Environmental Assessment and Review Framework

July 2018

Bhutan: Health Sector Development Program

Prepared by PricewaterhouseCoopers Pvt. Ltd. for the Asian Development Bank.

ABBREVIATIONS

ADB	–	Asian Development Bank
BHTF	–	Bhutan Health Trust Fund
BHU	–	Basic Health Unit
DHO	–	district health officer
DMS	–	Department of Medical Services
DMSHI	–	Department of Medical Supplies and Health Infrastructure
DRA	–	Drug Regulatory Authority
EARF	–	environmental assessment and review framework
ECOP	–	Environmental Codes of Practice
EMP	–	environmental management plan
HAI	–	hospital-acquired infection
HCF	–	health care facility
HIDD	–	Health Infrastructure Development Division
HIS	–	health information system
IEE	–	initial environmental examination
IHR	–	International Health Regulations
MWHS	–	Ministry of Works and Human Settlement
MOH	–	Ministry of Health
NEC	–	National Environment Commission
NECS	–	National Environment Commission Secretariat
NICHWMP	–	National Infection Control and Healthcare Waste Management Program
PMPSU	–	Project Management and Policy Support Unit
PHC	–	primary health care
PST	–	project supervision team
REA	–	rapid environmental assessment
SDP	–	sector development program
SPS	–	Safeguard Policy Statement
WHO	–	World Health Organization

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APPENDIXES

EXECUTIVE SUMMARY

The Health Sector Development Program will support efforts of the government to improve equity, efficiency, and sustainability of Bhutan's health system. The sector development program (SDP) comprises a (i) project, financed by a project grant, to invest in primary health care (PHC) improvements; and (ii) program, financed by a policy-based grant, to support governance and institutional improvements in the areas of health financing and health information management. The SDP will also advance Bhutan's health security agenda through strategic support for prevention and control of infectious diseases in line with Bhutan's commitment to the International Health Regulations (2005). The outcome will be equitable access, efficiency, and financial sustainability of the health system improved. The SDP will have three outputs. The project grant will support output 1 for PHC service delivery improvements in selected areas. The policy-based grant will support outputs 2 and 3 for enhanced health financing and health information management. The Ministry of Health will be the executing agency for this project.

This report complies with the provisions of Asian Development Bank's Safeguard Policy Statement (2009) which requires that the project's activities need to be carefully considered to avoid and/or to minimize the negative impacts on the natural environment and social environment (including environmental public health and occupational health), and to provide appropriate measures to mitigate such impacts. The environmental assessment and review framework therefore, assesses the existing environmental conditions of the project, identifies and evaluates the significance of potential adverse environmental impacts, and develops an environmental monitoring plan, identifying institutional responsibilities, public consultation, disclosure and reporting requirements.

Under output 1 for improving PHC in underserved areas, the project will undertake the construction of five satellite clinics in Thimphu and Phuentsholing. In selected districts, the project will upgrade Basic Health Units with construction of burial pits, toilets, water storage, and waste storage areas. The civil works to be implemented as part of the project are relatively small, localized, and are expected to be completed within 18 months. Construction impacts are typical of small to medium-scale construction projects such as dust, noise, public inconvenience and encroachment on public roads, spillage of chemicals, excavation works and muck disposal, generation of domestic and construction waste, and concerns about worker health and safety. These impacts can be easily mitigated through implementation of simple mitigation measures during the design, planning, and construction phase.

However, the operation of all health care facilities generates both hazardous and non-hazardous waste which contains pathogenic microorganisms and can result in health care workers and patients being exposed to the risk of contracting nosocomial infections (hospital-acquired infections). The Ministry of Health already has standard protocols and guidelines for infection control and medical waste management and additional mitigation measures will be proposed to strengthen infection prevention and the management of health care waste.

Considering that the project is expected to have limited and minimum adverse environmental impacts, the project is categorized B for environment and therefore will require an initial environmental examination.

I. INTRODUCTION

A. Project Description

1. The sector development program (SDP) will support efforts of the government to improve equity, efficiency, and sustainability of Bhutan's health system. The SDP comprises a (i) project, financed by a project grant, to invest in primary health care (PHC) improvements; and (ii) program, financed by a policy-based grant, to support governance and institutional improvements in the areas of health financing and health information management. The SDP will also advance Bhutan's health security agenda through strategic support for prevention and control of infectious diseases in line with Bhutan's commitment to the International Health Regulations (IHR, 2005).

2. **Outcome and outputs.** The outcome will be equitable access, efficiency, and financial sustainability of the health system improved. The SDP will have three outputs. The project grant will support output 1 for PHC service delivery improvements in selected areas. The policy-based grant will support outputs 2 and 3 for enhanced health financing and health information management.

3. **Output 1: Primary health services in underserved areas improved.** This project-based output will support improvements in PHC service delivery, especially in the underserved areas. Investments include (i) construction of five PHC satellite clinics in urban peripheries of Thimphu and Phuentsholing; (ii) upgrading primary health facilities with improved infrastructure provisions for infection control and waste management; (iii) medical equipment support for enhanced PHC service delivery, including immunization and transportation of laboratory samples; (iv) support for capacity development to roll-out the Bhutan Health Standards and Quality Assurance mechanism at primary health facilities; and (v) support for public health advocacy and behavior change communication through civil society organizations.

4. **Output 2: Health sector financing enhanced.** This policy-based output will support enhanced health financing equity and sustainability of the Bhutan Health Trust Fund (BHTF), which core mandate includes financing vaccines and supporting immunization, in line with IHR requirements. The policy actions include measures to (i) enhance the BHTF operations through strengthened capital, capacity, and governance; (ii) improve equitable distribution of public health financing benefits through a benefit-incidence analysis; and (iii) develop a legal basis to support provisions for health financing equity, efficiency, and sustainability in the form of a health bill. Asian Development Bank (ADB)'s budget support under this output will contribute to the BHTF capital enhancement and diversification of investments offshore.

5. **Output 3: Disease surveillance and health information system enhanced**. This policy-based output will improve sector management efficiency through catalyzing transformative change in Bhutan's health information management, including for effective disease surveillance. The program will facilitate Bhutan's incremental move to an interoperable national health information system (HIS), from the current stage of fragmented individual systems that are often redundant and ineffective to support decision-making in critical areas of health and disease management. Policy actions include (i) development and adoption of a national e-health strategy; (ii) creation of HIS governing body; (iii) development and adoption of HIS enterprise architecture for interoperability; and (iv) development and adoption of technical standards for health data exchange.

6. **Overall financing.** The SDP is estimated to cost $41.22 million. ADB will provide a grant of $20 million, comprising a project grant of $6 million equivalent, and a policy-based grant of $14

million. The government will provide counterpart funds totaling $21.22 million equivalent, comprising $0.52 million for output 1, $7.71 million for output 2, and $13.00 million for output 3.

B. Physical Infrastructure Development

7. The components under output 3 that will be relevant for the initial environmental examination (IEE) are as follows:

1. Construction of Five New Satellite Clinics in Thimphu (Mothithang, Taba Babesa, Debsi) and Phuentsholing

8. The location of the three satellite clinics has been selected (i.e., Mothithang, Taba, Babesa at Thimphu Thromde) to reduce the outpatient load from the Jigme Dorji Wangchuk National Referral Hospital at Thimphu City. The location for the remaining two satellite clinics at Thimphu Dzongkhag (i.e., Debsi) and at Phuentsholing will be selected during the second or third year of the project. The details of the satellite clinics are provided in Table 1.

Table 1: Details of the Satellite Clinics

S. No.	Location	Jurisdiction	Area	Remarks
1	Mothithang	Thimphu Thromde	30 decimal (1,215 m^2)	Single-storied building with parking
2	Taba	Thimphu Thromde	30 decimal (1,215 m^2)	Double-storied building, with parking
3	Babesa	Thimphu Thromde	722.00 m^2	Double-storied building, public parking
4	Debsi	Thimphu Dzongkhag	Sites to be identified	Land identification and construction of satellite clinics will be undertaken in the second or third year of the project
5	Phuentsholing	Phuentsholing Thromde		

Source: Government of Bhutan, Ministry of Health.

2. Basic Health Unit Grade II Renovation Work

9. Basic Health Unit Grade II (BHU-II) renovation work includes the following activities:

(i) construction of deep burial pits;
(ii) construction of new clients' toilets (to ensure one for men, one for women); and
(iii) construction of a water reservoir to ensure 24-hour running water and water source protection through simple fencing.

10. The infrastructure improvements will be made at BHU-II in eight focus districts as selected under the project. The Dzongkhags are Dagana, Mongar, Pemagatshel, Samdrup Jongkhar, Trashigang, Trashi Yangtse, Trongsa, and Zhemgang.

C. Purpose of the Environmental Assessment and Review Framework

11. This report on the environmental assessment and review framework (EARF) of the project complies with the provisions of ADB's Safeguard Policy Statement (SPS) (2009) and its components. The EARF has been carried out to ensure that all potential adverse environmental impacts are assessed, mitigated, and presented.

12. The sub-project selection will be in accordance with the environmental project selection criteria as outlined in this EARF and the executing agency will agree with ADB on the screening, categorization, environmental assessment, preparation, implementation, and monitoring of the sub-project to facilitate compliance with the requirements as specified under ADB's SPS (2009).

13. The objectives of the EARF are to provide guidance on safeguard screening, assessment, institutional arrangements, and processes to be followed for components of the overall project, where design takes place after ADB Board approval, and for impact mitigation planning in the event unanticipated environmental impacts arise during implementation.

II. ASSESSMENT OF THE LEGAL FRAMEWORK AND INSTITUTIONAL CAPACITY

A. Assessment of the Legal Framework

14. An assessment of the legal environmental framework has been conducted by ADB, described in the Bhutan Country Environmental Analysis (2004) report and many similar EARF documents on projects in Bhutan, and therefore will not be further described in this section. ADB's SPS (2009) and all national laws, acts, regulations and guidelines of the Government of Bhutan will govern the implementation of the project-related infrastructure and procurement works.

B. Safeguard Requirements of the Government of Bhutan

15. Sustainable development is enshrined in the government's National Environment Strategy for Bhutan 1998, which aims to maintain a balance between environment and development. The Environmental Assessment Act 2000, which requires that all environmental concerns are fully considered prior to the formulation of new projects and it establishes procedures for assessing the potential impacts of plans, policies, programs, and projects. The act mandates that an environmental clearance from a competent authority should be conducted as a pre-requisite for a project.

16. The environmental clearance procedure is described in the Regulation for the Environmental Clearance of Projects (2016), and specific guidance is given in a series of sectoral guidelines, prepared in 1999 and revised with ADB assistance in 2006. According to the Environment Assessment Act, the proponent is required to submit an environmental clearance application to a designated competent authority wherein all environmental concerns are fully considered and documented.

17. When developmental projects are in the Thromde (municipality), the project is governed by the Thromde Act of Bhutan (2007), and the Thromde Rules (2011) and the designated competent agency to grant development and environment clearance is the Thromde. Where development projects such as construction of BHUs in rural areas or where small improvement works within rural health care facilities (HCFs) are proposed, the designated competent authority is the district environmental officer and must abide by Rural Construction Rules (2013) for the Ministry of Works and Human Settlement (MWHS).

18. All construction works within Thimphu city limits must be in line with the Thimphu Structural Plan (2004), Thimphu Municipal Development Control Regulations (2004), and the Bhutan Building Rules (2002), which apply to all urban areas. In rural areas, Rural Construction Rules (2013) apply. These rules dictate the maximum plot sizes and maximum building heights so that aesthetic as well as environmental impacts on neighboring areas are minimized. The MWHS has released the Bhutan Green Building Design Guidelines in 2013 which provides guidance to

architects, engineers, and builders on practical green building design and construction principles and solutions that can be adopted in Bhutan. It promotes the use of low energy local construction methods and natural resources coupled with designs that was adapted to respond to local climatic environment combined with vernacular architecture in Bhutan. The National Health Policy (2011) provides guidance to the Ministry of Health (MOH) to achieve its national and international health goals as guided by the constitution. The design and minimum requirements for the satellite clinics is guided by the Bhutan Services Standards (2009) for BHUs and satellite clinics. Other relevant regulations and standards are the Water Regulation of Bhutan (2014) and the Environmental Standards (2010) that regulate the water and ambient air quality standard.

19. Under the Thromde Act and Rules, development applications are categorized as major, and those that can be routed through the green channel or those considered as development priority considered as minor. Where development work is undertaken on behalf of the government, by a government agency, the construction clearance for the project can be processed through the "priority channel". Through this channel, the construction approval is granted within 5 working days (excluding the time taken to seek clearance from the Bhutan Power Corporation for electrical connections) of submission of all the required architectural, structural, electrical, and water supply and sanitation drawings. All government works are guided by the Procurement Rules and Regulations (2009), and therefore procurement of all equipment and construction works will follow government standard bidding processes.

20. As per the Disaster Management Act of Bhutan (2013) to reduce the risks from disaster, the Department of Disaster Management has prepared Dzongkhag Disaster Management Planning Guidelines to guide the Dzongkhags, through the Dzongkhag Disaster Management Committees, to develop and implement a Dzongkhag Contingency Plan. Most Dzongkhags are now undertaking the planning process that includes hazard mapping to identify the most hazard-prone areas of the Dzongkhag so that future development, interventions, and risk mitigation measures can be planned accordingly. A national health emergency and disaster contingency plan has been developed to respond to public health emergencies and disease outbreak. A Health Emergency Operation Centre has been established to ensure effective communication and coordination for emergency response and disaster management.

21. Bhutan has several acts and rules related to waste management such as the Waste Prevention and Management Act of Bhutan (2009) and Waste Prevention and Management Regulation (2012) that promote the principles of 3Rs (reduce, reuse, and recycle). The act and regulation discuss waste reduction at the source; promoting segregation, reduction, recycling, and disposal of waste in an environmentally sound manner. The act is enforced through the Waste Prevention and Management Guideline (2012). The National Environment Commission Secretariat (NECS) is responsible for implementing the provisions outlined in the act and the guidelines. According to these guidelines, medical waste is categorized into general, pathological, infectious, sharps, pharmaceutical, chemical, radioactive waste, and pressurized containers. Table 2 provides details of different categories of waste.

Table 2: Categories of Medical Waste as per Government's Waste Management Regulations

Type of Waste	Description of Waste
General waste	Waste free of pathogenic microorganisms or hazardous substances. Therefore, waste is harmless and does not need special handling or treatment.
Infectious waste	Contains potentially pathogenic organisms, which have the potential to cause infections. Wastes include, laboratory cultures stocks, live or attenuated vaccines, human and animal cell culture, infectious agents from research laboratories, wastes from biological, toxins, dishes and devices used for transfer of cultures, used syringes and contaminated materials.
Sharps waste	Suture needles, scalpel blades, lancets, broken vials / ampoules/ pipettes/glasses, knives and infusion sets.
Pathological waste	Body parts and tissues, body fluids, dead fetuses, placenta, blood and blood products.
Pharmaceutical waste	Unused, contaminated expired drugs, vaccines, serum and recalled (quality failed) medicinal products. medicine returned by patients.
Genotoxic waste	Cytotoxic drugs, highly toxic and may contain mutagenic, teratogenic or carcinogenic properties.
Chemical waste	Laboratory reagents, X-ray film developer, disinfectants and others like Deltamethrin, etc.
Radioactive waste	Radioactive substances used for diagnostic or therapeutic purposes. Blood, urine and feces of patients on treatment or tested with radionuclides.
Pressurized containers	Gas cylinders (anesthetic gas, oxygen, compressed air in health facilities) stored in pressurized cylinders, cartridges, aerosols and cans.
Heavy metals	Mercury from broken thermometers and mercury sphygmomanometer, dental amalgam, cadmium from batteries, tube lights and bulbs.
E-wastes	Printer cartridges, computers, etc.

Source: Government of Bhutan, National Environment Commission. *Waste Management Regulation, 2012 and Waste Guideline, 2017.* Thimphu.

22. There are 2014 guidelines on pharmaceutical waste issued by the Drug Regulatory Authority (DRA) and endorsed by the National Environment Commission (NEC). The guidelines outline the process for collection, segregation, transportation, storage, disposal, and recording of pharmaceutical waste from HCFs as well as private pharmacies. Further, as per the Bhutan Medicines Rules and Regulations (2012), the firms are mandated to segregate and record the quantity of waste generated from the firm and store them separately until disposal. The sale and distribution of expired medicines is prohibited by the 2003 Medicine Act. Since not much waste is generated from the private pharmacies, disposal is only carried out once a year. Non-hazardous waste is managed at individual health facility level and hazardous waste is sent to the medical store in Phuentsholing for disposal. The DRA has a memorandum of understanding with the Penden Cement Authority in Gomtu to be able to incinerate hazardous pharmaceutical waste.

23. In 2004**,** the MOH set up the National Infection Control and Healthcare Waste Management Program (NICHWMP) to address the need for efficient infection control and waste management as well as build the capacity of the health workers to prevent hospital-acquired infections (HAIs). Each HCF is required to send quarterly and annual compliance reports to the MOH and the MOH in turn is responsible for reporting to the NECS. The responsibility in the MOH for waste management is as follows:

(i) At the national level, the high-level committee provides technical guidance to the NICHWMP.
(ii) At regional referral hospitals, there is an infection control team who implement infection control and waste management practices.
(iii) At the hospitals, there is a committee who implement infection control and waste management practices.
(iv) At the primary level, each BHU has a health worker who is an infection focal person and is responsible for infection control and waste management practices.

24. The Waste Prevention (2009) and Management Act of Bhutan (2009) and Chapter IV of the Waste Prevention and Management Regulations (2012) indicates that the municipal authority is responsible for waste management, transport, and disposal at designated sites and for developing public–private partnerships for waste management. Dumping of any kind of waste is punishable by law, all waste needs to be approved by the Environmental Division of the Thromde who will identify the appropriate disposal site in consultation. The Dzongkhag Tshogdue and Thromde Tshogdu are responsible for waste management in district towns and Dzongkhag. They review and approve waste management facilities, landfill locations, and approve collection of waste management services.

25. The Department of Information Technology and Telecoms under the Ministry of Information and Communications is responsible for information and communication technology policies, regulations, standards, and legislation and supporting the development of reliable information and communication technology infrastructure. It is responsible for ensuring the minimization, storage, treatment, and disposal of e-waste in Bhutan. As per standard practice, across all government institutions, all health facility staff are required to send redundant electronic equipment to the Department of National Properties where it is disposed of.

26. There are guidelines on Infection Control and Health Care Waste Management as well as Guideline for Disposal of Pharmaceutical Waste (2014), produced by the DRA, outlines the process for segregation, transportation, storage, disposal, and recording of pharmaceutical waste. The National Guideline on Infection Prevention and Control and Medical Waste Management for Healthcare Facilities (MOH, 2017) outlines in Table 2.2.3 the types of waste that can be disposed of in the deep burial pit as well as the type of treatment method required prior to disposal such as autoclaving/ chemical disinfection for solid hazardous waste, and autoclaving and shredding for sharps. The guidelines also outline the standards for deep burial pits construction such as minimum distance, siting, depth, and width, which are included in the environmental management plan (EMP).

C. Safeguard Requirements of ADB

27. ADB's SPS (2009) requires that in all projects, environmental issues are identified and assessed. It also requires that plans are developed and implemented to avoid, minimize, mitigate, or compensate for potential adverse environmental impacts.

28. The nature of the assessment required for a project depends on the significance of its environmental impacts, which in turn is related to the type and location of the project, scale, nature, and magnitude of its potential impacts, and the availability of cost-effective mitigation measures. Projects are screened for their expected environmental impacts and are assigned to one of the following categories:

(i) **Category A:** Projects that could have significant environmental impacts that are irreversible, diverse, or unprecedented and affect an area larger than the sites or facilities subject to physical works. An environmental impact assessment is required.
(ii) **Category B:** Projects where the environmental impacts are less adverse than those of category A projects. The impacts are site-specific, few, if any are irreversible, and in most cases can be mitigated. An IEE is required.
(iii) **Category C:** Projects which are unlikely to have adverse environmental impacts. No environmental impact assessment or IEE is required, although environmental implications are reviewed.

(iv) **Category FI:** The project involves the investment of ADB funds to or through a financial intermediary.

1. Pollution Prevention

29. Pollution prevention and control, techniques and practices should be consistent with international good practices, as reflected in internationally recognized standards such as International Finance Corporation's Environmental, Health, and Safety Guidelines. These must be applied during the design, construction, and operation of the project. When national regulations differ from the levels and measures of the International Finance Corporation, the borrower/client will apply whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the borrower/client will provide full and detailed justification for any proposed alternatives.

2. Consultation, Participation, and Information Disclosure

30. The project management must conduct meaningful consultation with all stakeholders early in the project and continue consultations throughout the project cycle. Public consultation and information disclosure is covered in the Social Impact Assessment Report. The SPS (2009) requires that all relevant information such as resettlement framework/plan must be submitted to ADB for disclosure on ADB's website. In case where no resettlement is involved, the final IEE and the environmental monitoring reports must be submitted to ADB and made available to other stakeholders.

D. International Regulations

31. Bhutan is a member of the World Health Organization (WHO) and obligated to fulfill the IHR (2005). Bhutan became a party to several multilateral environmental agreements listed below with the year of ratification.

(i) United Nations Framework Convention on Climate Change in 1995.
(ii) United Nations Convention on Biological Diversity in 1992 in August 1995.
(iii) Convention on International Trade in Endangered Species of Wild Fauna and Flora in 2004.
(iv) Kyoto Protocol to the United Nations Framework Convention on Climate Change in 2005.
(v) Basel Convention on the Control of Trans boundary Movements of Hazardous Wastes and their Disposal in 2004.
(vi) United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Convention in 2001.
(vii) International Plant Protection Convention in 1994.
(viii) The Final Act and the Law of Sea Convention in 1982.
(ix) Statute of the Centre for Science and Technology of the Movement of Non-Aligned Countries and other Developing Countries in 1985.
(x) Statutes of the International Centre for Genetic Engineering and Biotechnology in 1985.
(xi) Vienna Convention for the Protection of the Ozone Layer and Montreal Protocol on Substances that Deplete the Ozone Layer in 2004.
(xii) United Nations Convention to Combat Desertification in 2004.

E. Review of Institutional Capacity of Executing Agency

1. Environmental Concerns

26. According to the Environmental Assessment Act, a proponent is required to submit an environmental clearance application to a designated competent authority or to the NEC wherein all environmental concerns are fully considered and documented as per the environmental guidelines published by the NEC. In the case of developmental projects which are located within the Thromde (municipality), the project is governed by the Thromde Act of Bhutan (2007), and the Thromde Rules (2011). The designated competent authority to grant development and environment clearance is the Thromde. All construction works within Thimphu city limits must be in line with the Thimphu Structural Plan (2004), the Thimphu Municipal Development Control Regulations (2004), and the Bhutan Building Rules (2002), which apply to all urban areas. Where development projects such as construction of BHUs in rural areas or where small improvement works within rural HCFs are proposed, the designated competent authority is the district environmental officer and must abide by Rural Construction Rules (2013) by the MWHS.

27. The MOH has no dedicated personnel responsible for overseeing environmental concerns for its development projects. However, for any large infrastructure development work within the municipality/Thromde, there is an Environment Division, and within each district, an environmental officer whose responsibility it is to screen for environmental impacts and monitor progress on behalf of other ministries. Capacity development is necessary especially for implementation of the infection control and waste management guidelines in all HCFs. The NICHWMP of the Department of Medical Services (DMS) is responsible for waste management of HCFs and the environmental health program/environmental health unit, under the Department of Public Health, is responsible for coordination and implementation of climate and health initiatives. However, specific to construction work, there is no designated personnel for assessing environmental impacts, implementation of the EMP, or environmental monitoring during construction. Quality control and construction monitoring is carried out for all large health construction projects by the Health Infrastructure Development Division (HIDD).

2. Civil Works/Construction

28. The HIDD under Department of Medical Supplies and Health Infrastructure (DMSHI) is responsible for the architectural and structural designs of any civil works. The HIDD is mandated to undertake large-scale construction (more than 20-bedded health facilities). The district administration (district health officer [DHO]/district engineer) is responsible for civil works/construction of facilities less than 20-bedded health facilities.

3. Infection Control and Health Care Waste Management

29. The NICHWMP focal person and the Waste Management Committee is responsible for ensuring the standard precautions for infection prevention measures.

4. Recommendations

30. The project plans to implement civil and construction work centrally through MOH-Project Management and Policy Support Unit (PMPSU) for ease of fund-flow process, simplification of procurement mechanisms, and monitoring of the work. Thus, the HIDD will be central to the construction of new satellite clinics and BHU-II renovation work. However, at present many projects are being implemented by the HIDD and the division is not adequately staffed to provide

full-time resource to oversee the satellite clinic construction or the BHU-II improvement work. Therefore, provision of a team of two personnel (one civil engineer and one electrical engineer) has been made in the PMPSU to support the supervision and implementation of civil and construction work.

31. DHOs and district/Dzongkhag engineers are required to support the HIDD in the site selection, its confirmation, estimation, development of bills of quantity, etc. for improvement or renovation work.

32. The Dzongkhag engineers have the responsibility to oversee the construction works as it is limited to improvement/construction of toilets, water reservoirs, and burial pits.

33. During the operation phase, the NICHWMP focal person and the Waste Management Committee will ensure use of protective equipment, post exposure treatment for infected personnel, etc. In addition, human resource will not be required for this purpose.

34. As recognized by the DMS, MOH, there is a need to continue to train all health care workers on the importance of segregation, waste treatment, and standard protocols for handling waste to prevent infection. Further, there are no guidelines on medical wastewater management, and there is a need to develop most appropriate methods or standards relevant for each type of HCF depending on the types of liquid waste it generates. In the absence of national guidelines on medical wastewater treatment, International Finance Corporation's Environmental, Health, and Safety Guidelines for HCFs, and other international best practices will be followed.

III. GENERAL PRINCIPLES AND ACTION PLAN FOR EARF

35. It is recommended that a set of general principles for the design and construction of the civil works be agreed upon in the EARF. The principles of environmental management for the project will be as follows:

(i) The HIDD (under DMSHI), who is responsible for the overall structural design and structural works for the new satellite clinics and improvement works be responsible for overall construction supervision. The DMSHI will guide the project supervision team (PST) to ensure monitoring of construction works and mitigation of any unforeseen environmental impacts.
(ii) The NICHWMP, under DMS, will take the lead role in ensuring that infection prevention and waste management guidelines are understood and followed at each health facility. It will also continue to provide ways for safe disposal of infectious and pathological waste from the satellite clinics.
(iii) The design and construction works must be in line with Bhutan Services Standards for satellite clinics and BHUs, and as per the Development Control Regulations.
(iv) For the construction works, the Environmental Codes of Practice (ECOP) and the construction site checklist developed for the contractor (refer to Table 5 for the ECOP and Appendix 2 for the checklist) once reviewed and approved by the PMPSU will be attached to the contract document. This will form a requirement for the construction contractor to fulfill as part of environmental compliance.

36. The other critical aspects of environment management must ensure that:

(i) project sites are not located in any critical habitat, protected area, biological corridor or watershed, wetland or heritage, religious, or archaeological site or impact any rare, endangered, or threatened species.
(ii) Construction must follow Thromde Development Control Regulations (2016) and should not be in areas under natural streams, waterways, and hillsides with more than 30% slope, in paddy fields, and agricultural areas or in areas designated as environmental conservation precincts where no development is permitted.
(iii) The design should fit in with the surrounding and should not require significant quantities of resources (timber, water, construction material).
(iv) Construction activities should not generate massive air and dust pollution or generate large amounts of hazardous waste or have any residual environmental impacts.
(v) Environmental impacts must be small, temporary and easily mitigated, and should not cause any other environmental impacts that could trigger categorization as a "Category A' project in accordance with ADB's SPS (2009).
(vi) Remedial mitigation measures must be immediately undertaken in the event of any unforeseen impacts on the community or the environment.
(vii) The construction site and its surrounding including access roads, sidewalks, public utilities, and parking must be restored once the construction is complete as part of decommissioning work.
(viii) The project must compensate for any private/government property damaged during construction to the satisfaction of the owner/Thromde.

37. The operation of all HCFs should be further supported by the following measures/activities:

(i) Management of medical waste as per waste prevention and management regulations, that promote the principles of 3Rs (reduce, reuse, and recycle) through waste reduction at the source; promoting segregation, reduction, recycling, and disposal of waste in an environmentally sound manner.
(ii) Promote water use efficiency to reduce the amount of wastewater generation.
(iii) Incorporate the recurrent costs of infection control and waste management practices (e.g., plastic bags, containers/bins, closed jars or puncture-resistant jars for collection, disinfection or transportation, autoclave bags, safety boxes for sharps, needle cutter, plastic shredder, equipment maintenance, fridge, autoclave), materials for encapsulation, and disinfection.
(iv) Provide personal protective gear such as gloves, masks for personnel to wear when dealing with medical waste and ensure that standard protocols and precautions such as hand hygiene, decontamination, disinfection, housekeeping, and post exposure treatment are followed.
(v) Conduct orientation for new staff and annual refresher training for all health care workers involved in handling, treatment, and disposal of infectious waste at the time of induction and thereafter at least once every year.
(vi) Conduct training for staff on the infection prevention and waste management guidelines including International Finance Corporation's Environmental, Health, and Safety Guidelines for HCFs and provide ready reminders by displaying written instructions for personnel.
(vii) Educate the public through posters on the risks of improper waste disposal, infection control, and waste management.
(viii) Conduct regular check-up of personnel dealing with infectious waste and provide immediate treatment for personnel who may be infected.

(ix) Clear delineation of responsibilities for health care waste management to ensure regular surveillance of infection, monitoring, and reporting of medical waste generation trends as well as records of accidents from waste handling and treatment given to infected personnel.

(x) Evaluation of the health care waste management system and trends in waste generation after 3 years.

IV. ANTICIPATED ENVIRONMENTAL IMPACTS

A. Pre-Construction

38. Activities during pre-construction include site selection, approval of architectural drawings, and tender and hire of contractors. During this phase, the potential environmental impacts are mostly due to the design and location of the satellite clinics. The sites for three satellite clinics have been pre-selected by the Thimphu Thromde authorities (i.e., Mothithang, Taba, and Babesa) that are responsible for controlling land use to ensure that these are not located in environmentally or socially sensitive areas. Thus, the environmental impacts during this phase are not expected to be significant for these sites. For the two remaining sites at Debsi and Phuentsholing, once selection is done, a detailed similar environment screening and assessment will be undertaken by the PMPSU-appointed expert. The guidance provided in ADB's SPS (2009) requires to be followed for undertaking the same, also refer to the rapid environmental assessment (REA) checklist for environment screening (Appendix 1).

39. The Thromde also regulates building design implying that the architectural design and structure plans will also be rigorously checked and screened to ensure that they conform to the required building regulations and standards and that the need for the provision of electricity, waste, and sewerage have already been considered. Also, all sites are easily accessible through existing access roads so there will be no requirement for new access road construction, additional land, or land encroachment issues. There are no significant environmental impacts due to location and design and the MOH will ensure that all necessary government permits will be secured during pre-construction phase.

B. Construction

40. The construction period is one where the project interacts physically with the environment. During this phase, the construction of the new satellite clinics and improvement works for BHU-IIs will be carried out. Due to the nature and size of construction/improvement work (which is not significant), implementation of construction works is not expected to cause major negative impacts spatially or temporarily because of the following:

(i) Construction impacts will be limited to the immediate and its surrounding and therefore the zone of impact is very small (less than half a km^2). Excavation work will also be localized and will only occur during foundation work. The construction work itself is relatively straightforward and can be completed in a short time as the structure is small and single/double-storied.

(ii) The construction work will be contracted as per prevailing government procedures and the contractor will therefore be accountable for responsible management of construction sites and delivery of quality structure within the stipulated period. The ECOP, once approved by the MOH, and the Construction Site Checklist (Appendix 2) will be included as part of the terms and conditions of the contract agreement and a requirement of the contract.

(iii) The project engineer/district engineer (in the case of the improvement works) through their regular inspections will provide the necessary check and balance required. This would ensure that the construction work cannot progress to the next level unless work has been inspected and approved.

Table 3: Fields in Which Construction is Not Expected to Have Significant Impacts

Field	Rationale
Climate	Short-term production of dust is the only effect on atmosphere.
Forest cover and biodiversity	All selected sites are within the periphery of Thimphu City and Thromde therefore will not impact forest cover, protected areas, critical habitats, or endangered species.
Geology and seismology	Excavation will not be large enough to affect these features and the approval process requires that building designs incorporate seismic risks.
Rivers	The closest rivers are separated by several infrastructures (e.g., expressways, buildings, access roads) from the proposed sites.
Industries	There are no major industries in any area.
Tourism	There are no large hotels or tourist attractions in the vicinity.
Population and communities	Construction will not affect population numbers, location, or composition.
Religious and cultural sites	None of the satellite clinics are near any religious or cultural site.

Source: Asian Development Bank.

41. Despite all precautions, it is expected that there will be temporary, localized, and minor environmental impacts during site clearance, excavation, material transportation, storage, and construction works due to generation of emissions, smoke and dust, construction noise, and increase in traffic and congestion. These activities will have impact on the health and safety of workers if proper construction standard and safety procedures are not followed. The construction will result in the generation of construction and domestic waste from worker camps.

C. Operation Phase

42. Once the satellite clinics are in operation, these are expected to contribute positively to reducing traffic congestion and noise in the city center by diverting away patients from the Jigme Dorji Wangchuk National Referral Hospital. While the operation of the clinic will not cause any negative environmental impact on air quality i.e., pollution or noise levels, it is expected to generate an increasing amount (with increasing number of patients) of solid and liquid health care waste. Pathogenic microorganism present in health care waste can easily be transmitted by direct contact, in the air or by vectors, resulting in nosocomial infections (HAIs), putting the health of health care workers and patients at risk.

43. Prevention and control of infections entails ensuring that sources of infection, such as staff/workers, patients, or the inanimate environment are protected. Therefore, waste management during operation includes proper management to minimize infection risks to health care personnel, patients, waste workers, and the public.

44. The burial pit will contribute positively towards infection prevention and waste management. There is always the risk of ground and surface water being contaminated if the floors and walls burial pits are not concreted well or located too close to water sources. Proper waste disposal, site drainage, and adherence to standards for deep burial pit construction (including a minimum distance of 50 m to be maintained from water sources, siting, height of pit bottom, depth, width and type of lining) are included in the EMP.

45. The anticipated potential impacts during all stages of the project period are summarized in Table 4.

Table 4: Anticipated Potential Impacts of the Project

Component	Anticipated Environmental Impacts
Pre-Construction Phase	
None anticipated as seismic vulnerability and prevailing land use and material or resource requirements (such as wood) have been incorporated into the design of the infrastructure.	
Construction Phase	
Dust and emissions	• Air emissions from vehicular movement during drop-off of materials at construction sites and increase in air pollution due to construction traffic. • Pollution from fires lit in worker camps or from burning debris. • Increase in dust from excavation work and cleared land. • Dust may blow from construction work or from open piles of materials stored such as sand.
Noise	Minor disturbance due to traffic noise during material transportation and storage; excavation works, use of installation equipment/electrical and construction works or from workers playing loud music.
Odor	Generation of odor from accumulation of organic waste, improper sewerage disposal, or burning of waste.
Surface and ground water	Water requirement for drinking and washing for workers camps and construction work and pollution of water sources/streams from construction work and improper solid and liquid waste management. Surface and ground water will be contaminated if burial pits floors and walls are not concreted well.
Soil	Soil contamination from spillage of chemicals or paints or improper waste management, removal of soil during excavation, and risk of spillage of soil along access roads.
Land coverage	Congestion in some HCFs due to lack of space to store machines, construction material, or to accommodate storage areas and burial pits.
Traffic congestion	Impeded access and congestion to the neighborhood from increase in traffic, especially trucks.
Occupational health and safety	Environmental impacts from construction worker camps, risk of transmission of diseases, and accidents at the workplace.
Public health and safety	• Construction hazards causing risk to the public. • Risk of diseases due to social and sexual contact with non-national workers.
Solid or hazardous waste	Safety and health hazard to workers if waste (from worker camps, construction waste) is not managed well.
Operation of new satellite clinics and BHUs	
Odor	• Generation of odor from accumulation of organic waste. • There may be localized odor from pathological waste if burial pits are not sealed well.
Soil and water quality	• Soil and water pollution due to improper disposal of wastewater. • Surface and ground water will be contaminated if wastewater is not treated before disposal.
Management of medical waste	Risk of infection to patients, health care personnel, and waste handlers from exposure due to improper management of medical waste.
Electrical/ electronic waste	Ozone depleting substance released from improper management and disposal of equipment including refrigerators.

BHU = Basic Health Unit, HCF = health care facility.
Source: Asian Development Bank.

46. Mitigation measures for all potential impacts will be detailed out in the IEE report.

V. ENVIRONMENTAL ASSESSMENT AND ENVIRONMENTAL MANAGEMENT PLAN

47. The environmental assessment procedure shall be as follows:

A. Environmental Screening and Categorization

48. An environmental screening using the REA checklist shall be conducted and filled prior to detailed design of the proposed investment (refer to Appendix 1 for the REA checklist).

49. The degree of impact of the sub-components will be determined by looking at the current land use, ownership, existing degree of disturbance, uniqueness and importance of the site, spatial and temporal scale of the project, and magnitude of the impact. Also, compliance with national and ADB policies, regulations, and guidelines will be reviewed to determine the magnitude of the impacts.

50. The infrastructure development works to be implemented are quite small, localized, and temporary in nature during the construction phase. Also, there are no major social or environmental concerns, and impacts can be easily mitigated. However, the operations phase of all HCFs will result in generation both hazardous and non-hazardous waste containing pathogenic microorganisms which can easily be transmitted by direct contact, in the air or by vectors, resulting in nosocomial infections (HAIs). Thus, increasing the risk of infections amongst health workers and patients.

51. Based on the screening, the environmental category of the project is ascertained, and the findings lead to the categorization of the project as category B and conclude that an IEE is required for the project sub-components.

B. Environmental Assessment Procedure

52. The environment assessment methodology will include the following:

(i) review of relevant acts, policies, strategies, and guidelines;
(ii) collection of baseline information on the physical, biological, socioeconomic, and cultural environment in the project areas;
(iii) field visits to the proposed site locations as well as representative HCFs;
(iv) identification and consultation with the stakeholders during preparation of the IEE. Primary stakeholders include health personnel from the relevant divisions of the MOH including urban health, infection control and waste management program, architects, engineers, and infrastructure consultants involved in designing the satellite clinics, DHO, staff of the existing satellite clinics, urban planners from the Thromde Office, representatives of the local community, and some patients where possible; and
(v) review of architectural drawings for the new satellite clinics. Assessment of suitability and adequacy of structure for delivery of standard services by the infrastructure consultant.

1. Preparation of Environmental Assessment Documents

53. A category B project requires an IEE as the final environmental assessment report. The steps towards preparing the IEE include:

(i) identification of potential environmental impacts and risks arising from current practices or from the newly proposed project;
(ii) identification of suitable typical mitigation measures to ameliorate potential impacts;
(iii) preparation of an EMP that describes the proposed mitigation measures, management responsibilities;
(iv) designing an EMP to monitor its implementation, performance monitoring, and to document and report monitoring results;
(v) discuss and develop institutional arrangements for implementation of environmental management and monitoring; and
(vi) document public consultation and information disclosure during the IEE as well as continued future consultation with and participation of affected people if any during project implementation.

54. As a standard operating procedure, the following ECOP will be attached to the contract document, as a part of the contract clause, and to be used in conjunction with other requirements of the MOH and municipal authority.

Table 5: Environmental Codes of Practice for Construction

Component	Mitigation Measure
Quality control and fire safety	Use qualified/licensed plumber/electrician for sanitation, water supply plumbing, and electrical installations.
Dust and emission generation	Ensure that emissions do not result in pollutant concentrations that reach or exceed relevant ambient quality guidelines and standards by applying national legislated standards, or in their absence, the current World Health Organization Air Quality Guidelines. Supporting measures to minimize air emissions and generation of dust: • Ensure construction equipment and vehicles are maintained in good condition and have passed Road Safety and Transport Authority's emission test. • Prohibit burning of construction debris on site. • Remove excavated soil as soon as possible and dump it at pre-approved Thromde site. • Cordon off the area to reduce dust from spreading to neighboring areas. • Sprinkle water on exposed work sites to minimize dust. • Cover stockpiles of sand to avoid this being carried off on windy days.
Fire safety	Use only licensed electricians for wiring or installation of electrical connections.
Noise during construction	• Minimize use of trucks during early morning school drop-off or pick-up times, keep material drop-off to daytime (7:30 a.m.–8:00 a.m. and 2:30 p.m.–4:00 p.m.). • Notify the school and the early care center of work scheduling and expected construction period. • Minimize noisy activities to daytime hours. • Restrict workers from playing loud music.
Odor	• Prohibit burning of waste especially plastics. • Regular removal of waste from site. • Burning of waste especially plastics restricted.
Water requirement and quality	• Water required for construction must be sourced with approval from Thromde. • Provision must be made to store water in case of shortage. Restrict dumping construction waste or any disinfectants into any water body.

Component	Mitigation Measure
	• Domestic drains must be constructed as per standards and connected to the nearest covered or open public storm water drain.
Soil	• Store all chemicals, fuel, and paints in designated storage areas to reduce the risk of spillage. • Keep corrosive and toxic materials in sealed containers. • Minimize and contain work areas especially when dealing with corrosives. • Collect containers, oily rags, used oils, paints, and disposed-off as per municipal rules. • Provide waste bins and designate a waste collection and storage area, that is not easily damaged by dogs.
Congestion	Reduce traffic congestion during early morning school drop-off or pick-up times
Occupational work safety	• Contractor will be required to provide adequate housing facilities for workers that includes drinking water, electricity/kerosene/gas with proper drainage and sanitation/temporary toilets. • Screen workers at their point of origin for the more virulent and contagious diseases, including HIV/AIDS, tuberculosis, and malaria. • First-aid kit should be readily available to workers. • Provide workers with personal protective equipment such as helmets, gloves, glasses, and boots and ensure workers use them while working. • Conduct safety awareness for all site personnel. • Document procedures to be followed for accident and record actions taken in such cases. • Ensure fire safety at site by providing fire extinguishers.
Public health and safety	• Maintain cleanliness of the premises and surrounding. • Take necessary precautions against accidents, damages or inconvenience to the public and workers or adjacent property during the execution of the work such as: – Cordon off the site to exclude the public from the site especially where there are trenches. – Post a signboard to notify passers-by of ongoing work at the site. – Safely store all construction waste on the site and not along the road, or on top of drains and footpaths to minimize public inconvenience.
Public and private property	Restore any private/government property damaged during construction to the satisfaction of the owner/Thromde.
Waste generation at construction site	• Remove all construction waste and transport it to landfill site without spillage. • Provide appropriate bins for waste collection and storage (plastics, paper, organic, construction waste). • Contractor will be required to dismantle worker camps and clear the site of construction debris around the building and or on the abutting road and or adjoining property after completion of construction works. • Make appropriate arrangements for disposing of construction debris with approval of Thromde.

Source: Asian Development Bank.

VI. INSTITUTIONAL ARRANGEMENTS AND MECHANISMS FOR IMPLEMENTATION OF THE ENVIRONMENTAL MANAGEMENT PLAN

A. Project Execution

55. The MOH is the executing agency responsible for management, coordination, and execution of all activities funded under the grant.

56. The Planning and Policy Division will form the PMPSU for the implementation of the project. The PMPSU will undertake the following activities:

(i) Coordinate and monitor all project activities with respective implementing agencies to ensure timely implementation of all project activities.
(ii) Prepare and submit implementation progress and compliance reports on all project sub-components (after compilation from the implementing agencies) to ADB every quarter for both construction and operation phase.

B. Project Implementation and Supervision

1. Satellite Clinics in Thimphu and Phuentsholing (Urban Satellite Clinics)

57. During the construction stage, the contractor will be responsible for mitigating all environmental impacts related to construction activities which will be monitored by the PMPSU. All safeguards requirements including IEE will be included in the bidding document. It will also comprise of EMP and ECOP. During construction, the contractor will be responsible for regular monitoring to ensure that work is executed as per the terms and conditions of the contract document and the ECOP. The contractor will be responsible for monitoring through visual observation and maintenance of daily logs/record by the site supervisor (routine monitoring).

58. The DMSHI, through the HIDD, will hire a supervision team that will be responsible to ensure quality and monitor implementation of the EMP and/or the ECOP by the contractor during construction.

2. Construction of Satellite Clinic in Thimphu Dzongkhag and Improvement Works in the Districts

59. The DHO and the district engineer will be responsible for supervision of construction according to contract agreements, which includes the ECOP. The DHO will report on the construction performance to the MOH through the DMS.

C. Mechanisms for Implementation of the Environmental Management Plan and Environmental Monitoring

1. Pre-Construction Phase

60. There is no need to conduct environmental monitoring during pre-construction apart from ensuring that the required permits and building clearances are obtained.

2. Construction Phase

a. Satellite Clinics in Thimphu and Phuentsholing (Urban Satellite Clinics)

61. Adherence to the ECOP are the responsibility of the contractor, who will therefore be responsible for daily monitoring through visual observation and maintenance of daily logs/record by the site supervisor as their routine monitoring process.

62. The Environmental Division in Thimphu and Phuentsholing Thromde are responsible for all environmental matters within the municipal boundaries. This includes assessment of environmental impacts arising from construction work, town sanitation, identification (with urban planners) of muck disposal sites, domestic and construction waste disposal, as well as all matters

pertaining to disasters and compliance with environmental terms and conditions issued with the development consent granted for the construction work.

63. Since the MOH does not have dedicated personnel for overseeing environmental aspects, the PMPSU (PST) will coordinate with the district environment officer of the Environment Division of the two Thromdes to conduct monitoring, through quarterly site visits, to assess any environmental impacts caused by the project activities and ensure compliance with Thromde rules and guidelines. The Thromde Environment Division will provide the necessary guidance to choose appropriate mitigation measures should the need arise. This will be requested on a quarterly basis so that any unforeseen environmental impacts can be mitigated as soon as possible.

b. Construction of Satellite Clinic in Thimphu Dzongkhag and Basic Health Unit Grade II Improvement Works in the Districts

64. The ECOP is the responsibility of the contractor, who will therefore be responsible for routine monitoring through visual observations and maintenance of records.

65. For the construction of satellite clinic in Thimphu Dzongkhag with the support of DHO from the PST, the DHO will coordinate with the environment officer in the districts to conduct monitoring every quarter through site visits to assess environmental conditions as well as compliance with the EMP. For BHU-II improvement, the DHO will coordinate with the environment officer for monitoring. Overall, the environment officer will also provide the necessary guidance to choose appropriate mitigation measures should the need arise. This will be requested on a quarterly basis so that any unforeseen environmental impacts can be mitigated as soon as possible.

3. Operation Phase for all Sub-Components

66. The area of concern during the operation phase of the satellite clinics and the BHUs is to prevent patients, public and health care, and waste handlers from health care associated infections through:

(i) infection prevention control measures and practices such as use of personal protective equipment, disinfection, hygiene, infection surveillance, training, and capacity building; and
(ii) proper waste management strategies including waste minimization, segregation, collection, treatment, and safe disposal of solid and liquid medical waste.

67. A requirement of the EMP is that all HCFs follow the National Guidelines on Infection Control and Health Care Waste Management, as well as the guidelines for disposal of pharmaceutical waste. The EMP also recommends supporting measures, which will be discussed under capacity building.

68. The DMS with its Urban Health Program and the District Health Services Program and the NICHWMP will be responsible for operational aspects of the satellite clinic. Quarterly compliance reports will be submitted by the BHU in-charge (health assistant) to the Infection Program.

69. For the satellite clinic in Debsi, the DHO will be responsible for overall operation and maintenance which he will oversee through the BHU in-charge or the health assistant. At the BHU-II level, infection control and waste management is the responsibility of the designated infection focal person who will implement the guidelines and submit quarterly compliance reports to the NICHWMP of the DMS through the Thromde.

D. Midterm and Final Evaluation

70. The project will be subjected to midterm and final evaluation to assess project implementation, achievements, and compliance with the EMP by the DMS. The findings of the evaluation will be used to better manage the project to mitigate any unmitigated adverse impact.

Table 6: Mechanism for Implementation of the Project

S. No.	Activity	Agency/Responsibility	Timeline
1	Environmental screening and categorization of project using REA checklist Preparation of EARF IEE circulation and approval	PPTA	Jan–Feb 2018
2	Detail design (i) Thromde Committee to approve the lease (ii) MOH to sign the lease with the Thromde (iii) Site plan to be issued from Thromde (iv) HIDD can then begin the new design for the 2-storey clinic (v)Incorporation of EMP/ECOP into bidding documents	HIDD/DMSHI and DMS	February 2018–onwards
3	Establishment of PMPSU and management supervision monitoring	MOH	April 2018–onwards
4	Procurement/ contract award and Construction	HIDD/DMSHI	December 2018–onwards
5	EMP monitoring[a] and reporting	DMSHI and/ DMS	September 2018 –onwards
6	Operation of health care facilities	DMSHI and/ DMS	2019
7	Operation monitoring and reporting	DMS and DHO	2020–onwards

DHO = district health officer, DMS = Department of Medical Services, DMSHI = Department of Medical Supplies and Health Infrastructure, EARF = environmental assessment and review framework, ECOP = Environmental Codes of Practice, EMP = environmental management plan, HIDD = Health Infrastructure Development Division, MOH = Ministry of Health IEE = initial environmental examination, PMSPU = Project Management and Policy Support Unit, PPTA = project preparatory technical assistance, REA = rapid environmental assessment.
[a] EMP monitoring should start upon effectivity of the project.
Source: Asian Development Bank.

E. Capacity Development

71. Capacity development is necessary especially for implementation of the infection control and waste management guidelines in all HCFs. The NICHWMP of the DMS will implement capacity building measures through trainings and meetings or even exposure trips to other model HCFs that are successfully handling medical waste.

72. The following is recommended:

(i) Training workshop on infection control and waste management for health care personnel and Thromde staff. The NICHWMP will conduct a series of workshops in four locations (east, west, north, and south) so that participants from the various districts can attend.

(ii) Training for the new recruits prior to being assigned to the new satellite clinics in Thimphu and the BHUs. The assumption is that new recruits are not aware of and therefore need more intensive training on the guidelines.

(iii) The NICHWMP will initiate a national-level workshop involving all stakeholders such as designers of any new health care center, in-charge of BHUs, hospitals, and Thromde to develop practical guidelines on wastewater treatment and management.

(iv) To ensure that ADB safeguard requirements are better understood by all stakeholders (i.e., PST, district engineers, DHOs, and environment officers), especially those officers involved in the satellite clinics and the DHOs of the eight districts, a short training on ADB safeguards requirements and construction good practices is also recommended.

F. Budgetary Requirement for Implementation of the Environmental Assessment and Review Framework and Capacity Building

73. A tentative budgetary requirement for implementation of the EARF and capacity building will be prepared by the PMPSU. The budget will be required for recruitment of project supervision by the electrical and civil engineers and capacity building and training resources for health care workers, DHOs, and relevant focal staff HIDD/DMSHI, DMS and PMPSU. Additionally, the cost of environmental assessment (IEE) for the Debsi and Phuentsholing satellite clinics to be also considered in the budget as land identification, its transfer from Thromde, and construction of the clinic is planned in later years of the project implementation. The environmental monitoring will be undertaken by the PMPSU. Budget will also be required for preparation of environmental assessment reports and for conducting midterm and final evaluations. Budget for these will be detailed out in the IEE.

VII. ENVIRONMENTAL MONITORING AND REPORTING

74. Environmental monitoring during project implementation is required to assess project performance and compliance with the EMP and contract agreements. The monitoring program will help identify any modifications to improve the project, or to identify any unanticipated environmental impacts that need to be mitigated.

75. In case unanticipated environmental impacts become apparent during project implementation, MOH will update the environmental assessment and EMP, to assess potential impacts, evaluate alternatives, identify appropriate mitigation measures and ensure that the mitigating measures and implementation of such plans are adequately resourced.

76. The environmental reporting will cover environmental effects monitoring to assess the impacts of the sub-project on environmental conditions as well as environmental performance monitoring to evaluate compliance with the operating procedures, national standards, and requirements of the EMP. Monitoring reports during construction and operation phases will be submitted to ADB on a quarterly basis. Environmental monitoring will be conducted from effectivity of the project, including pre-construction activities, until a project completion report is issued.

77. In the event of noncompliance during project implementation, ADB and the executing agency will agree on a time-bound corrective action plan. The measures for the corrective action plan will be budgeted by the executing agency depending on the cost of measure required.

Table 7: Environmental Monitoring Plan

Mitigation Measures	Indicators	Location	Implementation Responsibility	Monitoring Method	Monitoring	Frequency
Pre-construction phase						
• All designs must be in line with the Thimphu Thromde Development Control Regulations (2016), Bhutan Building Rules (2002), and improvement works in line with Rural Construction Rules (2013)	Design and construction approval	All sites	HIDD, MOH	Approval	PMPSU	One time
Construction phase						
• Emissions from on-road and off-road vehicles should comply with national or RSTA regulations	Smoke and dust emission	All sites	Contractor/ Machine owner	Visual observations Emission test certificate	PST/DHO	Quarterly
• Contractor must supply kerosene, LPG, or electricity in worker camps and restrict use of firewood for cooking and heating • Prohibit open burning of solid wastes, whether hazardous or non-hazardous and enforce strictly* • Stockpile and reuse excavated material, • Remove all excess excavated soil within 2 weeks of excavation at pre-approved site • Use dust control methods, such as sprinkling water on newly excavated area* • Use of water suppression for control of loose materials on paved or unpaved road surfaces*. • Cordon off work area, especially excavated area to reduce dust from being carried by wind,	• Smoke and air emission • Visible dust levels in the construction area • Number of fires in worker camps or from burning debris	All sites	Contractor	Visual observation, CC records	PST/DHO	Quarterly

Mitigation Measures	Indicators	Location	Implementation Responsibility	Monitoring Method	Monitoring	Frequency
• Cover stockpiles of sand or other loose material* to prevent it being carried off on windy days						
• Ensure that Noise impacts do not exceed the levels 55 dB during daytime and 45 dB at night* through the following • Carrying out excavation work only during daytime* • Select equipment with lower sound power levels* • Notify the school, early daycare center and community of work scheduling • Prohibit workers from playing loud music early morning and evenings	• Noise level • Number of complaints of disturbance • Number of notifications • Excavation hours	SC and BHU sites	Contractor	CC records, visual observation	PST/DHO	Quarterly
• Prohibit disposal of solid and liquid waste into nearby streams or water bodies • Store all chemicals, fuel, paint and corrosives in a designated area in leak proof containers with lids or under roof away from rainwater • Construct and connect site drains to the nearest public storm water drain, prevent surface runoff, and contamination from worksites	• Pollution of streams and waterbodies • areas with spills • Number of drain connections constructed • Storage of chemicals/paints/corrosives	All sites	Contractor	CC records, visual observation	PST	Quarterly
• Store all chemicals, fuel, paint and corrosives in a designated area in leak proof containers with lids or under roof away from rainwater - Minimize work area when dealing with corrosives, - Make appropriate arrangements and transport excavated soil and construction debris,	• Storage of chemicals/paints/corrosives • Number of areas with spills and Soil contamination and waste dumped	All sites	Contractor	CC records, visual observation	PST/DHO	Quarterly

Mitigation Measures	Indicators	Location	Implementation Responsibility	Monitoring Method	Monitoring	Frequency
without spillage to pre-approved dump site • Inspect and clean all drains monthly especially during the monsoons repair all damaged drains • Dispose all rubbish and silt removed from drains with other excavated/construction waste						
• Ensure that the bottom of the burial pit is at least 1.5 m higher than the ground water and lined with concrete	• Soil contamination • Number of pits constructed as per recommendation • Number of spills/leakages from pit	Burial pit sites	Contractor	CC records, visual observation	PST/DHO	Quarterly
• Provide waste bins and a designated area to segregate and store organic waste • Provide sewage facilities • Ensure that storage rooms are ventilated • Maintain cleanliness of the premises and surrounding	• Generation of foul odor • Number of waste bins • Method/Type of sewage disposal • Number of cleaning and ventilation • Number of cases of foul odor	All sites	Contractor	CC records, visual observation	PST/DHO	Quarterly
• Ensure health and safety of workers through: - All migrant workers are screened for HIV/AIDS/STD/ TB - Locate labor camps in pre-approved sites only - Provide workers with adequate housing facilities with (a) drinking water, (b) electricity), (c) sanitation facilities with soak pits/septic tanks - Provision of PPE to all workers - Maintain a first aid kit on sites - Display emergency contact numbers on site	• Number of workers screened for health risks • Number of location and type of worker camps facilities provided • Number of workers with PPE • Number of First aid kit on sites • Number of Emergency displays • Number of orientation/awareness meeting • Number of emergencies at site • Designation of focal person • Number of Health and safety measures in place • Number of accidents and measures taken	All sites	Contractor	CC records, visual observation	PST/DHO	Quarterly

Mitigation Measures	Indicators	Location	Implementation Responsibility	Monitoring Method	Monitoring	Frequency
- Conduct orientation/awareness meeting for new recruits - Provide transportation facilities for workers in case of medical emergency - Designate a focal person on site to prepare and ensure procedures are in place in case of accidents, disaster or any other emergency - Document all accidents, the cause and measures taken						
• Implementation of the health and safety plan that includes: - Providing information to the public and neighboring schools/institutions about the construction work and schedule via meetings or notification - Post signboards to notify passers-by of ongoing work - Cordon off all work sites to exclude public from the workplace - Instruct workers in advance on required behavior especially in the districts • Avoid storing or spillage of any construction material or waste along access roads or footpaths • Reduce project traffic* during early morning school drop off or pick up times (7:30 a.m.-	• Public health and safety • Number of communication measures, • Number of signboards • Number of awareness meetings • Number of or length of barriers to exclude public from site • Number of and cause of accidents/spills • Number and types of Health and safety measures implemented	SC and BHU sites	Contractor	CC records, visual observation	PST/DHO	Quarterly

Mitigation Measures	Indicators	Location	Implementation Responsibility	Monitoring Method	Monitoring	Frequency
8:00 a.m. and 2:30 p.m.-4:00 p.m.). • Unloading of construction materials should be carried in a manner and time to avoid blockage of roads/paths/access						
• Record and document all accidents to public and measures undertaken • Develop and follow standard procedures to record and respond to complaints* within 7 days	• Public health and safety • Number of accidents • Number of grievances	All sites	Contractor	CC records, visual observation	PST/DHO	Quarterly
• Use only licensed/qualified or experienced electricians for wiring, installation of electrical equipment, • Provide and keep at least one fire extinguisher, water hose, torch light on site for emergencies • Emergency procedures should be clearly posted at appropriate locations • Ensure that workers/staff are aware of emergency numbers for Police, Fire and Ambulance • Conduct mock drill for emergencies	• Number of Fire hazards and Disasters • Number of emergency procedures instituted • Number of displays/notices/drills	All sites	Contractor	CC records, visual observation	PST/DHO	Quarterly
• Remove all waste daily to minimize pile up of fuel for fires	Aesthetic impacts	All sites	Contractor	CC records, visual observation	PST/DHO	Quarterly
• Dismantle worker camps and clear the site of all construction and domestic debris, seal soak pits/temporary toilets after completion of construction	Decommissioning of construction works	All sites	Contractor	CC records, visual observation	PST/DHO	Quarterly

Mitigation Measures	Indicators	Location	Implementation Responsibility	Monitoring Method	Monitoring	Frequency
• Compensate and or restore any private/government property damaged during construction to the satisfaction of the owner/Thromde	Number of damage/accidents	All sites	Contractor	CC records, visual observation	PST/DHO	Quarterly
• Institute procedures to deal with unanticipated or chance find impacts	Number of chance findings	All sites	Contractor	CC records, visual observation	PST/DHO	Quarterly
Operation Phase						
• Implement collection and segregation, treatment and disposal of waste as per infection prevention and waste management guidelines including wastewater management guidelines; • Waste minimization and stock management • Develop procurement procedures or take back mechanism with suppliers to manage wastes stemming from their supplies • Clear delineation of responsibilities for healthcare waste management. • Conduct regular management review of staff capability and practices, • Review healthcare waste management system, practices and trends in waste generation after 3 years	• Quantities of waste generated, segregated, reused, recycled, returned to supplier, composted and disposed/burnt/buried • Number of review meetings	All sites	HA	Waste inventory Medical stock management practices Site observations HCF waste report Review reports	DHO, ICWMP	Quarterly
• Follow approved protocols on wastewater collection, pre-treatment and disposal • Inspect and clean all drains monthly especially during the monsoons repair all damaged drains	• Wastewater collection, treatment and disposal • Number or % staff complying with guidelines	All sites	HA	Site observations wastewater report	DHO, ICWMP	Quarterly

Mitigation Measures	Indicators	Location	Implementation Responsibility	Monitoring Method	Monitoring	Frequency
• Conduct wastewater monitoring to assess, sources and trends (types and quantities generated)						
• Incorporate the costs of providing infection control and waste management equipment or materials into the annual budget	Annual budget provision	All sites	HA	Budget requirements	DHO, ICWMP	Quarterly
• Provide personal protective gear such as gloves, masks for personnel handling medical waste, • Ensure that standard protocols and precautions such as hand hygiene, decontamination, disinfection, housekeeping • Conduct regular checkup of personnel dealing with infectious waste and provide immediate treatment for personnel who may be infected	• Number of PPE provided • Number of staff using PPE • Number of staff following protocols • Number of infections and post exposure treatment • Number of checkups of personnel	All HCFs	HA	Observation HCF records and progress reports	DHO, ICWMP	Quarterly
• Conduct orientation for new staff and annual refresher training for all healthcare workers involved in handling, waste at the time of induction and thereafter at least once every year. • Conduct awareness on “Infection prevention and waste management guidelines, and wastewater management guideline” • Display written instructions for personnel on waste management protocols	Number of orientation trainings/awareness meetings conducted, Number of participants	All HCFs	HA	Observation HCF records and progress reports	DHO, ICWMP	Quarterly
• Educate the public through posters on the risks of improper waste disposal,	• Number of posters • Number of measures instituted to restrict public access	All HCFs	HA	Observation	DHO, ICWMP	Quarterly

Mitigation Measures	Indicators	Location	Implementation Responsibility	Monitoring Method	Monitoring	Frequency
infection control and waste management • Restrict public access to waste storage and burial and disposal areas				HCF records and progress reports		
• Promote waste minimization such as using microfiber mops and cloths rather than chemicals, in general areas such as general toilets, stores, offices etc.	• Number of waste minimization measures initiated	All HCFs	HA	Observation HCF records and progress reports	DHO, ICWMP	Quarterly
• Waste storage areas should be sized to the quantities of waste generated and designed with impermeable floors, partitioned and well ventilated,	• Number of waste storage areas constructed as per approved design	All HCFs	HA	Observation HCF records and progress reports	DHO, ICWMP	Quarterly
• Facilitate disposal for sharps and pathological waste with relevant authorities such as JDWNRH	• Number of meetings to facilitate sharp disposal	All HCFs	HA	Observation HCF records and progress reports	DHO, ICWMP	Quarterly
• Conduct regular check and maintenance of all equipment, • Conduct validation of treatment technology (e.g., autoclave)	• Number and type of maintenance work • Number and results of validation	All HCFs	HA	Observation HCF records and progress reports	DHO, ICWMP	Quarterly

BHU = Basic Health Unit, CC = climate change, DHO = district health officer, HA = health agency, HCF = health care facility, ICWMP = Infection Control and Waste Management Program, IFC = International Finance Corporation, JDWNRH = Jigme Dorji Wangchuck National Referral Hospital, PPE = personal protective equipment, PST = project supervision team, SC = satellite clinic.

*****As per IFC's EHS guidelines.

Source: Asian Development Bank .

VIII. PUBLIC CONSULTATION, INFORMATION DISCLOSURE AND GRIEVANCE REDRESS MECHANISM

A. Public Consultation

78. Key stakeholders were identified and consulted during preparation of the EARF. Any others that are identified during project implementation will be brought into the process in the future. Primary stakeholders include:

(i) MOH;
(ii) DHO;
(iii) staff of the satellite clinics and BHUs;
(iv) residents of neighboring community;
(v) patients that will use the clinic; and
(vi) village health workers.

79. Post approval, the EARF and IEE will be shared with the relevant stakeholders and disseminated through the ministry website.

B. Consultation and Information Disclosure

80. Consultation and information disclosure will be a continuous process during the preparation of the environmental assessment document and implementation of the EMP. The aim of the consultation is to discuss the project and involve stakeholders in planning the mitigation measures and developing the EMP. Meetings will be held with MOH, DHOs, and health care workers, staff at the BHU-II and satellite clinics, architects and engineers designing the infrastructure works, infection control program personnel, representative of the local community, patients, and nongovernment organizations. As an ongoing process, consultations will continue throughout the sub-project cycle. Consultation will be conducted in a congenial environment without intimidation through prior notice and be gender sensitive. The public consultation process will be documented and incorporated in the environmental assessment and progress reports. It will be published on the MOH website and on official MOH social media pages.

81. Prior to disclosure, executing/implementing agencies will send concurrence in writing and disclosure requirements under ADB's Public Communications Policy 2011 will be followed. All IEEs, updated IEEs including corrective action plans, and environmental monitoring reports will be disclosed in the ADB website. The MOH will provide relevant environmental information including the IEE and environmental monitoring reports in a timely manner, in a form and language easily understood by affected people and stakeholders.

C. Grievance Redress Mechanism

82. Affected person(s), if any, or person(s) who do not agree with the plans, activities or outcomes will have the right to file complaints and/or grievance regarding the new construction and improvement works. Such persons will be able to express their grievances through a grievance redress mechanism that will be instituted under the PMPSU in the ministry and at the Dzongkhag. The grievance redress process will provide enough opportunity for such persons to articulate complaints before and during the implementation of construction and improvement works and ensure that the MOH adequately responds to peoples' views on planning and implementation of the construction and its associated activities.

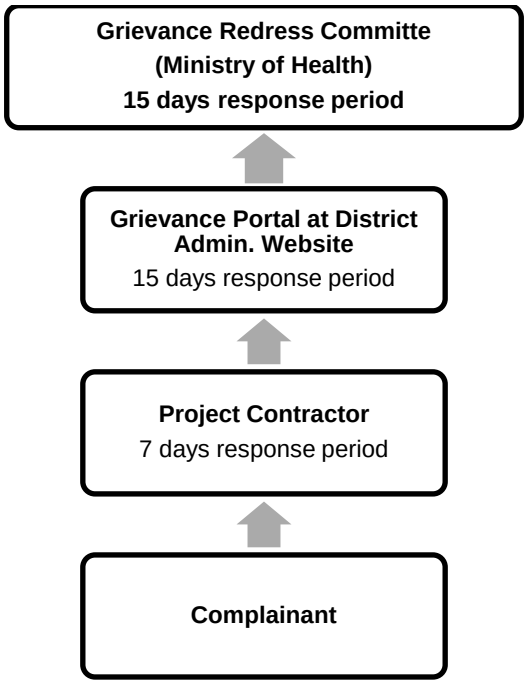
83. A three-tier grievance redress mechanism will be followed.

(i) **First-tier.** The complainant(s) must submit their grievance or in written form directly to the project contractor. The project contractor, if it is within his scope, will facilitate solutions or within 7 days provide a response (in writing) to the complainant(s) justifying his inability to address the grievance. Refer Appendix 4 for sample grievance form.

(ii) **Second-tier.** If the complainant(s) is not satisfied with the decision or response he/she receives from the project contractor, he/she can take the written response from the project contractor and submit his written complaint/appeal to the Dzongkhag. This can be done via the grievance portal on the district webpage of Samdrup Jongkhar, Pemagatshel, Dagana, Trashi Yangtse, Mongar districts and in writing for Trashigang, Trongsa, and Zhemgang districts. The Dzongkhag will discuss the issue with the DHO who will try to address it through the district PMPSU committee and facilitate a solution or a response within 15 days.

(iii) **Third-tier.** Again, if the complainant is not satisfied with the decision of the Dzongkhag PMPSU committee or he/she does not receive a response within 15 days of submitting the grievance the complainant can submit his appeal to the Grievance Redress Committee in MOH. The MOH will record, review, and discuss the issue with the complainant(s) and the project contractor to address the grievance and facilitate solutions, or respond (in writing) otherwise, within 15 days.

Grievance Redress Mechanism



Source: Asian Development Bank.

84. **Accountability mechanism.** ADB has adopted an accountability mechanism whereby people adversely affected by ADB-financed projects can file a request for compliance review by the ADB's Compliance Review Panel or express their concerns to the Special Project Facilitator that assists in finding solutions to the problem. Before submitting a complaint to the Accountability Mechanism, affected people should make an effort in good faith to solve their problems by working with the concerned ADB operations department. Only after doing that, and if they are still dissatisfied, should they approach the Accountability Mechanism.

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APPENDIX 1
RAPID ENVIRONMENTAL ASSESSMENT CHECKLIST

Project Title: **Preparing the Health Sector Development Program**
Location: **Bhutan**
Proposed Environment Category: **B**

Screening Questions	Yes	No	Remarks
A. Project Siting Is the Project area adjacent to or within any of the following environmentally sensitive areas?		X	All works will be confined in government-owned land. The satellite clinics will not be located in environmentally sensitive areas.
▪ Cultural heritage site		X	
▪ Legally protected Area (core zone or buffer zone)		X	
▪ Wetland		X	
▪ Mangrove		X	
▪ Estuarine		X	
▪ Special area for protecting biodiversity		X	
B. Potential Environmental Impacts Will the Project cause …			
▪ impairment of historical/cultural areas; disfiguration of landscape or potential loss/damage to physical cultural resources?		X	
▪ disturbance to precious ecology (e.g., sensitive or protected areas)?		X	
▪ alteration of surface water hydrology of waterways resulting in increased sediment in streams affected by increased soil erosion at construction site?		X	
▪ deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?		X	
▪ increased air pollution due to project construction and operation?	X		This potential impact during construction period will be mitigated by restricting truck movement during peak traffic periods. Construction equipment and vehicles are required to have passed the road safety and transport emission tests. Delivery trucks will be covered to avoid dispersion of dust. Considering the nature of the project, significant air emissions are expected during operational phase.
▪ noise and vibration due to project construction or operation?	X		Temporary increase in noise levels and vibration from use of construction equipment and manual works are expected during construction phase. No significant increase in noise and vibration is expected during operations phase. The impacts during construction can be addressed by following mitigating measures in the environmental management plan.
▪ involuntary resettlement of people? (physical displacement and/or economic displacement)		X	
▪ disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		X	
▪ poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of	X		Contractors are required to follow the Worker and Occupational Health and

Screening Questions	Yes	No	Remarks
communicable diseases (such as STI's and HIV/AIDS) from workers to local populations?			Safety Plan which includes pre-screening of workers, provision of workers' housing, lighting, drinking water and sanitation facilities.
▪ creation of temporary breeding habitats for diseases such as those transmitted by mosquitoes and rodents?	X		The contractor will be responsible in keeping all areas clean. All empty containers which promotes breeding habitats will be disposed of properly.
▪ social conflicts if workers from other regions or countries are hired?		X	There has been no history of such conflicts for any infrastructure projects till date.
▪ large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?		X	The nature of the work is so small that at any particular site, no more than 100 workers are anticipated. Provisions will be made for water supply and sanitation for workers.
▪ risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?	X		All construction activities carried out under the project will comply with the General Rules and Regulation on Occupational Health and Safety (OHS) in Construction, Manufacturing, Mining and Service Industries, promulgated in 2006 by the Ministry of Labor and Human Resources, Government of Bhutan. In addition to this, the Ministry of Health (MOH) Infection Prevention and Control and Medical Waste Management guidelines will be followed, and training will be provided by the MOH. Environmental codes of practice will be part of the contract agreement with the contractor.
▪ risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?	X		The national occupational health and safety (OHS) guidelines will be followed.
▪ community safety risks due to both accidental and natural causes, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?	X		Construction sites will be fenced and safety signages will be placed where needed. The new infrastructure will be part of the Thimphu Dzongkhag disaster management contingency plan. Requisite to install fire safety measures such as fire extinguishers on site incorporated
▪ generation of solid waste and/or hazardous waste?	X		Proper waste management measures will be implemented during construction. The Infection Prevention and Control and Medical Waste Management guidelines will be followed for clinical wastes during operation.
▪ use of chemicals?	X		
▪ generation of wastewater during construction or operation?	X		

Check list for Preliminary Climate Risk Screening

Country/Project Title: BHU 51141-002: Health Sector Development Program

Sector: Health

Subsector: Health system development

Division/Department: Human and Social Development Division, South Asia Department

Screening Questions		Score	Remarks
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?	0	Project's new construction will adhere to zoning regulations and will not be in environmentally-affected zones. The Government of Bhutan has strict guidelines on where public buildings can be constructed. The 2016 Development Control Regulations, published by Ministry of Works and Human Settlement, has city plans which have zones where different types of construction are permitted. These planning zones have been worked out by studying soil mechanics and land usability. The regulations categorize zones as environmental-affected zones, residential zones, commercial zones, and heritage sites. The locations for constructing the satellite clinics will be in zones where residential and institutional buildings are permitted, and not in environmentally-affected zones. Building materials for the clinics will be based on standard designs for medical institutions, and the materials themselves are approved by the Standards and Quality Control Authority, which consider climate suitability of building materials.
	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.)?	0	The clinic construction sites will be selected based on city plans and zones of the 2016 Development Control Regulations, which considers hydro-meteorological parameters. In addition, the 2012 Bhutan Building Rules, to which the construction must comply, consider climatic risk concerns. Although these considerations are implicit in current regulations, updated climate scenarios should be factored into project design.

Screening Questions		Score	Remarks
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)?**	1	Changes in temperature, precipitation, and extreme events (heavy rainfall, including wind and storms) may affect the selection of building materials for the satellite clinics. The Bhutan Standards and Quality Control Authority (SQCA) sets minimum standards and specifications, including building materials to be used that take into consideration these climate concerns. The clinics' structural design and materials used will strictly comply with the SQCA and will be robust and high quality.
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s)?	0	Climate conditions will not significantly affect the cost of maintenance over the life of project outputs, given planned use of standard quality climate appropriate materials and adherence to zoning regulations. (Post-construction maintenance cost is included in project based on government standard rates for similar structures.) In addition, there may be disruption in construction activities due to weather conditions affecting roads and mobility of workers and construction supervision. The contractors' workplan will consider these adverse conditions in their cost proposal and scheduling completion of works, which will be closely monitored by the executing agency.
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 life time?	1	Extreme weather and climate induced disasters (e.g., landslides) can affect the capacity of clinics to deliver health services, both due to surge in medical needs, or clinic structures being affected. The health sector has developed the Health Emergency and Disaster Contingency Plan (2016), in accordance with the requirements of the 2013 Disaster Management Act of Bhutan. The contingency plan mandates the health sector to deliver uninterrupted medical services, especially during and after emergencies. Disaster risk reduction measures include seismic safe designs and non-structural mitigation measures. Furthermore, all health facilities are expected to have emergency plans and procedures in place and provide training and

Screening Questions		Score	Remarks
			equipment for health staff to deliver emergency medical response during crisis. All hospitals are mandated to conduct mock drills twice a year to test response plans. There is also a National Action Plan for Earthquake Safety of Health Facilities 2013 that requires standard measures to be in place to protect critical utility systems, such as the back-up of the electrical power system to ensure critical medical equipment will function during extreme weather conditions. However, policies and plans do not always guarantee implementation of adequate preparedness and mitigation measures without strict monitoring and resources to put in place response readiness.

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 highrisk project.

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

Other Comments: The health sector in Bhutan is at risk of some climate impacts for which reason the preliminary categorization is considered “medium.” Climate-induced disasters (e.g., landslides) can affect the capacity of clinics to deliver health services, both due to surge in medical needs, or due to clinic structures, roads, and utility systems being affected. Climate risks will be mitigated through selection of climate appropriate building materials, and there are also adequate government adaptation policies, standards, and measures in place.

APPENDIX 2
CONSTRUCTION SITE CHECKLIST

The checklist is to be used to review conditions at the construction site and identify any environmental impacts or risks to the health and safety of workers and the public.

No.	Parameter	Description	Y/N	Remarks
1	Quality control	Is the contractor using experienced/qualified/licensed Plumbers and Electricians		
2	Air and dust pollution	Is waste/wood being burnt onsite What are the workers using for cooking (Gas/wood/electricity)		
3	Noise	Have there been any complaints of congestion and disturbance by neighborhood community		
4	Odor	Is there any foul odor being emitted on site. If so what is the cause?		
5	Water availability	Are there any water shortage problems and if so are there any water storage facilities on site?		
6	Water pollution	Is the site close to any stream? If so how close is the stream?		
		Is there any sign of water pollution i.e. dumping of construction or domestic waste into any water body/stream		
		Does the site have proper drainage connecting to the nearest public drain		
7	Soil erosion/degradation	Has the excavated soil been removed from site Where has the soil been dumped?		
Occupational health and safety				
1	Number of construction workers employed national non-national			
2	Number of Non-national workers that have undergone health screening			
3	Number of workers that have fallen ill in the last 3 months			
4	Is there a First aid kit readily available on site?			
5	Number of accidents that occurred on site in the last 3 month			
6	Location of worker camp? # rooms,# toilets, #workers per room			
7	Does the worker camp have Drinking water Electricity Sanitation facilities			

No.	Parameter	Description	Y/N	Remarks
8	Number of workers provided with Personal Protective Equipment (PPE) • Helmets • Gloves • Boots			
9	Number of workers using the PPE while working. Why are workers not using their PPE			
10	Number of safety meeting/training conducted in the last 3 months			
11	What measures have been taken to ensure fire safety at site (e.g. fire extinguishers)			
12	Are there any fire hazards at the worker camps and construction site?			
Storage of construction material, oils, chemicals and corrosive materials				
1	Where is construction material stored			
2	Is there any spillage of construction material on the access road or, walkway			
3	How is oil, chemical and corrosive material stored? Are the containers sealed?			
Public safety and traffic congestion				
1	Has there been any traffic congestion due to material transportation to site			
2	Does the site have a barricades around site			
3	Does the site have a sign to notify the public of the type and work duration			
4	Is there any material stored on the access road, or on top of drains and footpaths			
6	Rate the cleanliness of the construction site on a scale from 1 to 10 and write comments on remarks for ranking			
Fire hazard				
1	Is there a Fire extinguisher on site, or some measure to put off accidental fires			
2	Are staff aware of protocols for earthquakes?			
	Have there been any earthquakes in the last period?			

Waste generation and management at site

S. No	Description	Yes/ No	Remarks
1	Are there separate bins for waste segregation and storage		
2	Waste collection frequency by municipality (# times a week)		
3	Where is construction waste stored		
4	Where is construction waste disposed?		
5	Any waste management problems at site?		

Damage to Public and private property and site closure

Sl.No.	Nature and type of damage	Government/private property	Cause of damage	Measures undertaken	Cost implications
1					
2					
3					

Record of ailments/ illness among workers

Sl.No.	Nature and Type of illness	Cause of illness	# staff	Measures undertaken
1				
2				
3				

Accidents at the workplace – Types of accidents on site in the last 3 months

Sl.No.	Nature and Type of accident	Cause of accident	# staff # non-staff people involved	Mitigation measures undertaken
1				
2				
3				

Decommissioning of Project

- Have all worker camps and site offices been dismantled?
- Has the site as well as the adjoining property/access roads/walkways been cleared of all materials as well as domestic and construction waste?
- Have all the damages, if any, been repaired?

APPENDIX 3
OUTLINE OF THE INITIAL ENVIRONMENTAL EXAMINATION

I. **Introduction.** This chapter covers general background of the project, project background, purpose of the initial environmental examination and structure of the report and applicable policy, legal and administrative framework, and standards of the Government of Bhutan and Asian Development Bank for the project

II. **Description of the Project.** This chapter covers description of the project areas covering physical, ecological, economic, social, and cultural resources. A reference baseline on health care and waste management is also presented.

III. **Screening of Potential Environmental Impacts.** This chapter details the rapid environmental assessment methodology and screening of environmental impacts of project components.

IV. **Findings of the Environmental Assessment.** This chapter identifies potential environmental impacts during pre-construction, construction, and operation phases and describes the mitigation measures for all impacts.

V. **Institutional Arrangements and Environmental Management Plan.** This chapter details project execution and implementation and identifies the agencies responsible for implementation, supervision and environmental monitoring as well as capacity development and budgetary requirements.

VI. **Public Consultation and Disclosure.** This chapter identifies project stakeholders, details consultation, and disclosure to date and discusses future consultation and disclosure and the Grievance redress mechanism for the project.

VII. **Findings and Recommendations.** This chapter summarizes the conclusions of the initial environmental examination and recommendations for successful implementation.

VIII. **Conclusion.**

References
Annexes

APPENDIX 4
SAMPLE GRIEVANCE REDRESS FORM

GRIEVANCE REDRESS FORM

Date:

Name of Complainant:

Address of complainant:

Contact number of complainant:

Describe grievance:

Solution suggested by complainant:

Signature of complainant

Grievance received by:

Signature of official receiving the grievance:

APPENDIX 5
SAMPLE QUARTERLY ENVIRONMENTAL AND SOCIAL PROJECT MONITORING REPORT

1. Introduction

1.1. Brief project description
1.2. Project Progress Status and Implementation Schedule
1.3. Purpose of the report

2. Reporting details

Name of Project	
Name of reporting agency	
Reporting period	
Report No.	
Report for the period	
Date of reporting	

3. Project Implementation

3.1. Implementation arrangements
3.2. Project phase and progress (based on site visits, meetings and monitoring)
3.3. Compliance with regulations and EMP
3.4. Monitoring Results, Unanticipated Impacts and any new mitigation measures
3.5 Grievances received, status and redressal

4. Conclusion

PROJECT NAME: Bhutan: Health Sector Development Program

Site Visit and Reporting details

Site visit Date:	Project site:
Dzongkhag:	
Report submitted by:	Reporting Period:

List of persons visited/interacted with

Sl.No.	Name	Designation and Organization

Status of construction progress and main activities being carried out (as per construction work plan)

Project phase	Ongoing works	Remarks/Issues

Main observations from inspection visit

From the perspective of EMP (using the EMP matrix), describe any major concerns of the project implementation against the EMP and work plan by contractor.

1.
2.
3.
4.
5.

Is the project progressing on schedule? If No, describe reason for how off target the project is and what actions are being taken to resolve delays.

What are the major actions needed to be undertaken by contractor/MOH in order to minimize environmental impacts?

Describe any unforeseen social or environmental impacts that have arisen during project implementation.

What are the recommended action/remedial measures (to be discussed with contractor/MOH)

Status of Compliance with EMP

Sl.No.	Activity	Mitigation measure	Compliance (Y/N)	Reasons for Partial or non-compliance	Issues for further action and target dates

Photos from the monitoring visit

APPENDIX 6
AMBIENT AIR QUALITY, EMISSION AND NOISE STANDARDS, 2010
(NATIONAL ENVIRONMENT COMMISSION)

Table 1: Ambient Air Quality Standards (Maximum permissible Limits in µg/m3)

Parameter	Industrial Area	Mixed Area*	Sensitive Area**
Total Suspended Particulate Matter			
24-Hour Average	500	200	100
Yearly Average	360	140	70
Respirable Particulate Matter (PM 10)			
24-Hour Average	200	100	75
Yearly Average	120	60	50
Sulphur Dioxide			
24-Hour Average	120	80	30
Yearly Average	80	60	15
Nitrogen Oxides			
24 Hour Average	120	80	30
Yearly Average	80	60	15
Carbon Monoxide			
8-Hour Average	5,000	2,000	1,000
1-hour Average	10,000	4,000	2,000

* 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.

Table 2: Motor Vehicle Emission Standards

Parameter	Measuring System	Maximum Permissible Limit (%)	Unit
Diesel vehicle	Bosch	80.0	Hertz Smoke Unit (HSU)
Gasoline vehicle	Normal	5.0	Volume CO

Table 3: Environmental Standard for Noise

Land use Category	Max Leq		
	Day	Night	Unit
Industrial	75	70	db(decibel)
Commercial	65	55	dB
Rural/Residential	55	45	dB

Noise standard as per land use category 2