covered in the consultant contract
B. Administrative Costs					
Legislation, permits, and agreements	Permit for excavation, tree-cutting permits, etc.	Lump sum	\$1,000	\$1,000	These consents are to be obtained by contractor at its own expense.
	Environmental assessment and environmental clearances as per national requirements Obtaining right of way clearances with related national agencies, if required.	Lump sum	\$5,000	\$5,000	NHDCL cost
C. Environmental Monitoring Costs					
Baseline monitoring prior to construction	During detailed design stage to establish existing environmental conditions	Lump sum	\$5,000	\$5,000	Covered under PIAC contract
	Before start of construction works	1 sample each for noise, ambient air quality, receiving/adjacent body of water	\$1,000 per site	\$36,000 ^b	Contractor's cost
Monitoring during construction	(i) Ambient air quality; (ii) Surface water quality; and (iii) Noise level. Sampling sites near sensitive areas (schools, hospitals, places of worship, historical/cultural areas)				
D. Other Costs					
Public consultations and information disclosure	Information disclosure and consultations during preconstruction and construction phase, including public awareness campaign through media	As per requirement	Lump sum	\$15,000	Covered under PIAC contract

Component	Description	Number	Cost Per Unit (\$)	Cost (\$)	Source of Funds
Capacity building	(i) Orientation workshop for officials involved in the project implementation on ADB Safeguards Policy Statement, Government of Bhutan environmental laws and regulations, and environmental assessment process; (ii) induction course contractors, preparing them on EMP implementation and environmental monitoring requirements related to mitigation measures; and taking immediate action to remedy unexpected adverse impacts or ineffective mitigation measures found during the course of implementation; and (iii) lessons learned information sharing	Module 1 – immediately upon engagement of the PMU consultants Module 2 – prior to award of civil works contracts (twice a year for 4 years) Module 3 – upon completion of the project/subproject	Module 1 - \$500 Module 2 - \$200 Module 3 - \$500	\$2,600	Covered under PIAC contract
GRM implementation	Costs involved in resolving complaints (meetings, consultations, communication, and reporting/information dissemination)	Lump sum	Part of administration cost of PMU	\$1,500 per year	PMU cost
Any unanticipated impact due to project implementation	Mitigation of any unanticipated impact arising during construction phase and defect liability period	Lump sum	Contractor's liability	As per insurance requirement	Contractor's insurance

^a Consultant engagement is based on intermittent inputs and the period is indicative. This may be adjusted accordingly based on the need of PMU. It is expected that the consultant will be utilized with more inputs during the initial period of implementation and lesser inputs towards the end of implementation.

^b This indicative cost assumes to cover all environmental sampling activities (ambient air, noise, surface water) for 9 subprojects for approximately four occasions for each subproject (i.e. baseline plus 3 semi-annually during 18-month construction phase).

ADB = Asian Development Bank, EARF = environmental assessment and review framework, EMP = environmental management plan, GRM = grievance redress mechanism, IEE = initial environmental examination, NHDCL = National Housing Development Corporation Limited, PMU = project management unit.

VIII. MONITORING AND REPORTING

134. The PMU and PIUs will monitor the safeguards compliance and progress of EMP implementation in the different locations of the project. The PMU and PIUs, with support from Environment Specialist Consultant, will undertake site inspections and document review to verify compliance and progress toward the final outcome of the project. The contractors will conduct day to day implementation of their respective SEMP.

135. The contractors will submit monthly reports to their respective PIUs with jurisdiction over the subproject sites. The monthly reports will include compilation of copies of monitoring sheets accomplished and duly signed by the contractors' EHS supervisors (or equivalent) on a daily basis. A sample daily monitoring sheet which can be used by the contractors is in Appendix 8. This monitoring sheet is indicative which can be further enhanced depending on the actual situations at subproject construction sites.

136. The PIUs will submit quarterly environmental monitoring reports to PMU, which will include summary of daily monitoring activities of contractor and results of any independent monitoring or inspection activities of the PIUs. In the conduct of these independent inspection activities, PIUs will be supported by the Environment Specialist Consultant in this regard. A sample inspection checklist is in Appendix 9. This checklist is indicative which can be further enhanced depending on the actual situations at subproject construction sites.

137. PMU shall consolidate quarterly reports from the PIUs and results of its independent monitoring or inspection activities. With support from the Environment Specialist Consultant, PMU shall accomplish semi-annual environmental monitoring report (SEMRs), which shall be submitted to ADB for review and disclosure on ADB website. Submission of SEMR will continue until ADB issues a project completion report. The template for the SEMR is attached as Appendix 10.

138. ADB will carry out the following monitoring actions to supervise the project implementation:

- (i) on a need basis, conduct site visits for undertakings with potential adverse environmental or social impact;
- (ii) conduct supervision missions with detailed review by ADB's environment and social safeguard specialists and/or officers and/or consultants with adverse environmental and social impacts;
- (iii) review the SEMRs submitted by PMU to ensure that adverse impacts and risks are mitigated as planned in the EMP;
- (iv) work with NHDCL to rectify to the extent possible any failures to comply with its environmental safeguard commitments, as covenanted in the loan agreement and elaborated in all environmental safeguard documents; and formulate and implement a corrective action plan to re-establish compliance as appropriate; and
- (iv) prepare a project completion report that assesses whether the objective and desired outcomes of the safeguard plans have been achieved, taking into account the baseline conditions and the results of monitoring.

139. ADB's monitoring and supervision activities are carried out on an on-going basis until a Project Completion Report is issued. ADB issues a Project Completion Report within 1-2 years after the project infrastructures are physically completed and in operation.

ADB Prohibited Investment Activities List

The following do not qualify for Asian Development Bank financing:

- (i) production or activities involving harmful or exploitative forms of forced labor¹ or child labor;²
- (ii) production of or trade in any product or activity deemed illegal under host country laws or regulations or international conventions and agreements or subject to international phaseouts or bans, such as (a) pharmaceuticals,³ pesticides, and herbicides,⁴ (b) ozone-depleting substances,⁵ (c) polychlorinated biphenyls⁶ and other hazardous chemicals,⁷ (d) wildlife or wildlife products regulated under the Convention on International Trade in Endangered Species of Wild Fauna and Flora,⁸ and (e) transboundary trade in waste or waste products;⁹
- (iii) production of or trade in weapons and munitions, including paramilitary materials;
- (iv) production of or trade in alcoholic beverages, excluding beer and wine;¹⁰
- (v) production of or trade in tobacco;¹⁰
- (vi) gambling, casinos, and equivalent enterprises;¹⁰
- (vii) production of or trade in radioactive materials,¹¹ including nuclear reactors and components thereof;
- (viii) production of, trade in, or use of unbonded asbestos fibers;¹²
- (ix) commercial logging operations or the purchase of logging equipment for use in primary tropical moist forests or old-growth forests; and
- (x) marine and coastal fishing practices, such as large-scale pelagic drift net fishing and fine mesh net fishing, harmful to vulnerable and protected species in large numbers and damaging to marine biodiversity and habitats.

¹ Forced labor means all work or services not voluntarily performed, that is, extracted from individuals under threat of force or penalty.

² Child labor means the employment of children whose age is below the host country's statutory minimum age of employment or employment of children in contravention of International Labor Organization Convention No. 138 "Minimum Age Convention" (www.ilo.org).

³ A list of pharmaceutical products subject to phaseouts or bans is available at <http://www.who.int>.

⁴ A list of pesticides and herbicides subject to phaseouts or bans is available at <http://www.pic.int>.

⁵ A list of the chemical compounds that react with and deplete stratospheric ozone resulting in the widely publicized ozone holes is listed in the Montreal Protocol, together with target reduction and phaseout dates. Information is available at <http://www.unep.org/ozone/montreal.shtml>.

⁶ A group of highly toxic chemicals, polychlorinated biphenyls are likely to be found in oil-filled electrical transformers, capacitors, and switchgear dating from 1950 to 1985.

⁷ A list of hazardous chemicals is available at <http://www.pic.int>.

⁸ A list is available at <http://www.cites.org>.

⁹ As defined by the Basel Convention; see <http://www.basel.int>.

¹⁰ This does not apply to project sponsors who are not substantially involved in these activities. Not substantially involved means that the activity concerned is ancillary to a project sponsor's primary operations.

¹¹ This does not apply to the purchase of medical equipment, quality control (measurement) equipment, and any equipment for which ADB considers the radioactive source to be trivial and adequately shielded.

¹² This does not apply to the purchase and use of bonded asbestos cement sheeting where the asbestos content is less than 20%.

Outline of Initial Environmental Examination Report¹

1. An initial environmental examination (IEE) report is required for all environment B projects. Its level of detail and comprehensiveness is commensurate with the significance of potential environmental impacts and risks. An IEE report will follow the outline below. The substantive aspects of this outline will guide the preparation of environmental impact assessment reports, although not necessarily in the order shown. IEEs for sample subprojects have been prepared during loan processing, which will serve as actual reference for the preparation of IEE reports of future subprojects.
2. **Executive Summary.** Describe concisely the critical facts, significant findings, and recommended actions.
3. **Policy, Legal, and Administrative Framework.** Discuss the national and local legal and institutional framework within which the environmental assessment is carried out. Identify project-relevant international environmental agreements to which Government of Bhutan is a party.
4. **Description of the Project.** Describe the project, its major components, and its geographic, ecological, social, and temporal context, including any associated facility required by and for the subproject/package (for example, access roads, power plants, water supply, quarries and borrow pits, and spoil disposal). Include drawings and maps showing the project's layout and components, the project site, and the project's area of influence.
5. **Description of the Environment (Baseline Data).** Describe relevant physical, biological, and socioeconomic conditions within the project area. Include any known current and proposed development activities within the project's area of influence, including those not directly connected to the project. Indicate the accuracy, reliability, and sources of the data.
6. **Anticipated Environmental Impacts and Mitigation Measures.** Predict and assess the project's likely positive and negative direct and indirect impacts to physical, biological, socioeconomic (including occupational health and safety, community health and safety, vulnerable groups and gender issues, and impacts on livelihoods through environmental media and physical cultural resources in the project's area of influence, in quantitative terms to the extent possible; identify mitigation measures and any residual negative impacts that cannot be mitigated; explore opportunities for enhancement; identify and estimate the extent and quality of available data, key data gaps, and uncertainties associated with predictions and specify topics that do not require further attention; and examine global, trans boundary, and cumulative impacts as appropriate.
7. **Analysis of Alternatives.** Examine alternatives to project or project component site, technology, design, and operation—including the no project alternative—in terms of their potential environmental impacts; the feasibility of mitigating these impacts; their capital and recurrent costs; their suitability under local conditions; and their institutional, training, and monitoring requirements. State the basis for selecting the particular project design proposed and justify recommended emission levels and approaches to pollution prevention and abatement.

¹ Suggested outline per ADB SPS.

8. **Information Disclosure, Consultation, and Participation.** (i) Describe the process undertaken during project design and preparation for engaging stakeholders, including information disclosure and consultation with affected people and other stakeholders; (ii) Summarize comments and concerns received from affected people and other stakeholders and how these comments have been addressed in project design and mitigation measures, with special attention paid to the needs and concerns of vulnerable groups, including women, the poor, and Indigenous Peoples; and (iii) Describe the planned information disclosure measures (including the type of information to be disseminated and the method of dissemination) and the process for carrying out consultation with affected people and facilitating their participation during project implementation.

9. **Grievance Redress Mechanism.** Describe the grievance redress framework (both informal and formal channels), setting out the time frame and mechanisms for resolving complaints about environmental performance.

10. **Environmental Management Plan.** Describe and discuss the set of mitigation and management measures to be taken during project implementation to avoid, reduce, mitigate, or compensate for adverse environmental impacts (in that order of priority). Include multiple management plans and actions, if necessary. Include the following key components (with the level of detail commensurate with the project's impacts and risks):

- (i) **Mitigation.** Identify and summarize anticipated significant adverse environmental impacts and risks; describe each mitigation measure with technical details, including the type of impact to which it relates and the conditions under which it is required (for instance, continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures, as appropriate; and provide links to any other mitigation plans (for example, for involuntary resettlement, Indigenous Peoples, or emergency response) required for the project.
- (ii) **Monitoring.** Describe the monitoring measures with technical details, including parameters to be measured, methods to be used, sampling locations frequency of measurements, detection limits and definition of thresholds that will signal the need for corrective actions; and describe monitoring and reporting procedures to ensure early detection of conditions that necessitate particular mitigation measures and document the progress and results of mitigation.
- (iii) **Implementation arrangements.** Specify the implementation schedule showing phasing and coordination with overall project implementation; describe institutional or organizational arrangements, namely, who is responsible for carrying out the mitigation and monitoring measures, which may include one or more of the following additional topics to strengthen environmental management capability: technical assistance programs, training programs, procurement of equipment and supplies related to environmental management and monitoring, and organizational changes; and estimate capital and recurrent costs and describe sources of funds for implementing the environmental management plan.
- (iv) **Performance indicators.** Describe the desired outcomes as measurable events to the extent possible, such as performance indicators, targets, or acceptance criteria that can be tracked over defined time periods.

11. **Conclusion and Recommendation.** Provide the conclusions drawn from the assessment and provide recommendations.

Contractor Guidelines on Responding to Threat of Corona Virus Disease (COVID-19)

1. This set of guidelines has been formulated based on common practices in many countries worldwide on the fight against COVID-19, and in consonance with ADB's Interim Advisory Note on Protecting the Safety and Well-Being of Workers and Communities from COVID-19,¹ WHO guidance on COVID-19,² and the ILO Workplace Response to the Coronavirus Disease outbreak,³ the IFC-WB Environmental, Health, and Safety (EHS) General Guidelines (April 2007). It aims to assist Contractors during construction works in response to the COVID-19 pandemic.
2. The Contractor will be required to comply with the requirements and recommendations from the national policies and guidelines on COVID-19, which may change from time to time.
3. The Contractor will employ an EHS Engineer/Officer who shall oversee compliance to the occupational health and safety (OHS) requirements particularly on prevention of COVID-19 transmission in the workplace. This shall include but not limited to the following:
 - (i) Orientation of workers on OHS, disaster and emergency response procedures, and COVID-19;
 - (ii) Provision and use of personal protective equipment (PPE), fire suppression system and appropriate medical emergency response logistics;
 - (iii) Placement of safety signs, posters (e.g., WHO posters on COVID-19), information and warning signs within the worksite and adjacent areas;
 - (iv) Implementation and maintenance of good housekeeping;
 - (v) Monitoring of occupational health and environmental controls (e.g., airborne contaminants, noise, illumination, ventilation, temperature and humidity); and
 - (vi) Conduct of regular safety inspection and incident reporting/ recording.
4. The Contractors will provide all subcontractors with compulsory site induction on COVID-19 response prior to start of any works. The EHS Officers will keep a record of the contact details of all worker and staff: mobile telephone number, alternate telephone, email, and address where they are staying.
5. The Contractors will maintain regular housekeeping practices, including routine cleaning and disinfecting of surfaces, equipment, and other elements of the work environment. Make sure workplaces are clean and hygienic. Surfaces (e.g., desks and tables) and objects (e.g., telephones, keyboards) need to be wiped with disinfectant regularly.
6. The Contractors will ensure that all persons reporting to work are healthy and in a fit state. Any person showing signs of cough and colds will not be allowed to enter the work sites and will be advised to stay at home, or follow the isolation procedure, if any, by the government.
7. The Contractors will ensure that staff, subcontractors, and workers have access to places where they can wash their hands with soap and water. Wash stations at strategic locations within the work areas that are equipped with adequate soap and water will be provided for workers to wash their hands. Put sanitizing hand rub dispensers in prominent places around the workplace.

¹ <https://www.adb.org/publications/safety-well-being-workers-communities-covid-19>

² WHO. Coronavirus disease (COVID-19) technical guidance: Guidance for schools, workplaces & institutions. 19 March 2020. <https://www.who.int/docs/default-source/coronaviruse/advice-for-workplace-clean-19-03-2020.pdf>

³ ILO. ILO Standards and COVID-19 (coronavirus) 23 March 2020 - Version 1.2 https://www.ilo.org/global/topics/safety-and-health-at-work/areasofwork/occupational-health/WCMS_738178/lang--en/index.htm.

Make sure these dispensers are regularly refilled. All workers will be required to practice basic hygiene such as hand washing before eating, drinking, and after using the toilet.

8. The Contractors will display posters promoting hand-washing, and social distancing – ask local public health authority for these or consult www.WHO.int. Combine posters with other communication measures like offering guidance from EHS Officers, briefings at meetings, and information on intranet sites to promote handwashing.

9. The Contractors will not allow any person on medication for a specific medical condition that will impair their performance to work at the sites.

10. The Contractors and all subcontractors will provide the appropriate PPE for all their workers. All tools and PPE must be in good condition, fit for purpose, and receive all the mandatory and statutory inspections, checks and calibrations, as and when required. Proof that they are in good condition may be required, if needed. Workers will be responsible to wear PPE appropriately, take good care of equipment and report any defects. Have surgical masks and disposable gloves available to provide anyone who develops respiratory symptoms. All tools must be sanitized after every use.

11. The Contractors will actively monitor where COVID-19 infection is high. In the event COVID-19 is known in their respective communities, the Contractors will brief and/or orient workers, staff and subcontractors that anyone with mild cough or low-grade fever (37.3°C or more) will stay at home. A work from home arrangement, if possible, can be arranged.

12. The Contractors will keep promoting the message that people need to stay at home even if they have only mild symptoms of COVID-19 by displaying posters with this message in the workplace, combined with other channels of communications commonly used in the workplace.

13. The Contractors will develop a preparedness and response plan to prevent COVID-19 infection in the workplace. The preparedness plan will be submitted to PMU for approval.

Rapid Environmental Assessment Checklist for Urban Development Project

Country/Project Title:

Screening Questions	Yes	No	Remarks
A. Project Siting Is the project area...			
▪ Densely populated?			
▪ Heavy with development activities?			
▪ Adjacent to or within any environmentally sensitive areas?			
• Cultural heritage site			
• Protected Area			
• Wetland			
• Mangrove			
• Estuarine			
• Buffer zone of protected area			
• Special area for protecting biodiversity			
• Bay			
B. Potential Environmental Impacts Will the Project cause...			
▪ impacts on the sustainability of associated sanitation and solid waste disposal systems and their interactions with other urban services.			
▪ deterioration of surrounding environmental conditions due to rapid urban population growth, commercial and industrial activity, and increased waste generation to the point that both manmade and natural systems are overloaded and the capacities to manage these systems are overwhelmed?			
▪ degradation of land and ecosystems (e.g. loss of wetlands and wild lands, coastal zones, watersheds and forests)?			
▪ dislocation or involuntary resettlement of people?			
▪ disproportionate impacts on the poor, women and children, Indigenous Peoples, or other vulnerable group?			
▪ degradation of cultural property, and loss of cultural heritage and tourism revenues?			
▪ occupation of low-lying lands, floodplains, and steep hillsides by squatters and low-income groups, and their exposure to increased health hazards and risks due to pollutive industries?			
▪ water resource problems (e.g. depletion/degradation of available water supply, deterioration for surface and ground water quality, and pollution of receiving waters)?			
▪ air pollution due to urban emissions?			
▪ risks and vulnerabilities related to occupational health and safety due to physical, chemical, and biological hazards during project construction and operation?			
▪ road blocking and temporary flooding due to land excavation during rainy season?			
▪ noise and dust from construction activities?			
▪ traffic disturbances due to construction material transport and wastes?			

Screening Questions	Yes	No	Remarks
▪ temporary silt runoff due to construction?			
▪ hazards to public health due to ambient, household and occupational pollution, thermal inversion, and smog formation?			
▪ water depletion and/or degradation?			
▪ overpaying of ground water, leading to land subsidence, lowered ground water table, and salinization?			
▪ contamination of surface and ground waters due to improper waste disposal?			
▪ pollution of receiving waters resulting in amenity losses, fisheries and marine resource depletion, and health problems?			
▪ large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?			
▪ social conflicts if workers from other regions or countries are hired?			
▪ risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during operation and construction?			
▪ community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation, and decommissioning?			

A Checklist for Preliminary Climate Risk Screening

Country/Project Title: _____

Screening Questions		Score	Remarks ^a
Location and Design of project	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather-related events such as floods, droughts, storms, landslides?		
	Would the project design (e.g., the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc.)?		
Materials and Maintenance	Would weather, current, and likely future climate conditions (e.g., prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g., construction material)?		
	Would weather, current, and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s)?		
Performance of project outputs	Would weather, climate conditions, and related extreme events likely affect the performance (e.g., annual power production) of project output(s) (e.g., hydro-power generation facilities) throughout their design lifetime?		

^a If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1–4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response, will be categorized as high risk project.

Result of Initial Screening (Low, Medium, High): _____

Other

Comments: _____

Prepared by: _____

COVID-19 Safety Guidelines for Field-Based Consultation Activities

A. Introduction

1. The Green and Resilient Affordable Housing Sector Project (GRAHSP) will assist the Royal Government of Bhutan (RGOB) establish infrastructures (i.e., shelters and recycled waste livelihood facilities) and provide services [i.e., business development, child care centers (crèches), integrated services for survivors of gender based violence (GBV)] for vulnerable women (victims/survivors of violence, poor working mothers caring for children and marginalized informal sector workers) in Thimphu and Phuentsholing municipalities (*thromde*) while also adopting climate adaptation and disaster risk reduction in housing projects. The Project is in line with ADB's Strategy 2030, the Country Partnership Strategy (2019-2023) and the 12th Five-Year Plan's national key result area (NKRA) of gender equality and sustainable human settlements. NKRA aims to remove barriers (including GBV) that limit the opportunities and potentials of women and girls by creating enabling policies and providing adequate support services.⁴⁶ The Project is also aligned with the Disaster Management Act (2013) and supports a systematic approach to disaster risk management.

2. As an integral part of administering this project and to comply with ADB Safeguard Policy Statement, continuing meaningful consultations will be undertaken with stakeholders. This activity may be undertaken through a combination of online, virtual and in-face consultations. However, as COVID-19 still prevails, travel to sites for in-face consultations shall need to be undertaken with due regard to compliance with appropriate safety protocol as discussed in detail in this document.

B. About the Corona Virus Disease

3. Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus. Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness. The COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes. Precautions can be implemented to prevent and slow down the transmission of the virus⁴⁷.

C. Common Symptoms of Corona Virus Disease⁴⁸

4. COVID-19 affects different people in different ways. Most infected people will develop mild to moderate illness and recover without hospitalization.

Most common symptoms:

- fever.
- dry cough.
- tiredness.

Less common symptoms:

- aches and pains.

⁴⁶ Gross National Happiness Commission. 2019. Twelfth Five-Year plan. 2018-2023. Thimphu.

⁴⁷ World Health Organization. https://www.who.int/health-topics/coronavirus#tab=tab_1

⁴⁸ World Health Organization. https://www.who.int/health-topics/coronavirus#tab=tab_3

- sore throat.
- diarrhea
- conjunctivitis.
- headache.
- loss of taste or smell.
- a rash on the skin, or discoloration of fingers or toes.

Serious symptoms:

- difficulty breathing or shortness of breath.
- chest pain or pressure.
- loss of speech or movement.

D. Personal Protective Equipment that should be worn by field team

5. While in the field, all the members of the consultation team shall use or wear proper personal protective equipment (PPE) at all times. These PPEs may be removed on certain circumstances only, such as, but not limited to, eating, drinking, and any other task or activity that the PPE may inhibit the action. However, during these times, strict observance of social distancing is required.

6. The most common type of PPEs that should be worn by the field team are the following:
- Reusable mask or surgical mask. Reusable masks should be maintained clean per the manufacturer's instruction. Surgical masks should not be reused.
 - Face shield. This PPE is especially useful for the field workers when talking to various people in a relatively confined space or indoors.
 - Gloves. This is especially useful in situations in the field where items are being passed around from one hand to another, and no available hand sanitizers, or water and soap for handwashing after the activity.

E. Safety Protocol for Field Work

1. Field Team Composition

7. Strictly comply and observe with the condition that field team composition, including assistants, drivers, helpers, etc., should be pre-identified. These team members should only be the ones going to the field.

2. The field team should ensure the following:

8. Before undertaking the field visits, ensure that the local/district administration of a target site for consultation has been informed about the visit. Obtain necessary permits, if required.
9. Never carry out activities in areas under lockdown, if any, and undertake consultations in such areas after restrictions are lifted and necessary approvals are obtained for field activity.
10. Maintain adequate stock of face masks and hand sanitiser for field team; including single-use surgical masks for participants.
11. The team should have handheld contactless temperature scanner and pulse oximeter (minimum 2-sets).

- a) Test all members of the field team every morning before starting of field visit or activity to ensure no member is having a fever (above 100 F or 38 C) and ensure oxygen saturation level is normal (above 95).
 - b) Once in the field or venue of consultations, the team should test the temperature of every participant.
 - i. The temperature of a participant should likewise be below 100 F or 38 C.
 - ii. If the temperature is high, advise such participant to immediately go home, take a rest and consult a doctor.
12. Community consultation should be held only if allowed by local or district administration and if situation permits. Otherwise, avoid consultations.
- a) If consultations are conducted, ensure it is held in the open and that participants are seated at least 1-meter apart (or as per local rules on social distancing).
 - b) Ensure there is no handshaking or any physical contact among the team members and participants.
13. Check daily the latest information on areas where COVID-19 is spreading and ensure no field activity is undertaken in any area declared under lockdown.
14. Ensure that no member of the field team belongs to the high-risk category, or those with medical conditions such as diabetes, heart disease, lung disease, etc.
15. Mobile phones of the field team, laptop, etc need to be wiped with disinfectant daily on return from the field.
16. If a big group of participants or a wide venue is expected for a consultation activity, ensure to bring portable microphones and audio system to avoid shouting or avoid drawing participants close to the speaker or discussant.
- 3. Each field team member should strictly adhere to the following safety measures:**
17. Use facemasks with reliable and known quality in every field consultation activity. At the end of each day of consultation activity and upon reaching home/place of stay, cut the mask into two pieces (to prevent recycling) and safely dispose following local or national guidelines. Wash hands with soap afterwards.
18. Use a shoulder bag for carrying hand sanitiser, single-use surgical masks, hand towel, identity card, water bottle, etc.
19. Wear mask before setting out to the field location and the mask should be worn throughout the day until return to place of stay or residence, unless in special or unavoidable circumstances as discussed in the use of PPE above.
- a) Before putting on the mask, clean hands with alcohol-based hand sanitise or soap and water.
 - b) Cover mouth and nose with mask and make sure there are no gaps between the face and the mask.

- c) Avoid touching the mask while using it; if it is touched, clean hands with alcohol-based hand sanitise immediately after touching the mask.
 - d) To handle a reusable mask: remove it from behind (do not touch the front of the mask); clean hands with alcohol-based hand rub or soap and water; and wash the mask with washing soap and dry it in sunlight.
20. When multiple small group consultations are undertaken, ensure to clean hands thoroughly with an alcohol-based hand sanitiser at every end of each consultation.
- a) Avoid touching eyes, mouth, and nose after using the hand sanitiser. Spare a few minutes for the hands to dry up. The hand sanitizer can cause irritation.
 - b) Store the hand sanitizers in safe places and out of reach of children. Hand sanitizers can be poisonous when swallowed.
 - c) Recommended hand sanitizers are alcohol-based. Ensure to handle them with care as these can be flammable.
21. Carry a freshly washed hand towel every day to dry your hands after washing.
22. Maintain at least 1 meter distance (or as per local rules on social distancing) the participants and any others during the consultation activities.
- a) If the place of consultation is deemed congested and may be difficult to maintain the minimum distance, ensure that the participants wear masks throughout the discussion.
 - b) Ensure that single-use surgical masks are available for participants who do not have their own.
 - c) Request participants to maintain distance and avoid congregating too close when the discussion is in progress.
23. As much as possible, avoid touching eyes, nose, and mouth until reaching home. Once at home or place of stay, take a bath immediately and observe all necessary actions to protect members of the household from possible COVID-19 infection.
- a) Use shampoo and wash hair thoroughly.
 - b) Wash clothes and dry them in sunlight.
 - c) All gadgets and materials used during field work should be disinfected, put in one bag and keep away from any family member.
 - d) Dispose of used face masks properly as described above. Face shields should be properly washed or disinfected as well.
24. Avoid public transport for local travel, if possible, and use dedicated vehicle/motorcycle (owned or rented by the project) to reach project sites.
- a) Where possible, the team shall only use dedicated vehicles to and from the sites.
 - b) If motorcycle or taxi is used, ensure to abide by the passenger limit imposed by the local or national government on the use of these transportations.
25. When feeling or suffering from any minor symptoms such as cough, headache, mild fever, stay at home and do not participate in the consultation activity.
- a) At home, be isolated from others.

- b) Call the nearest government COVID-19 health care contact person and give details of symptoms. Provide any other relevant information as may be needed by the health care contact person.

F. Important

26. The project will facilitate testing of the team members for COVID-19 prior to deployment. Only members with negative results will participate in consultation activities. If a team member is tested positive, then such team member should immediately contact the appropriate local authority and follow all local/national guidelines governing patients of COVID-19.

SAMPLE GRIEVANCE REGISTRATION FORM

(To be available in the local language)

The _____ Project welcomes complaints, suggestions, queries and comments regarding project implementation. We encourage persons with grievance to provide their name and contact information to enable us to get in touch with you for clarification and feedback.

Should you choose to include your personal details but want that information to remain confidential, please inform us by writing/typing ***(CONFIDENTIAL)*** above your name. Thank you.

Date	Place of registration				
Contact Information/Personal Details					
Name		Gender	<ul style="list-style-type: none"> • Male • Female 	Age	
Home Address					
Village / Town					
District					
Phone no.					
E-mail					
Complaint/Suggestion/Comment/Question Please provide the details (who, what, where and how) of your grievance below: If included as attachment/note/letter, please tick here:					
How do you want us to reach you for feedback or update on your comment/grievance?					

FOR OFFICIAL USE ONLY

Registered by: (Name of Official registering grievance)	
Mode of communication: <ul style="list-style-type: none"> • Note/Letter • E-mail • Verbal/Telephonic 	
Reviewed by: (Names/Positions of Official(s) reviewing grievance)	
Action Taken:	
Whether Action Taken Disclosed:	<ul style="list-style-type: none"> • Yes • No
Means of Disclosure:	

SAMPLE DAILY MONITORING CHECKLIST FOR CONTRACTORS

BHUTAN GREEN AND RESILIENT AFFORDABLE HOUSING SECTOR PROJECT Contractor Monitoring Sheet

Name of Subproject: _____

Location: _____

Supervising PIU: _____

Contractor: _____

Contractor EHS Supervisor (or equivalent): _____

Date of monitoring: _____

Summary of Findings

Monitoring Item	Status	Remarks
1. Compliance with Local Permit Requirements	(Secured / Application Submitted / Not Applicable)	
<i>Location/zoning permits</i>		
<i>Permit to construct</i>		
<i>Building permit</i>		
<i>Transport / hauling permits</i>		
2. Compliance with IEE Requirements	(Approved / Under Preparation / Submitted to PMU for Approval / Not Applicable)	
<i>Site-specific EMP (SEMP)</i>		
<i>Corrective Action Plan, if any</i>		
3. Compliance with SEMP		
Construction Site	(Satisfactory / Needs Improvement / Not Implemented/Not Applicable)	
- Conduct of toolbox talk		
- Use of PPE		
- Rest areas for male and female workers		
- Toilets for male and female workers		
- Medical kits		
- Drinking water supply		
- Dust control		
- Noise control		
- Solid waste management		
- Wastewater management		
- Chemicals storage (fuel, oil, etc.)		
- Siltation or erosion control		
- Heavy equipment staging / parking area		
- Barricades around excavation sites		
- Access to residential houses/shops/businesses		
- Traffic routing signages		
- Lightings at night		
- Trench shoring / landslide protection		
Construction Workers' Camp Site	(Available / Needs Improvement / Not Available / Not Applicable)	
- Quarters for male and female workers		

Monitoring Item	Status	Remarks
- Sleeping utilities (e.g. beds, pillows, blankets, mosquito nets, etc.)		
- Power/Electricity supply		
- Drinking water supply		
- Toilets for male and female workers		
- General purpose water supply (cooking, washing, bathing)		
- Cooking facilities and areas		
- Solid waste management		
- Wastewater management		
- Pest control		
4. Implementation of GRM	(Yes / No or None / Under Resolution)	
<i>Complaints</i>		
<i>Complaints resolution</i>		
5. Environmental Quality Measurement	(Passed / Failed / Not Applicable)	
<i>Ambient air quality sampling</i>		
<i>Noise level measurement</i>		
<i>Receiving water quality sampling</i>		

Other Issues: _____

Attachments:

1. Copies of permits secured, if any.
2. Photos taken at worksites, if any.
(photos attached in previous monitoring sheets should not be used again).
3. Laboratory results of environmental quality measurements, if any.

Prepared by: _____
 Name, Designation and Signature

SAMPLE INSPECTION CHECKLIST FOR PROJECT MANAGEMENT UNIT AND PROJECT IMPLEMENTATION UNITS

BHUTAN GREEN AND RESILIENT AFFORDABLE HOUSING SECTOR PROJECT SITE INSPECTION CHECKLIST

Project: _____
Subproject / Location: _____

Date: _____

MONITORING/INSPECTION QUESTIONS		FINDINGS			COMMENTS / CLARIFICATIONS
1.	Supervision and Management On-Site	Yes	No	NA	
	a. Is an EHS supervisor available?				
	b. Is a copy of the SEMP available?				
	c. Are daily toolbox talks conducted on site?				
2.	The Facilities	Yes	No	NA	
	a. Are there a medical and first aid kits on site?				
	b. Are emergency contact details available on-site?				
	c. Are there PPEs available? What are they?				
	d. Are the PPEs in good condition?				
	e. Are there firefighting equipment on site?				
	f. Are there separate sanitary facilities for male and female workers?				
	g. Is drinking water supply available for workers?				
	h. Is there a rest area for workers?				
	i. Are storage areas for chemicals available and with protection? in safe locations?				
3.	Occupational Health and Safety	Yes	No	NA	
	a. Are the PPEs being used by workers?				
	b. Are excavation trenches provided with shores or protection from landslide?				
	c. Is breaktime for workers provided?				
	d. How many for each type of collection vehicle is in current use?				
4.	Community Safety	Yes	No	NA	
	a) Are excavation areas provided with barricades around them?				
	b) Are safety signages posted around the sites?				
	c) Are temporary and safe walkways for pedestrians available near work sites?				
	d) Is there a record of treated wastewater quality testing/measurement?				
5.	Solid Waste Management	Yes	No	NA	
	a. Are excavated materials placed sufficiently away from water courses?				
	b. Is solid waste segregation and management in place?				

MONITORING/INSPECTION QUESTIONS		FINDINGS			COMMENTS / CLARIFICATIONS
	c. Is there a regular collection fo solid wastes from work sites?				
6.	Wastewater Management	Yes	No	NA	
	a) Are there separate sanitary facilities for various types of use (septic tanks, urination, washing, etc.)?				
	b) Is any wastewater discharged to storm drains?				
	c) Is any wastewater being treated prior to discharge?				
	d) Are measures in place to avoid siltation of nearby drainage or receiving bodies of water?				
	e) Are silt traps or sedimentation ponds installed for surface runoff regularly cleaned and freed of silts or sediments?				
7.	Dust Control	Yes	No	NA	
	a. Is the construction site watered to minimize generation of dust?				
	b. Are roads within and around the construction sites sprayed with water on regular intervals?				
	c. Is there a speed control for vehicles at construction sites?				
	d. Are stockpiles of sand, cement and other construction materials covered to avoid being airborne?				
	e. Are construction vehicles carrying soils and other spoils covered?				
	f. Are generators provided with air pollution control devices?				
	g. Are all vehicles regularly maintained to minimize emission of black smoke? Do they have valid permits?				
8.	Noise Control	Yes	No	NA	
	a) Is the work only taking place between 7 am and 7 pm, week days?				
	b) Do generators operate with doors closed or provided with sound barrier around them?				
	c) Is idle equipment turned off or throttled down?				
	d) Are there noise mitigation measures adopted at construction sites?				
	e) Are neighboring residents notified in advance of any noisy activities expected at construction sites?				
9.	Traffic Management	Yes	No	NA	
	a) Are traffic signages available around the construction sites and nearby roads?				
	b) Are re-routing signages sufficient to guide motorists?				

MONITORING/INSPECTION QUESTIONS		FINDINGS			COMMENTS / CLARIFICATIONS
	c) Are the excavation sites along roads provided with barricades with reflectors?				
	d) Are the excavation sites provided with sufficient lighting at night?				
10.	Recording System	Yes	No	NA	
	a) Do the contractors have recording system for SEMP implementation?				
	b) Are the daily monitoring sheets accomplished by the contractor EHS supervisor (or equivalent) properly compiled?				
	c) Are laboratory results of environmental sampling conducted since the commencement of construction activities properly compiled?				
	d) Are these records readily available at the site and to the inspection team?				

Other Issues: _____

Prepared by: _____
 Name, Designation and Signature

Semi-Annual Environmental Monitoring Report Template

I. INTRODUCTION

- Overall project description and objectives
- Environmental category as per ADB Safeguard Policy Statement, 2009
- Environmental category of each subproject as per national laws and regulations
- Project Safeguards Team

Name	Designation/Office	Email Address	Contact Number	Roles
1. PMU				
2. PIUs				
3. Consultants				

- Overall project and sub-project progress and status
- Description of subprojects (package-wise) and status of implementation (preliminary, detailed design, on-going construction, completed, and/or O&M stage)

Package Number	Components/List of Works	Contract Status (specify if under bidding or contract awarded)	Status of Implementation (Preliminary Design/Detailed Design/On-going Construction/Completed/O&M) ⁴⁹	If On-going Construction	
				%Physical Progress	Expected Completion Date

⁴⁹ If on-going construction, include %physical progress and expected date of completion

II. COMPLIANCE STATUS WITH NATIONAL/STATE/LOCAL STATUTORY ENVIRONMENTAL REQUIREMENTS⁵⁰

Package No.	Subproject Name	Statutory Environmental Requirements ⁵¹	Status of Compliance ⁵²	Validity if obtained	Action Required	Specific Conditions that will require environmental monitoring as per Environment Clearance, Consent/Permit to Establish ⁵³

III. COMPLIANCE STATUS WITH ENVIRONMENTAL LOAN COVENANTS

No. (List schedule and paragraph number of Loan Agreement)	Covenant	Status of Compliance	Action Required

IV. COMPLIANCE STATUS WITH THE ENVIRONMENTAL MANAGEMENT PLAN (REFER TO EMP TABLES IN APPROVED IEE/S)

- Confirm if IEE/s require contractors to submit site-specific EMP/construction EMPs. If not, describe the methodology of monitoring each package under implementation.

Package-wise IEE Documentation Status

Package Number	Final IEE based on Detailed Design				Site-specific EMP (or Construction EMP) approved by Project Director? (Yes/No)	Remarks
	Not yet due (detailed design not yet completed)	Submitted to ADB (Provide Date of Submission)	Disclosed on project website (Provide Link)	Final IEE provided to Contractor/s (Yes/No)		

⁵⁰ All statutory clearance/s, no-objection certificates, permit/s, etc. should be obtained prior to award of contract/s. Attach as appendix all clearance obtained during the reporting period. If already reported, specify in the "remarks" column.

⁵¹ Specify (environmental clearance? Permit/consent to establish? Forest clearance? Etc.)

⁵² Specify if obtained, submitted and awaiting approval, application not yet submitted

⁵³ Example: Environmental Clearance requires ambient air quality monitoring, Forest Clearance/Tree-cutting Permit requires 2 trees for every tree, etc.

- For each package, provide name/s and contact details of contractor/s' nodal person/s for environmental safeguards.

Package-wise Contractor/s' Nodal Persons for Environmental Safeguards

Package Name	Contractor	Nodal Person	Email Address	Contact Number

- With reference to approved EMP/site-specific EMP/construction EMP, complete the table below

Summary of Environmental Monitoring Activities (for the Reporting Period)⁵⁴

Impacts (List from IEE)	Mitigation Measures (List from IEE)	Parameters Monitored (As a minimum those identified in the IEE should be monitored)	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
Design Phase						
Pre-Construction Phase						
Construction Phase						
Operational Phase						

⁵⁴ Attach Laboratory Results and Sampling Map/Locations

Overall Compliance with CEMP/ EMP

No.	Sub-Project Name	EMP/ CEMP Part of Contract Documents (Y/N)	CEMP/ EMP Being Implemented (Y/N)	Status of Implementation (Excellent/ Satisfactory/ Partially Satisfactory/ Below Satisfactory)	Action Proposed and Additional Measures Required

V. APPROACH AND METHODOLOGY FOR ENVIRONMENTAL MONITORING OF THE PROJECT

- Briefly describe the approach and methodology used for environmental monitoring of each sub-project.

VI. MONITORING OF ENVIRONMENTAL IMPACTS ON PROJECT SURROUNDINGS (AMBIENT AIR, WATER QUALITY AND NOISE LEVELS)

- Discuss the general condition of surroundings at the project site, with consideration of the following, whichever are applicable:
 - Confirm if any dust was noted to escape the site boundaries and identify dust suppression techniques followed for site/s.
 - Identify if muddy water is escaping site boundaries or if muddy tracks are seen on adjacent roads.
 - Identify type of erosion and sediment control measures installed on site/s, condition of erosion and sediment control measures including if these are intact following heavy rain;
 - Identify designated areas for concrete works, chemical storage, construction materials, and refueling. Attach photographs of each area in the Appendix.
 - Confirm spill kits on site and site procedure for handling emergencies.
 - Identify any chemical stored on site and provide information on storage condition. Attach photograph.
 - Describe management of stockpiles (construction materials, excavated soils, spoils, etc.). Provide photographs.
 - Describe management of solid and liquid wastes on-site (quantity generated, transport, storage and disposal). Provide photographs.
 - Provide information on barricades, signages, and on-site boards. Provide photographs in the Appendix.
 - Indicate if there are any activities being under taken out of working hours and how that is being managed.
- Briefly discuss the basis for environmental parameters monitoring.
- Indicate type of environmental parameters to be monitored and identify the location.
- Indicate the method of monitoring and equipment used.
- Provide monitoring results and an analysis of results in relation to baseline data and statutory requirements.

As a minimum the results should be presented as per the tables below.

Air Quality Results

Site No.	Date of Testing	Site Location	Parameters (Government Standards)		
			PM10 µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³

Site No.	Date of Testing	Site Location	Parameters (Monitoring Results)		
			PM10 µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³

Water Quality Results

Site No.	Date of Sampling	Site Location	Parameters (Government Standards)					
			pH	Conductivity µS/cm	BOD mg/L	TSS mg/L	TN mg/L	TP mg/L

Site No.	Date of Sampling	Site Location	Parameters (Monitoring Results)					
			pH	Conductivity µS/cm	BOD mg/L	TSS mg/L	TN mg/L	TP mg/L

Noise Quality Results

Site No.	Date of Testing	Site Location	LA _{eq} (dBA) (Government Standard)	
			Day Time	Night Time

Site No.	Date of Testing	Site Location	LA _{eq} (dBA) (Monitoring Results)	
			Day Time	Night Time

VII. GRIEVANCE REDRESS MECHANISM

- Provide information on establishment of grievance redress mechanism and capacity of grievance redress committee to address project-related issues/complaints. Include as appendix Notification of the GRM (town-wise if applicable).

VIII. COMPLAINTS RECEIVED DURING THE REPORTING PERIOD

- Provide information on number, nature, and resolution of complaints received during reporting period. Attach records as per GRM in the approved IEE. Identify safeguards team member/s involved in the GRM process. Attach minutes of meetings (ensure English translation is provided).

IX. SUMMARY OF KEY ISSUES AND REMEDIAL ACTIONS

- Summary of follow up time-bound actions to be taken within a set timeframe.

X. APPENDIXES

- Photos
- Summary of consultations
- Copies of environmental clearances and permits
- Sample of environmental site inspection report
- All supporting documents including **signed** monthly environmental site inspection reports prepared by consultants and/or contractors
- Others

SAMPLE ENVIRONMENTAL SITE INSPECTION REPORT

Project Name
 Contract Number

NAME: _____ DATE: _____
 TITLE: _____ DMA: _____
 LOCATION: _____ GROUP: _____

WEATHER CONDITION:

INITIAL SITE CONDITION: _____

CONCLUDING SITE CONDITION:
 Satisfactory _____ Unsatisfactory _____ Incident _____ Resolved _____ Unresolved _____

INCIDENT:
 Nature of incident:

Intervention Steps:

Incident Issues

Resolution

Project Activity Stage	Survey	
	Design	
	Implementation	
	Pre-Commissioning	
	Guarantee Period	

Inspection

Emissions	Waste Minimization
Air Quality	Reuse and Recycling
Noise pollution	Dust and Litter Control
Hazardous Substances	Trees and Vegetation

Site Restored to Original Condition Yes No

Signature

Sign off

Name
Position

Name
Position