Government of the People's Republic of Bangladesh

Ministry of Health and Family Welfare (MoHFW),
and Ministry of Local Government, Rural Development and Cooperatives (MoLGRD&C)

Bangladesh Urban Health, Nutrition and Population Project (BUHNP)
P171144

ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF)

May 2023

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Abbreviations

BMWM	Biomedical Waste Management
BOD	Biological Oxygen Demand
BUHNP	Bangladesh Urban Health, Nutrition and Population
COD	Chemical Oxygen Demand
CC	City Corporation
CCC	Chattogram City Corporation
DCC	Dhaka City Corporation
DNCC	Dhaka North City Corporation
DSCC	Dhaka South City Corporation
DoE	Department of Environment
EA	Environmental Assessment
ECA	Ecological Critical Area
ECA	Environmental Conservation Act
ECC	Environmental Clearance Certificate
ECR	Environment Conservation Rules
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EMIS	Environmental Management Information System
EMP	Environmental Management Plan
EMU	Environmental Management Unit
ERP	Emergency Response Plan
ES	Environmental Screening
ESA	Environmental and Social Assessment
ESCP	Environmental and Social Commitment Plan
ESDU	Environmental Social Development Unit
ESF	Environmental and Social Framework
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESMU	Environment and Social Management Unit
ESR	Environmental Screening Report
ESS	Environmental and Social Standards
E-waste	Electronic waste
GAP	Gender Action Plan
GBV	Gender Based Violence
GDR	General Department of Resettlement
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
HIES	Household Income and Expenditure Survey
IEE	Initial Environmental Examination
ILO	International Labor Organization
IoL	Inventory of Loss
IP	Indigenous Peoples
IVC	Inventory Verification Committee
JVC	Joint Verification Committee
LAO	Land Acquisition Officer
LAP	Land Acquisition Plan
LMI	Learning Management Infrastructure

HORMP	Human and Occupational Resources Management Plan
M&E	Monitoring and Evaluation
MIS	Management Information System
MoEFCC	Ministry of Environment, Forest and Climate Change
MoF	Ministry of Finance
MoFL	Ministry of Fisheries and Livestock
MoHFW	Ministry of Health and Family Welfare
MoLGRDC	Ministry of Local Government, Rural Development and Cooperatives
NGOs	Non-Government Organizations
OHS	Occupational Health and Safety
OHSM	Occupational Health and Safety Management
OHSP	Occupational Health & Safety Plan
PA	Protected Area
PAH	Project Affected Households
PAP's	Project Affected Persons
PAU	Project Affected Unit
PMO	Project Management Office
PCU	Project Coordinating Unit
PPE	Personnel Protective Equipment
SEP	Stakeholders Engagement Plan
SIA	Social Impact Assessment
WB	World Bank

Executive Summary

I. The World Bank will be supporting the Ministry of Health and Family Welfare (*MoHFW)* and the Ministry of Local Government, Rural Development and Cooperatives (*MoLGDR&C)* in implementing the Urban Health, Nutrition and Population (UHNP) Project. The objective of the project is to improve delivery of comprehensive primary health care services for selected urban areas. Comprehensive primary health care will include essential services for disease prevention, treatment, health promotion, as well as environmental health services. The project will directly contribute to the priorities identified in the government's Eighth Five-Year Plan (8th FYP), which emphasizes the need to expand urban primary health care services and "reprioritization of public health interventions" to improve environmental health. More specifically, the project will contribute to the following priorities/strategies of the 8th FYP: (i) establishing institutional arrangements and governance mechanism between relevant ministries and agencies; (ii) expanding/upgrading urban government dispensaries for delivery of quality urban primary healthcare services; (iii) defining an adequate referral system between the various urban dispensaries and the second and tertiary-level facilities hospitals; (iv) strengthening capacity of the various service providers under the MoHFW and MoLGRD&C; (v) developing and utilizing urban health information systems for effective management of services; and (vi) expanding health service delivery through public-private-partnership through diversification of strategies including introduction of evening shifts. The project will support the following activities:

II. Component 1. will support delivery of urban primary HNP services led by the MoHFW. Under this component, a package of HNP services including reproductive, maternal, neonatal, child and adolescent health and nutrition services, routine immunization, infectious disease services, and services for diagnosis, referral and management of selected NCDs will be delivered through Primary HNP centers. This project component will support installing solar panels; enhance promising information and communications technology (ICT) initiatives to support service delivery, data management, reporting etc. Investments in solar energy and water supply and sanitation facilities will aim to improve working conditions, security, and the quality and attractiveness of services, particularly for women and girls.

III. Component 2. Improve urban environmental health and preventives services led by the MoLGRD&C. Component 2 will support:

- Development and implementation of a comprehensive strategy for integrated vector management through strengthening *inter alia* vector (mosquito) surveillance and management, including early warning system for climate-sensitive diseases like dengue, and enhancing outbreak response capacities.
- Support behavior change communication interventions to promote healthy lifestyles and creating awareness among people about issues such as NCDs, mental health, hygiene, and effects of air and sound pollution and assist them in mitigating the associated health risks. For air pollution, effective public outreach systems will be established to provide early warning during days expected to have high air pollution levels and areas with high levels of noise exposure.
- For medical waste management, the project will support: (i) implementation of out-house medical waste management through a public-private partnership strategy for contracting-out arrangements; and (ii) revision and/or development of required guidelines, policies, and standards.

IV. Both components will support project management and M&E for the respective agencies, including

- project implementation management capacities and systems, including for procurement, financial management, M&E, and capacity strengthening of Project Coordination Unit (PCU) and Line Directorates;

- oversight, management and citizen engagement mechanisms at the local level, including supporting the establishment and functioning of Ward Health Committees; and
- strengthening of mechanisms for coordination between the implementing agencies.

V. The project activities will take place in the initially selected urban areas like Dhaka South and North City Corporation, Chattogram City Corporation, each of which presents differing contexts (notably the relative HNP service delivery capacities of the MoHFW and City Corporations), requiring flexibility in strategies and implementation mechanisms.

VI. As the exact locations and site-specific activities of the sub-projects are unknown at this stage, this Environmental and Social Management Framework (ESMF) has been prepared to identify the potential environmental and social risks and impacts of proposed Project activities and propose suitable mitigation measures to manage these risks and impacts. It maps out the Bangladesh laws and regulations and the World Bank policies appliable for the Project, and describes the principles, approaches, implementation arrangements, and environmental and social mitigation measures to be followed.

VII. The potential environmental and social risks for project activities are identified as:

- Increase generation of medical wastes, general solid and liquid wastes from delivery services.
- Construction-related risks and impacts from rehabilitation works of the existing health facilities.
- Community and workers health and safety hazards by the exposure to hazardous medical wastes and waste materials, noise and dust pollution.
- Poor labor and working environment and gender-based violence and involvement of diverse stakeholders from various background and social strata in the project area.
- Water pollution by the chemicals used for vectors (mosquitos) control.

VIII. These risks will be managed and mitigated through preparation and implementation of different E&S documents like ESMF, HORMP, SEP, SEA/SH, Medical Waste, and General and Liquid Waste Management plans. The ESCP specifies the material measures and actions required to be met by the client over a specified timeframe to fulfill the ESS requirements during implementation.

IX. Implementation **Arrangement:** The MoHFW and the MoLGDR&C will be the implementing agencies for this project. Each of these government entities will be fully responsible for implementing assigned project-financed activities (while ensuring coordination with each other). Under component 1, the project will mobilize resources to the MoHFW's ongoing Fourth HPNSP and relevant Line Directorates will be responsible for project implementation. A line director along with a team of technical specialists with relevant qualifications and experience, will be assigned for this operational plan who will be responsible for implementation of activities under component 1. After the closure of the Fourth HPNSP, the Fifth HPNSP will reflect the budget for the project activities for this component. Component 2 will be implemented by the MoLGRD&C, a development project proposal (DPP) will be prepared which will identify the budget and activities for the project. For component 2, a project coordination unit (PCU) set-up at the MoLGRD&C will be responsible for coordinating activities of the city corporations and municipalities, maintaining the project account, preparing financial reports, and undertaking procurement of goods, works and services etc. The PCU will include at least: a full-time project coordinat or/director, a procurement specialist, a financial management specialist, a social and environmental specialist, and an M&E specialist. Each of the targeted city corporations and municipalities will assign focal persons for the project. The PCU can include technical experts with relevant technical qualification and experience (e.g., entomologist, botanist, researcher, etc.).

X. **Monitoring:** Overall technical oversight and coordination will be ensured by the existing Urban Health Coordination Committee headed by the Secretary, Health Services Division (HSD), MoHFW, and co-chaired by the Additional Secretary, MoLGDR&C, with participation of MoHFW officials and focal persons of targeted city corporations and municipalities. The Urban Health Coordination Committee will meet at least twice a year, or more frequently if required. For technical oversight the existing Urban Health Working Group will continue to function which is co-chaired by the Additional Secretary (Planning), HSD, MoHFW and the Additional Secretary (Urban Development), Local Government Division, MoLGRD&C, and will meet once every quarter, or more frequently as needed. The MoLGRD&C may set-up committees to be chaired by the respective Mayors for regular monitoring of the project, to meet as frequently as needed.

XI. E&S specialist will be responsible for regular E&S reporting and monitoring. At a minimum, the reporting will include: (i) the overall implementation of E&S risk management instruments, (ii) any environmental or social issues arising as a result of project works and how these issues will be remedied or mitigated, (iii) OHS performance (including incidents and accidents), (iv) community consultation updates, (v) public notification and communications, (vi) progress on the completion of project works, and (vii) summary of grievances/beneficiary feedback received, actions taken and complaints closed out. Reports from the local levels will be submitted to the PCU at the national level, where they will be aggregated and submitted to the World Bank on a quarterly basis.

XII. A separate **Stakeholder Engagement Plan** (SEP) has been prepared for the Project, based the World Bank's Environmental and Social Standard 10 on Stakeholder Engagement.

1. Introduction

1. The government of Bangladesh (GoB) has secured funding from the World Bank for Bangladesh Urban Health, Nutrition and Population (UHNP) project. The project development objectives (PDO) are to support the government to improve delivery of primary health care including environmental health and promotive services for urban population in selected urban areas. This Environmental and Social Management Framework (ESMF) is developed to support the environment and social due diligence provisions for activities of the UHNP Project. The project will support the government to improve delivery of primary health, nutrition and population (HNP) and environmental health and preventive services initially for Dhaka South and North and Chattogram City Corporations and few selected urban areas. The Ministry of Health and Family Welfare (MoHFW) and the Ministry of Local Government, Rural Development and Cooperatives (MoLGRD&C) will be implementing the Project activities.

2. As the details of sub-projects and corresponding nature, type and extent of environmental and social impacts are not known until project implementation, this Environmental and Social Management Framework (ESMF) has been prepared to ensure that project activities are implemented in an environmentally and socially sustainable manner, following the World Bank Environmental and Social Framework (ESF) as well as the national laws and regulations of Bangladesh. The objective of the ESMF is to assess and mitigate potential negative environment and social risks and impacts of the Project consistent with the Environmental and Social Standards (ESSs) of the World Bank ESF and national requirements. More specifically the ESMF aims to: (a) assess the potential environmental and social risks and impacts of the proposed Project and propose mitigation measures; (b) establish procedures for the environmental and social screening, review, approval, and implementation of activities; (c) specify appropriate roles and responsibilities, and outline the necessary reporting procedures, for managing and monitoring environmental and social issues related to the activities; (d) identify the training and capacity building needed to successfully implement the provisions of the ESMF; (e) address mechanisms for public consultation and disclosure of project documents as well as redress of possible grievances; and (f) establish the budget requirements for implementation of the ESMF.

3. This ESMF will serve as an instrument to guide the Implementing Agencies on undertaking necessary E&S assessment of each sub-project, based on which risk category (Low/Medium/ Substantial/High) of each sub-project and associated IEE/ESIAs and RAPs will be undertaken, if necessary, including the development of sub-project specific environmental and social management plans to meet the requirements of the relevant Bank Standards. ESMF provides overarching framework to manage environmental, social, health and safety (ESHS) issues associated with the implementation of sub-projects, during construction and operational phases.

4. This ESMF should be read together with other plans prepared for the project, including the Stakeholder Engagement Plan (SEP), the Environmental and Social Commitment Plan (ESCP), Human and Occupational Resources Management Plan (HORMP) and the Medical Waste, Liquid and General Waste Management Plan.

1.1 Approach and Methodology for Development of ESMF

5. The ESMF has been prepared following the WB guidelines consisting of the steps listed below.

- ✓ Review of the project components in detail and meeting/discussions with the project team, concerned government departments and NGOs.

- ✓ Review of the policy and regulatory requirements of GOB and WB and identifying the gaps and addressing them.
- ✓ Consideration of requirements of ESF to meet the requirements of ESS.
- ✓ Conduct reconnaissance field visit by group of experts and project team and initial scoping and screening to determine the key environmental and social parameters and aspects that are likely to be impacted by the program activities.
- ✓ Collect and analyze of the baseline environmental and social data with the help of secondary literature review and field data collection.
- ✓ Consult with the stakeholders including beneficiary/affected communities and developing the consultation process.
- ✓ Assess the potential and likely impacts of the program activities.
- ✓ Prepare an outline environmental and social management issues according to the requirements of the ESSs of the ESF.
- ✓ Compile thematic issues into the ESMF.

2 Project Description

6. The project initial targets the areas of the City Corporations of Dhaka South, Dhaka North and Chattogram, (**Figure 2.1**), each of which presents differing contexts (notably the relative HNP service delivery capacities of the MoHFW and City Corporations), requiring flexibility in strategies and implementation mechanisms. The project will support the government to improve delivery of primary HNP services and environmental health and promotive services in targeted urban areas through investments in existing platforms. The project will also support contracting of private sector providers of diagnostic services to improve availability and quality. Nutrition counselling and growth monitoring services delivered through the health system will be developed, along with community outreach and behavior change communication. In Dhaka, most potential platforms are managed by the MoHFW, although there are some hospitals managed by the Dhaka South City Corporation while EPI Centers are jointly managed by the MoHFW and the two City Corporations. In Chattogram, both the MoHFW and the Chattogram City Corporation manage 3 general hospitals and primary health care facilities in each ward that are potential platforms for service delivery improvements supported by the project.

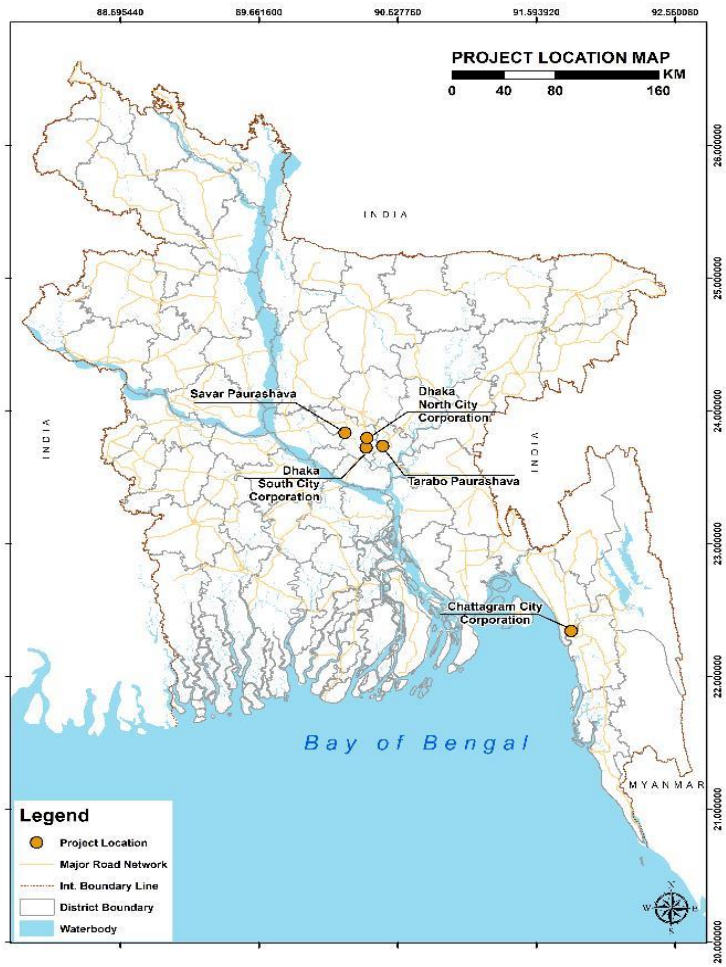

Figure 2.1. Proposed project locations.

The proposed project has the following 2 components:

Component 1. Improve urban primary HNP services led by the MoHFW

7. Under Component 1, urban primary HNP services will be delivered. Under this component, a package of HNP services including reproductive, maternal, neonatal, child and adolescent health and nutrition services, routine immunization, infectious disease services, and services for diagnosis, referral and management of selected NCDs will be delivered through Primary HNP centers. There will be at least one female service provider at each Center. The Primary HNP Centers will be fitted with solar panels and will use energy efficient bulbs, as feasible. The project will enhance existing information and communications technology (ICT) initiatives to support management and delivery of urban HNP services. Investments in solar energy and water supply and sanitation facilities will aim to improve working conditions, security, and the quality and attractiveness of services, particularly for women and girls.

8. The project will support development of primary health service delivery networks arranged in a "hub-spoke" model for each catchment area, whereby several Primary HNP Centers will be linked to a secondary/tertiary-level facility**.** Existing government health facilities at the primary level will be renovated, including selected government outdoor dispensaries, family planning clinics, and rooms allocated within national health institutes under the MoHFW. Under **Component 1**, the project will finance contracted human resources, training, civil works, equipment, medicines, furniture and other consumables, services, and additional recurrent costs. The cost for this component is **US$ 100** million.

Component 2. Improve public health services led by the MoLGRD&C

9. Component 2 will develop systems and capacities for delivering environmental health and preventive services such as mosquito control, outhouse management of medical waste, mitigating effects of air and sound pollution, behavior change communication to promote healthy lifestyles and creating awareness, and community-driven interventions for addressing NCDs. More specifically, the project will support:

- Development and implementation of a comprehensive strategy for integrated vector management through strengthening *inter alia* vector (mosquito) surveillance and management, including a dengue early warning system, and outbreak response capacities.
- Support behavior change communication interventions to promote healthy lifestyles and creating awareness among people about issues such as NCDs, mental health, hygiene, and effects of air and sound pollution and assist them in mitigating the associated health risks. For air pollution, effective public outreach systems will be established to provide early warning during days expected to have high air pollution levels and areas with high levels of noise exposure.
- To mitigate the effects of climate change, the project will support mass plantation of trees.
- For medical waste management, the project will support: (i) implementation of out-house medical waste management through a public-private partnership strategy for contracting-out arrangements; besides in house management options like use of integrated autoclave/microwave sterilizer with shredder plant with required civil structure may be supported, small scale incineration, pit burial etc. will also be considered and .(ii) revision and/or development of required guidelines, policies, and standards.

10. **Under Component 2**, the project will finance contracted human resources, training, civil works, equipment, consumables, services, and additional recurrent costs. This component will be implemented by the MoLGRD&C through close collaboration with City Corporations (Dhaka North and South, Chattogram) and few selected urban areas. The component assistance is **US$ 100** million.

11. **Both components will support project management and M&E for the respective agencies, including**

(i) project implementation management capacities and systems, including for procurement, financial management, M&E, and capacity strengthening of Project Coordination Unit (PCU) and Line Directorates;
(ii) oversight, management and citizen engagement mechanisms at the local level, including supporting the establishment and functioning of Ward Health Committees; and
(iii) strengthening of mechanisms for coordination between the implementing agencies.

The project will adopt a phased approach during the implementation. In the first-phase, services will be delivered through twelve government outdoor dispensaries of the DGHS in Dhaka North and Dhaka South city corporation areas. In second phase, HNP services will be expanded either through setting-up of new primary health centers, or strategic purchase of services from NGOs/private sector, or a combination, in Dhaka North, Dhaka South, Chattogram and/or other city corporation areas and selected municipalities In addition, innovative approaches to service delivery can be initiated, for example, a general practitioner model for service delivery and adopting public–private–partnership approaches and/or contracting–out for diagnostic services. For component 2, the first phase will cover Dhaka North, Dhaka South and Chattogram cities as well as select urban centers with a package of services; while in the second phase, the range of services will be further expanded in these areas and interventions will be rolled-out to other cities/municipalities, as feasible, based on successful implementation and lessons learned from the first phase.

12. .

3 Environmental and Social Policies, Regulations and Laws

3.1 Bangladesh Legal Framework

13. Bangladesh national policies, laws and regulations that are relevant and directly applicable to the environmental and social risks and impacts of project activities are provided in Table 3.1. A short description of the relevant laws and regulations are also provided.

Table 3.1. Bangladesh Legal Framework applicable for the project

Law	Description
Environmental Protection	
Environmental Conservation Act (ECA), 1995 and its amendment in 2000, 2002 and 2010.	This umbrella Act includes laws for conservation and improvement of the environment and environmental standards, and control and mitigation of environmental pollution and declaration of Ecologically critical areas. According to this act (Section 12), no industrial unit or project shall be established or undertaken without obtaining, in a manner prescribed by the accompanying Rules, an Environmental Clearance Certificate (ECC) from the Director General of DoE. This project also needs ECC.
Bangladesh Environmental Conservation Rules (ECR), 1997 and its amendment in 2010.	The Rule 7 classifies industrial units and projects into four categories like Green, Orange A, Orange B, and Red depending on environmental impact and location. The ECR describes the procedures for obtaining Environmental Clearance Certificates (ECC) from DoE; requirement of IEE/EIA as per category; determination of environmental standards of air, water and sound and acceptable limits for emissions/discharges from vehicles and other sources. Relevant. As per ECR, some of the interventions of UHNP are categorized as **Orange-B.** Hence, would require both IEE, ESIA and ESMP. All requisite clearances (LCC and ECC) from the DoE shall be obtained prior to commencement of civil work. The Environmental Quality Standards for drinking water, air, noise must follow these rules.
Environmental Conservation Rules (2023)	The Bangladesh government has issued the Environmental Conservation Rules 2023 and repealed the prior ones with immediate effect. The rules addressed many of the lacking in ECR (1997). Like the previous rules, industrial units and projects are classified into 4 categories: green, yellow, orange and red. For yellow, orange and red category project/industry, both location clearance certificate and environmental clearance certificate must be obtained from DoE. Separate application form for location clearance and environmental clearance certificate for project and healthcare establishment was provided in Form 02. Provided standard for drinking water quality and surface water quality including coastal area for various purposes. Also specified the effluent standards from industry or project. Schedule 9 specified the guidelines for project site selection and schedule 11 specified the outlines for EIA. Relevant, as both location clearance and Environmental clearance certificates shall be obtained from DoE.

Law	Description
Bangladesh National Environmental Policy (NEP), 2018	The policy envisaged environment conservation, pollution control, biodiversity conservation, and mitigation of the adverse effect of climate change to ensure sustainable development. For ensuring sustainable development and environmentally sound management of the natural resources and to meet the DoE/GOB regulatory requirement, this project will follow this policy.
Bangladesh Delta Plan 2100	The Bangladesh Delta Plan is a comprehensive development plan developed by Government of Bangladesh in 2018 focusing on economic growth, environmental conservation, and enhanced climate resilience. This plan in an adaptive techno-economic plan involving the interaction of water, land use, ecosystem and climate change with development outcomes. Relevant inline of climate change strategy.
The National Water Act, 2013	The National Water Act, 2013 is based on the National Water Policy, 1999 and provides the legal framework for integrated development, management, abstraction, distribution, usage, protection and conservation of water resources in Bangladesh. The Act authorized DoE to prevent water pollution. The Act denotes water pollution as 'direct and indirect harmful changes of physical, chemical and organic properties of water'. Relevant as preservation of water quality of the water resources in the project area during construction work and camps site effluent disposal.
EIA Guidelines for Industries, 2021	The guidelines are regarded as guidelines for industries subject to EIA and present 6 steps of the EIA process (screening, scoping, baseline data generation, impact assessment, mitigation of impacts and environmental management plan). These comprehensive guidelines can be followed for the ESIA study of development project.
National Water Policy, 1999	The policy emphasizes efficient and equitable management of water resources, proper harnessing and development of surface and ground water, availability of water to all concerned and institutional capacity building for water resource management. Measures must be taken to minimize disruption to the natural aquatic environment in streams and water channels by the project implementation.
The Noise Pollution (Control) Rules, 2006	Prevention of Noise pollution from noise generating activities which have the potential impact on health and wellbeing of workers and the surrounding communities. It also states the standards for noise levels. This is relevant, several project activities will be done in the densely populated areas causing potential noise in the sites, which may adversely impact on health and wellbeing of workers and the surrounding communities.
Bangladesh Environment Court Act, 2010	This Act has been enacted to resolve the disputes and establishing justice over environmental and social damage raised due to any development activities. Government can take legal actions if any environmental problem occurs due to project interventions.

Law	Description
Medical Waste (Management and Processing) Rules, 2008	The rules are applicable for out-house medical waste management facility/operators (transportation, treatment and disposal of medical waste). The law provides for guidance on the collections, storage treatment and disposal of medical waste for management facilities/operators. Project intervention of modernization and operation of medical /health institutions may generate excessive medical wastes. The institutions or agencies involved in collection, transport, storage, must obtain authorization from DoE. Relevant as the medical wastes management is a component of this project.
Manual for Hospital Waste Management 2001	Directorate General of Health Services (DGHS) has developed a manual for in-house hospital waste management in 2001 which was later updated. The manual is aimed for the hospital managers, health providers, policy makers and all the administrators, with an interest for and with responsibility to ensure hospital wastes are disposed of efficiently and economically as far as possible with a minimal environmental and health impact. All Primary HNP centers should follow the manual for in-house medical waste management.
Communicable Diseases (Prevention, Control and Eradication) Act 2018	This act is to protect the people from the national and international spread of infectious diseases, to prevent, control and eradicate such diseases, to issue global alerts and to increase mutual support for the outbreak of the disease, to increase the capacity for precise risk management and to spread related education, to review the progress of diseases, to protect rights including systematic loss. The project is related to control and prevention of communicable diseases.
National Health Policy (NHP), 2011	This strategy has focused on 10 actions including universal health coverage for urban population with a pro-poor focus, strengthening prevention and primary health care management systems, ensure urban poverty reduction, strengthening health service program of City Corporations and municipalities. The overall target was to strengthening primary health care service delivery in urban areas in Bangladesh. The project is targeted to strengthening the urban primary health care service delivery.
National Urban Immunization Strategy, 2019-2022	The goal of national urban immunization strategy is to increase the coverage of immunization in the urban areas to the expected level and to develop a system to sustain the coverage meeting the increasing demand in pace with enhanced urbanization.
Hospital Infection Prevention and Control Manual, 2018	This document lays down the policies and broad guidelines required for the practice of a nationally acceptable standard of Infection Prevention and Control (IPC) in health care settings. The purpose of this manual is to provide IPC guidelines (with customization options, depending on the level and type of hospital) for healthcare providers (hospital administrators, nurses and midwives, doctors and support staff) to use in all categories and all level of hospitals, public and private in Bangladesh. The guidance includes strategic directions, approaches, and actions for all major hospital services and sections. The manual incorporates and adapts mostly from the World Health Organization's Practical Guidelines for Infection Control in Health Care Facilities and some other

Law	Description
	international publications. The project will provide environmental health services including medical/hospital waste management.
Guidelines on Infection Prevention and Control (IPC) and Biosafety 2016	WHO Bangladesh has supported the development of updated guidelines on infection prevention and control (IPC) and biosafety for health care providers. The guidelines focus on measures to ensure patient safety as well as the safety of health care and laboratory personnel. Relevant, as to ensure patient, healthcare and laboratory personnel during the service delivery.
Municipal Solid Waste Management Rules, 2021	These rules stated the separation of MSW at source according to 3 color coded bins, recycling and reuses of materials, defines the roles and responsibilities of waste generators, municipalities and awareness program through campaign. Also states to follow the Medical Waste Management Rules 2008 for medical waste. This Rules shall be followed for effective management and disposal of the wastes.
Hazardous Waste (e-waste) Management Rules, 2021	The E-waste rules cover the products listed in the Schedule (home appliances, monitoring and control equipment, medical equipment, automatic machines, IT and communication equipment), and establishes obligations for manufacturers, assemblers, collectors, sellers, and consumers of the products. The rule also sets provisions to limit the use of the 10 substances covered by the EU RoHS Directive. This regulation entered in force upon publication. Relevant with the management of hazardous wastes (e-waste) from the health care facilities.
National 3R Strategy for Waste Management, 2010	This strategy for solid waste management is essential in order to minimize the environmental, social and economic problems by applying 3R (reduce, reuse & recycle) strategy. Relevant for the management of general solid wastes from healthcare facilities, construction sites and labor camps.
Acquisition and Requisition of Immovable Property Act (ARIPA), 2017	This is the principal legislation governing eminent domain land acquisition in Bangladesh. The Act requires that compensation be paid for: (i) land and assets permanently acquired (including standing crops, trees, houses); and (ii) any other damages caused by such acquisition. The Act also provides for the acquisition of properties belonging to religious organizations like mosques, temples, pagodas and graveyards if they are acquired for the public interest. Compensations to be paid including 200% premium for affected land. Relevant to UHNP project in case, land acquisition will be needed for any sub-projects. The land acquisition and compensation to the landowner must follow ARIPA 2017 and WB resettlement policy.
Bangladesh Climate Change Strategy and Action Plan (BCCSAP), 2009	This is a comprehensive strategy to address climate change challenges in Bangladesh, based on NAPA. There are 44 specific programs proposed in the BCCSAP under six themes. Relevant as sub-projects like dengue control, MSW and Medical wastes management are vulnerable to climate change effect.

Law	Description
8th Five Year Plan (2020-2025)	The plan has emphasized appropriate policies and institutions, and devised suitable development strategies for promoting prosperity, fostering inclusiveness, reducing poverty, and inequality. This plan focused on urban health services including Maternal, Neonatal, Child and Reproductive & Adolescent Health, Non-communicable diseases control, occupational health and safety, medical waste management, disease surveillance, Behavior change communication, etc., which are inline of this project.
Occupational Health and Safety	
Bangladesh National Building Code (BNBC), 2021	The Bangladesh National Building Code (BNBC) clearly sets out the constructional responsibilities according to which the relevant authority of a particular construction site shall adopt the precautionary measures to ensure the safety. The BNBC also stipulates the general duties of the employer to the public as well as workers. The Code of BNBC clarifies the issue of safety of workmen during construction and with relation to this, set out the details about the different safety tools of specified standard. In relation with the health hazards of the workers during construction, this chapter describes the nature of the different health hazards that normally occur in the site during construction and at the same time specifies the specific measures to be taken to prevent such health hazards. The project would involve construction or renovation or expansion of the existing buildings of Primary HNP centers, this project shall adopt the measures for safeguard of the workers at the project construction sites.
Labor Law	
Labor related Laws (Bangladesh Labor Act, 2006 and amendment 2013, Bangladesh Labor Rules 2015 and Occupational Health and Safety Policy, the Public Procurement Rules, 2008)	Standards for labor and Working Conditions are defined in these labor related acts and rules. Bangladesh Labor Act 2006 is a comprehensive legislation and addresses three areas: (i) Conditions of service and employment including wages and payment, the establishment of Wages Boards, employment of young people, maternity benefits, working hours and leave; (ii) Health, safety, hygiene, and welfare, and compensation for injury; (iii) Trade unions and industrial relations. The law applies to construction works in which laborers are employed for the purposes. The authority (contractor) will take all the measures for the safeguard of the workers. The Public Procurement Rule 2008 requires contractors to (a) take all reasonable steps to safeguard the health and safety of all workers working and other individuals authorized to work on-site; (b) to keep the site in an orderly state; and (c) to protect the environment on and off the site; (d) to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of the Contractors methods of operation. For the civil works for different sub-projects, labor will be engaged. Therefore, to safeguard the interest of the labor, host community, project authorities, contractors and other project stakeholders these laws will be triggered. The project will ensure that the stipulations of the law are duly followed when it comes to labor related activities.

3.2 National Environmental and Social Assessment and Clearance Procedure

14. The Department of Environment (DoE), the technical arm of the Ministry of Environment, Forests and Climate Change (MoEFCC), is the regulatory body and the enforcement agency of all environmental-related activities. It is the responsibility of the project proponent to conduct IEE/ESIA of the project activities; the responsibility to review IEE/ESIA to issue an Environmental Clearance Certificate rests on DoE. The Department of Environment (DoE) executes the Act under the leadership of the DG. **Error! Reference source not found.** shows the application procedure for obtaining site/environmental clearance with the required documents.

15. As per the ECR, 2023 industrial projects and units are classified in four categories which are 1. Green (low impact on environment and human health); 2. Yellow (moderate impact on environment and human health) 3. Orange (significant impact on environment and human health); and 4. Red (strong impact on environment and human health). Most the sub-components and associated activities are likely to fall under yellow category and only the component related to Medical Waste Management (both inhouse and outhouse) is categorized as orange to red Category. For sub-components falling under yellow category, there is no such significant impact on the surrounding environmental and social components, likely to have localized and reversible environmental and social impacts demands E&S screening and ESMP, based on which only a few may demand further EA like Initial Environmental Examination (IEE)/ESMP. For primary HNP services and MWM, it may be required to conduct both IEE and ESIA. It is required that the project should conduct screening for all activities of each sub-component and prepare site specific ESMP at the initial stage and based on screening result, and if recommended by DoE, further IEE/ESIA should be carried out for the specific sub-component.

16. Both Site/Location Clearance and Environment Clearance must be obtained by the respective implementing agency from DoE following the procedures as stated in **Figure 3.1.**

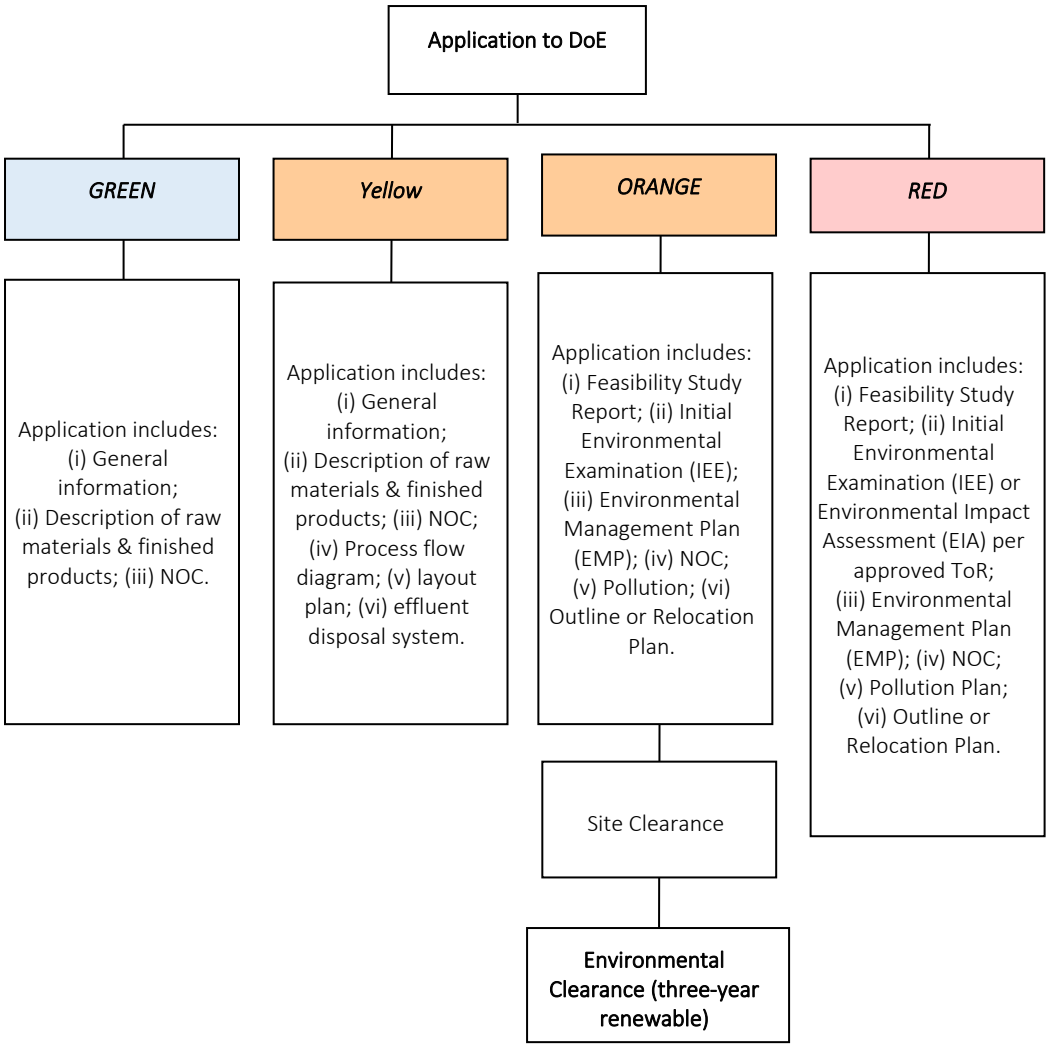

Figure 3-1. Application procedure for obtaining ECC as per project category.

3.3 Applicable International Treaties Signed by the GoB

17. Bangladesh has signed most international treaties, conventions and protocols on environment, pollution control, bio-diversity conservation, and climate change. A list of the relevant international treaties signed by GoB is furnished below.

- Bonn Convention
- Convention on the Elimination of All Forms of Discrimination Against Women
- ILO Convention No 29 on Forced Labor
- ILO Convention no. 182 on Prohibition and Immediate Action for the Elimination of the Worst Forms of Child Labor
- Indigenous and Tribal Populations Convention
- International Convention on Climate Changes (Kyoto Protocol)
- Migrant Workers (Supplementary Provisions) Convention
- Occupational hazards due to air pollution, noise & vibration (Geneva)
- Occupational Health services
- Occupational safety and health in working environment (Geneva)
- Prevention and Control of Occupational hazards
- Safety in use of chemicals during work
- UN Framework convention on climate change (Rio de Janeiro)

3.4 WB Environmental and Social Standards and Key Gaps with the National Framework

18. WB's Environmental and Social Framework (ESF) consisting of ten (10) Environment and Social Standards (ESSs) set out their requirements for identification and assessment of environmental and social risks and impacts associated with the project activities. The ESSs support the impacts assessment in achieving good international practice relating to environmental and social sustainability, assist them in fulfilling their national and international environmental and social obligations, enhance transparency and accountability and ensure sustainable development outcome through ongoing stakeholder engagement. EHS Guideline on Healthcare Facilities will also be referred for management of EHS issues associated with primary HNP centers. The World Bank's environmental and social standards applicable to project activities are summarized below in **Table 3.2**, as well as key gaps between the national framework and the policies and requirement for filling the gaps.

Table 3.2. Relevant World Bank ESS and Key Gaps with the National Framework

E&S Standard	Relevance	Key Gaps and Requirements
1. Assessment and Management of Environmental and Social Risks and Impacts	ESS1 is relevant for the project because project activities are expected to pose substantial/moderate environmental and social risks from (i) increased generation of medical wastes and general solid and liquid wastes from the rehabilitated health facilities, (ii) construction related risks from the renovation works of the existing health facilities, (iii) involve outreach to and engagement of all stakeholders in a challenging context who encompass a diverse backgrounds and social strata, (iv) management of labor and potential risk related to gender-based violence (GBV).	(i) ESIA study screening and scoping do not guarantee coverage of all ESS standards in the assessment. (ii) The stakeholder engagement during the conduct of the ESIA is limited and the ESIA report is not disclosed. (iii) The ESIA system in Bangladesh does not require analysis of alternatives. ESMF has suggested to follow the ESS1 requirements, given in the relevant sections of Environmental Management Procedures. In case, DoE rules/regulations do not cover the ESS requirements, relevant clauses should be added in the ESCP, Financial Agreements and Project Appraisal Document to follow the more stringent E&S requirements according to WB ESF.
2. Labor and Working Conditions	ESS2 is relevant for the project because there are certain labor risks for project workers. Labor related risks include (i) security risks to project workers, (ii) traffic and road safety issues, (iii) inadequate terms and conditions of employment, and (iv) occupational health and safety risks.	(i) The Labor Act 2006 does not specifically require that development be assessed and reviewed in terms of labor and working conditions including OHS requirements before approval. (ii) The Labor Act 2006 does not require development projects to prepare Human and Occupational Resources Management Plans/Procedure or OHS Plan. A **standalone HORMP** has been prepared.

E&S Standard	Relevance	Key Gaps and Requirements
		Guideline for developing Site Specific Human and Occupational Resources Management plans including OHS has been included in the HORMP.
3. **Resource Efficiency and Pollution Prevention and Management**	ESS3 is relevant for the project because (i) the project is to generate medical, solid and liquid wastes, which may affect health professional, local communities and the environment, (ii) pollution of environment from construction activities, (iii) management of wastes, chemical and hazardous materials, (iv) minimize the consumption of energy, water and raw materials.	(i) There is no laws and policy regarding resource efficiency. (ii) ECA 1995, the Water Act 1995 and the National Energy Policy 1996 stipulate the sustainable use of resources, but there is no requirement for development projects to assess resource efficiency and incorporate resource efficiency measures. Site **specific ESMP** to be prepared for each activity of the components and incorporate mitigation measures for efficient use of resources.
4. **Community Health and Safety**	ESS4 is relevant for the project, as (i) communities in the project areas expose to health and safety hazards from inappropriate medical, liquid and general wastes management and treatment, (ii) exposure of the local communities to noise and air pollution from repair and renovation activities, (iii) potential GBV risks, (iv) risk of water-related, communicable and non-communicable diseases by the climate change impacts.	(i) Covered under ESIA but the systems do not provide clear requirements for the development project and implementation. (ii) In the existing GoB regulatory systems (laws, rules, policies and acts), there is no clear requirement for establishment and monitoring of community health, safety and security measures. The gaps are addressed through suitable provisions in ESMP. In addition, the contractor will be responsible for implementing the ESMP regarding community health and safety which includes OHS plan, labor Influx Management Plan, workers camp management plan, traffic and road safety management plan etc.
10. Stakeholder Engagement and Information Disclosure	ESS10 is relevant for all projects given the need to engage with beneficiaries and stakeholders on development activities that affect their lives.	The ECA/ECR does not specifically require consultation, but the ESIA guidelines issued by DOE and other agencies recommend public consultations during scoping and the preparation of the ESIA. There is also no provision for any stakeholder engagements during project implementation.

E&S Standard	Relevance	Key Gaps and Requirements
		A **standalone SEP** has been developed with this ESMF for engagement of the communities, affected parties and stakeholders including information disclosure and consultation. The SEP will guide to ensure that project activities are identified, designed and implemented in a manner inclusive of all social groups and their vulnerabilities.

19. The project will follow the World Bank environmental and social standards and relevant GOB standards. Based on WB ESF the project is categorized as Substantial. The project will mainly provide HNP services in selected urban areas like City Corporations of Dhaka South, Dhaka North and Chattogram including few selected urban areas. The key environmental risk and impact associated with the project is generation of medical, solid and liquid wastes from healthcare services, besides there will be minor construction related impacts from infrastructure rehabilitation. The healthcare workers, patients, waste handlers, waste-pickers and general population may be exposed to health risks from medical, solid, and liquid waste. Based on available information, the medical waste management and practices in the country is inadequate. The project interventions will cause potentially increase generation of medical, solid, and liquid wastes from the healthcare facilities and due to existing insufficient waste management practices, the Environmental risk is rated as **Substantial**.

20. The social risk is categorized as Moderate. The project will bring social benefit by providing better medical and environmental health services to urban poor in selected urban areas. The key social risks involve outreach to and engagement of all stakeholders in a challenging context who encompass diverse backgrounds and social strata. A significant percentage of the beneficiaries will be from urban poor, most of them live in congested slums and do not have access to low-cost healthcare services. The project will respond to their inclusion through an appropriate outreach strategy involving NGOs and private-public partnership and as well as well-elaborated stakeholder plan. Further, social impacts may also include management of labor and potential risk related to gender-based violence (GBV). Given the project description at this stage and based on the experience of the ongoing health project, and the nature of social impacts of the project, the social risk for the proposed project is rated as **Moderate.**

4 Environmental and Social Baseline

21. The project activities will cause impacts on air quality, noise, water quality as a result of renovation/reconstruction of urban healthcare facilities and mismanagement of medical and other wastes. The social impacts include increased access to urban Primary HNP centers of the poor, slum and disadvantageous peoples, control of communicable and non-communicable diseases, family planning and others. The project initially targets selected urban areas like Dhaka City Corporations (North and South) and Chattogram.

4.1 Environmental Baseline

22. **Climate:** The climate is tropical in Dhaka. The summers here have a good deal of rainfall, while the winters have very little. The Köppen-Geiger climate classification is Aw. The average temperature in Dhaka is 25.3 °C in a year, the average annual rainfall is 2016 mm. Analysis of the rainfall data from 1987 to 2018 showed that the maximum rainfall occurs during June to September and the lowest rainfall occurs in November to February during winter season. Dhaka experiences more than 300 mm rainfall during monsoon, in winter (December and January), around 10 mm rainfall occurs in Dhaka. The highest average recorded temperature in Dhaka was 29.15°C in June and the lowest temperature was found was 18.42°C in January. Dhaka experiences high temperatures from April to September and lowest temperature during winter remains from December to February. The relative humidity in Dhaka is found to have a maximum in June to September, with a relative humidity from 80 to 82% in in winter, the relative humidity falls around 60%.

23. The climate is tropical in Chattogram. Chattogram has significant rainfall in most months, with a short dry season. According to Köppen and Geiger, this climate is classified as Am. The average temperature in Chittagong is 25.3 °C and the annual average rainfall based on rainfall record of last 35 years (1984-2019) 2796 mm. The monthly average of last 35 years (1984-2019) data shows that the maximum temperature varied from 28°C to 34°C and April was the warmest month while the minimum temperature varied from 13°C to 25°C and January is the coldest month. The average monthly relative humidity varied seasonally from minimum of 67% in February to maximum of 87% in July. The most humid months during this period were May to October, when relative humidity was more than 80%.

24. Air Quality: Bangladesh was ranked as the most polluted country in the world and Dhaka has ranked as the second most polluted city each year between 2018 to 2021. Dhaka has long been grappling with air pollution issues. Its air quality usually turns unhealthy in winter and improves during the monsoon. An AQI between 151 to 200 is considered 'unhealthy', particularly for sensitive groups. In Bangladesh, the AQI is based on five criteria pollutants: Particulate Matter (PM_{10} and $PM_{2.5}$), NO_2, CO, SO_2 and Ozone. As per monitoring reports of DoE, the average AQI in Dhaka, Chattogram was 190, 158 and 182, respectively during the period from 13 February, 2023 to 16 April, 2023. The maximum AQI was 304, 246 and 271 in these cities during the period. Based on AQI, the air was unhealthy to very unhealthy in these cities. The presence of excessive $PM_{2.5}$ was the main cause of air pollution in these cities. $PM_{2.5}$ more than 90 $\mu g/m^3$ was observed, which is much higher than the WHO recommended value for ambient air quality. The AQI of Dhaka, Chattogram during February to April, 2023 is shown in **Figure 4.1.**

25. Air pollution was deemed the second largest risk factor leading to deaths and disability in Bangladesh in 2019, with four out of the top five causes of total deaths in the country being directly associated with exposure **to** air pollution. Dhaka is the most polluted division in Bangladesh where the air pollution levels are becoming increasingly concentrated (measured using annual average concentration of fine particulate matter [PM2.5] weighted by population). Sites with major construction and persistent traffic in Dhaka had the highest $PM_{2.5}$ concentration levels, which is approximately 150% above the Air Quality Guidelines (AQG) 2021 of the WHO. Brick kilns around Dhaka city had the second highest levels of $PM_{2.5}$ concentration levels, which were 136% above the WHO AQG 2021. Breathing polluted air has long been recognized as an increasing chance of developing heart and chronic respiratory diseases, lung infections and cancer. More than 22,000 people died in Dhaka due to air pollution in 2019[1].

[1] *Health Effects Institute. 2022. Air Quality and Health in Cities: A state of Global Air Report 2022, Boston.*

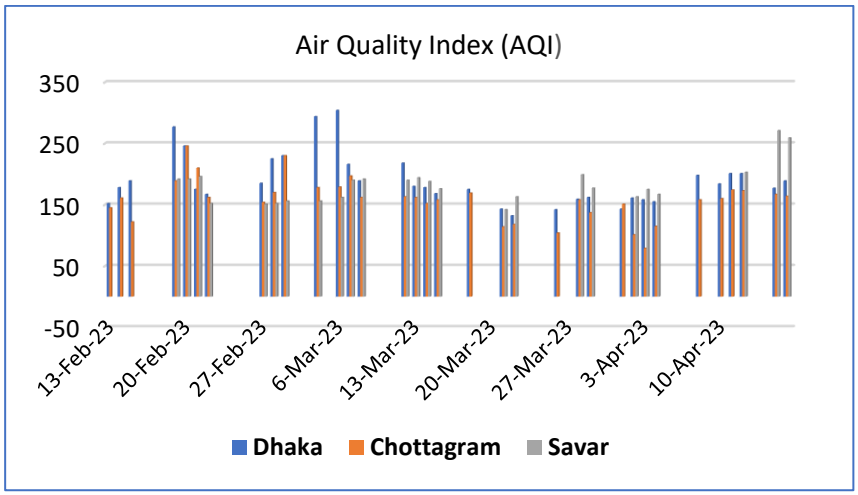

Figure 4.1. AQI index of the study area (Source: DoE, 2023).

26. **Noise Level:** According to WHO guidelines, the acceptable level of indoor noise for humans is 55 dB and 70 dB for outdoor commercial areas. The DoE has defined standard noise levels as 50 dB for residential areas and 60 dB in mixed areas during daytime. UN Environment Program (UNEP, 2022) report declared Dhaka the world's noisiest city. The noise levels in Dhaka were found at 110-132 dB, which is at least twice the recommended level. 75% of noise pollution in Dhaka originates from vehicles. In Dhaka, the average sound level is 80 to 110 dB in prime areas such as Farmgate, Karwan Bazar, Shahbagh, Gabtoli, and Mohakhali Bus Terminal (UNEP, 2022). This is almost twice the maximum noise level that can be tolerated by humans (60 dB) without suffering a gradual loss of hearing, according to WHO. WHO has documented seven categories of adverse health effects of noise pollution on humans which are: hearing loss, interference in speech communication, sleep disturbance, cardiovascular and physiological effects, mental health disturbance, impaired task performance, negative social behavior, and annoyance.

4.2 Medical Waste Management

27. In the project area, the targeted Primary HNP centers are Government Medical College, Primary Health Care Center (PHCC) and Government Outdoor Dispensary (GOD) and the services include essential healthcare, comprehensive **reproductive** health care and primary health care. The details information of the ongoing practices of medical waste management of these healthcare establishments are largely unknown at the moment. In Dhaka City Corporations, currently more than 7500 tons of waste are generated daily, of which 80% of the amount is properly collected and dumped, while rest remains uncollected and untreated (Prothom Alo, April, 2023). In Dhaka City, about 200 tons of hospital/day waste is generated, of which 40 tons are infectious wastes (Bangladesh Observer, 2000). Another report estimated approximately 55 MT of medical waste was generated from Primary HNP centers in Dhaka City, of which 20 MT are infectious wastes. Only half of this infectious waste is managed according to acceptable standards by PRISM, an NGO under a contractual agreement with the health facilities. About 35 MT of non-infectious waste is collected by the City Corporations from the health facilities and mixed with general waste.

28. MoHFW is responsible for in-house waste management including proper segregation and temporary storage. City Corporation/Paurashava/Private Operators are responsible for managing out-house waste, including waste collection from temporary storage, transportation and final disposal. Off-site management of medical waste is operational in the project area, where centralized facilities have been set up for medical waste management. In Dhaka (both North and South) City Corporation PRISM is operated the off-site medical waste management facility, currently collecting medical waste

from 1121 HCEs. PRISM has established a MWM plant at Matuail, Dhaka. PRISM has 7 specialized collection vehicles, 2 incinerators, 2 autoclaves, 12 pits and 1 chemical disinfection unit for waste transportation, treatment and disposal at present. Currently, PRISM collects infectious waste (yellow bins), plastic waste (green bins) and sharp waste (red bins) from the contracted Primary HNP centers in Dhaka. The wet part of medical waste is put into an autoclave chamber to disinfect them for further disposal at the landfill. Sharp (middle, glass etc.) items, body parts are buried at designated sites of the Matuail landfill. Recyclable plastic items are separated and chemically treated, shredded and sold as raw materials for plastic factories. All other dry items from medical waste are incinerated and the ash are buried at the landfill.

29. In Chattogram City Corporation (CCC) area, Chattogram Sheba Sangstha (CSS) has been working on medical wastes collection, transportation and treatment from the Primary HNP centers in the city. In 2021, a total of 22.7 tons/day MWs are generating in CCC area, of which 16.9 tons/day (74.45%) is non-hazardous and about 5.8 tons/day (25.55%) are hazardous. In CCC, a fumeless incineration has been installed recently, with a daily handling capacity of 4.8 tons. CSS is currently collecting medical wastes from 163 Primary HNP centers out of total 283 amounting to about 1.5 tons/day, which are now treated by incineration. The rest of the MWs are mixed with general wastes that are burned openly at the Anandabazar dumping ground at Halishahar.

30. Medical wastes contain sharp, non-sharp metallic items, human body fluids, dressing materials, surgically removed body parts, chemicals, pharmaceuticals, medical devices and radioactive materials and various types of plastics, glass etc. Medical wastes could be infectious and harmful for public health and environment; therefore, needs special care (for segregated and safe collection and storage) at the source of generation and for their further management. The Bangladesh Medical Waste Management and Processing Rules 2008 have been enacted to deal with medical waste collection and disposal in the country. Not all Primary HNP centers follow the requirement of the rules for segregated storage of medical wastes in separate covered bins (with different colours depending on the types and nature of medical waste). Unsafe handling and disposal of medical waste may pose threat to public health and environment. Improper handling of medical waste invites special threat of spreading COVID -19 to medical staff and people who handle the waste. Moreover, mismanagement of the infectious medical wastes may lead to rapid spread of infectious diseases like typhoid, cholera, hepatitis, AIDS and other diseases. Medical waste materials thrown to open landfills and water bodies may help infection to penetrate the food chain and invite disastrous consequences for public health and safety in our environment.

4.2.1 In-house Facilities for MW Treatment

31. WB in 2021 has conducted an assessment to understand the existing public sector primary and out-patient health care services in terms of available inputs and resource usage in all public health facilities including the medical waste management in Dhaka South, Dhaka North and Chattogram City Corporation areas. A total of 127 health facilities from three categories: Hospital, Primary Health Care and Urban Dispensary were surveyed for the assessment. Healthcare facilities should have the practices of segregating medical waste and collecting in color coded bins and should be properly disposed. However, the assessment found that about 60% hospitals in Dhaka (North and South) and only 12.5% hospitals in Chattogram would segregate MW and collect according to color code at the source of MW generation. Regarding waste management practices in the health facility, 25.7% hospital OPs and 10.0% PHC/UDs use Burn-in incinerator; and 25.7% of hospital OPs and 32.5 percent of PHC/UDs use Pit or protected ground or remove waste offsite. Incinerators in the hospital OPs were found functional in 85.7% cases and none in PHC/UDs. Fuel for the incinerator was available in all of the hospital OPs. Guidelines of waste management are available in 38.2% of hospital OP facilities and 13.6% of PHC/UDs (**Figure 4.2**).

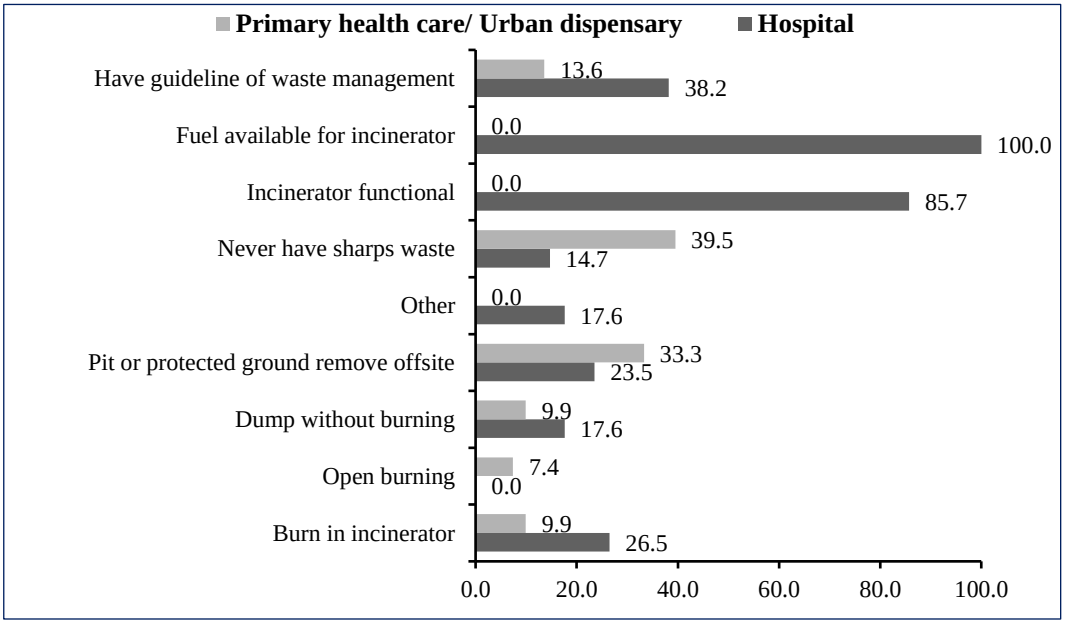

Figure 4.2. Waste Management Practices in the hospitals and PHC/UD (Source: WB 2021).

32. MW management has been previously identified as a challenge in health sector in Bangladesh as highlighted in several reports and assessments (The Environmental Assessment and Action Plan for HPNSDP in 2011-16, EMP implementation status report of 2014, etc.). The major findings from the assessment, which are still prevailing in MWM as follows:

- MW generated from the Primary HNP centers do not maintain the proper record of the different waste. Inadequate number of color-coded bins, often improperly placed, results in different waste streams getting mixed.
- Segregation of waste is delegated to the ward boys and the sweepers who do not have formal training on MWM. The nurses or the ward-in-charge who has received MWM training are not being able to supervise or transfer their knowledge adequately resulting in MWM practices not being implemented.
- Lack of uniformity in color-coding and segregation procedures among the Primary HNP centers.
- Needles and syringes are not destroyed before disposal. The bins used for sharps are not properly designed as per international standards. There is a general reluctance of destroying the sharps and needles.
- The Information, Education and Communication (IEC) materials were not visible at the appropriate places in the Primary HNP centers.
- Waste trolleys have become defunct and instead the patient's trolleys are used for transporting MW from the wards.
- Temporary storage of the different streams of MW is not done properly at the Primary HNP centers especially in public hospitals.
- Use of PPE such as gloves, masks, boots, etc. is limited. The employees/waste pickers also do not undergo immunization on a regular basis, as is required under the Infection Control Guidelines.
- Risk of infection arises from indiscriminate disposal, open burning, burying and disposal in municipal waste bins.

33. The medical waste management practices in the project area are below the expected standards. This project will support improvement in medical waste management in the project area (both inhouse and outhouse), which will need close collaboration between the MoHFW, City Corporations/Paurashavas and private operators/NGOs as well as strengthening institutional monitoring mechanism and adequate enforcement of existing rules and guidelines.

4.3 Urban Primary Health Services

34. The HNP services in urban areas are provided by three categories of service providers- public, private and non-government organizations (NGOs). However, urban population relies mostly on private sector health service providers including private hospital, clinic and others, although a large number of urban populations depends on government health care facilities like outdoor department of secondary and tertiary hospitals for primary health care services. There are only 35 government outdoor dispensaries and tertiary level facilities (hospitals) covering all urban cities of Bangladesh owned by the MoHFW, of which 17 are in Dhaka North and Dhaka South city corporation areas (catering to 10.2 million people approximately[2]) and 9 in Chattogram city corporation area (for more than 3.9 million people[3]). In Chattogram, the City Corporation has established one primary health clinic in each ward and operates 3 general hospitals. These clinics along with the tertiary-level facilities constitute the public HNP service delivery model, but these are not well functioning due to lack of technical capacity and unavailability of adequate budget. The non-governmental organizations (NGOs) and the private sector are thus filling up the major gap. The government outdoor dispensaries and outpatient services at the tertiary hospitals are available only in the morning hours and the tertiary hospitals are often overcrowded with people seeking primary care from specialist doctors. The urban population, particularly the poor thus have to rely on for- and non-profit private sector for health services. In 2021, 23.1% of mothers living in slums and 24.8% in non-urban areas received antenatal care (ANC) from a government facility compared to 53.5% and 68.2%, respectively from the private sector (Table 4.1).[4] Similarly, the largest source of modern contraception for urban poor in slums were the private sector in 2021; 78.2% from the private sector (particularly the pharmacies) compared to 14.6% from a government health facility.[5] The private sector services are more expensive than the government or NGO services. In 2021, the average cost of delivery at a public facility was BDT 7,000 and at an NGO was BDT 5,000 while it costed BDT 20,000 at a private hospital.[6] Despite such high costs and due to unavailability of a more affordable health care service, the urban population, in particular the poor are compelled to use the private sector that substantially increases the household expenditure on health and often pushes families into poverty. Nine percent of urban households and 16% of rural households incurred catastrophic health expenditures (equivalent to 10% or more of total household expenditures) in 2010, estimated to push 3.5% of the population below the poverty line.[7]

[2] https://en.prothomalo.com/bangladesh/city/fzkq4hv4k7

[3] https://populationstat.com/bangladesh/chattogram

[4] National Institute of Population Research and Training (NIPORT). Urban Health Survey 2021. Dhaka: NIPORT

[5] National Institute of Population Research and Training (NIPORT). Urban Health Survey 2021. Dhaka: NIPORT

[6] National Institute of Population Research and Training (NIPORT). Urban Health Survey 2021. Dhaka: NIPORT

[7] 2013 Bangladesh Urban Health Survey; 2012 Bangladesh National Health Accounts; Khan, Jahangir A.M., Sayem Ahmed and Timothy G. Evans. 2017. Catastrophic healthcare expenditure and poverty related to out-of-pocket payments for healthcare in Bangladesh—an estimation of financial risk protection of universal health coverage." Health Policy and Planning. 32: 1102–1110.

Table 4.1. Source of HNP services in 2021 in urban areas.

	Public sector	NGO	Private sector
Source of modern contraceptive methods			
Slum	14.6	11.8	78.2
Non-slum	17.9	4.6	77.4
Place of delivery			
Slum	13.3	9.8	30.6
Non-slum	17.5	4.9	54.9
Place of ANC			
Slum	23.1	30.8	53.5
Non-slum	24.8	15.2	68.2

4.4 Non-communicable Diseases

35. People in urban areas are facing higher incidence of non-communicable diseases (NCD) like hypertension, diabetics, heart diseases, stoke, chronic lung diseases, etc. In 2017-18, in urban areas, 49% of women aged 35 years and older were measured with elevated blood pressure (hypertension), of which only a quarter were being treated with medication. (This proportion was only 13% among men with hypertension).[8] It is notable that indicators of hypertension and diabetes are more prevalent among urban women than among urban men.[9] For NCDs, effective intervention is prevention and maintenance, which require self-care and lifestyle changes. In 2018, 13 percent of adults aged 18 years and over (both female and male) suffered from diabetes in urban areas, with a large majority around 60% of the diabetic adults unaware of their elevated blood sugar levels. Similar behavior patterns exist for hypertension: 48% of female adults and 38% male adults suffered from hypertension in 2018, half of hypertensive women and two-thirds of the hypertensive men were unaware of their condition. While only 15% of hypertensive women and 9% of hypertensive men took medication regularly and have their blood pressure levels under control. The incidence of NCD in the urban areas will be increased as a result of increased heat and temperatures due to climate change effect.

4.5 Dengue and other Emerging Diseases

36. In the recent years, outbreak of dengue has occurred in a large scale, a total of 86,833 cases and 364 deaths recorded in Bangladesh in 2022. The urban areas bear a bigger brunt of this, for example, in 2019, 101,354 dengue cases were reported with 164 deaths, with half of the total cases and three-quarters of total deaths recorded for Dhaka[10]. Dengue cases usually peak in Bangladesh between July and September but due to climatic changes, this pattern is shifting and in the recent years, dengue was also reported in November/December.

37. Climate sensitive diseases were also found more prevalent in Dhaka and Chattogram city areas. The prevalence of infectious diseases in monsoon and dry seasons of Dhaka and Chattogram cities were 6.2% and 5.7%, respectively, which is higher than the national average of 5.7% and 4.5%, respectively. Similarly, the prevalence of waterborne, respiratory disease and vector borne diseases in Dhaka and Chattogram City areas were 21.9%, 43.8% and 34.3% in monsoon, while the incidence of these diseases in dry season was 14.6%, 65.8%, 19.6%, respectively.

[8] 2017-18 Bangladesh Demographic and Health Survey; World Bank. 2018. Hypertension and Type-2 Diabetes in Bangladesh: Continuum of Care Assessment and Opportunities for Action.
[9] 2017-18 Bangladesh Demographic and Health Survey.
[10] Health Emergency Operations Center and Control Room of the Directorate General of Health Services

38. Measures for disease and vector surveillance as well as mosquito management in urban areas are not sufficient. Climate change and variability, unplanned rapid urbanization, high population densities, insufficient preparedness, including inadequate public health infrastructure and suboptimal vector-control programs, are factors that contribute to the magnitude and severity of dengue outbreaks in Bangladesh.[11] Similarly, incidence of and mortality from COVID-19 have been highest in Dhaka, reflecting its high population density and congestion facilitating transmission of the disease. City Corporation/Paurashava are responsible for vector (mosquito) controls, but have limited budgetary allocations and capacity for vector controls. For example, Dhaka North City Corporation spends BDT 250 million for environmental health services, of which BDT 220 million has spent for mosquito control. The City Corporations use chemicals like Malathion and Temephos for adult and larvae/pupae controls, respectively. Besides the need for additional financial resources, the city corporations need to adopt innovative approaches for effective mosquito control, particularly using weather data.

4.6 Climate Change and Vulnerability

39. The Global Climate Risk Index ranks Bangladesh as the world's seventh most-affected country in 2000-2019[12]. Rising temperatures leading to more intense and unpredictable rainfalls during the monsoon season and the already high probability of cyclones is expected to further increase, resulting in increased tidal inundation. The analysis of rainfall and temperature data from 1975-2019 of BMD was conducted to assess the climate change variable in Dhaka and Chattogram[13]. The annual rainfall in Dhaka was found to decrease at a rate of 0.18mm/yr and in Chattogram, it was to increase 0.09 mm/year. The monsoon rainfall in both Dhaka and Chattogram was found to increase (0.06 mm/yr and 0.11 mm/yr, respectively), whereas the rainfall in dry season was found to decrease for both cities. The average temperature, monsoon and dry season temperature of both Dhaka and Chattogram showed an increasing trend, which means these Cities are becoming warmer day by day. Dhaka is becoming warmer, average maximum temperature has increased by 0.5°C between 1976 and 2019. The minimum temperature from November to February is rising and close to 18^{O}C. Rainfall is intensifying, particularly between April and August and the average monthly humidity is declining, but withing 60 to 80%.

40. The climatic conditions in Dhaka are becoming more conducive to mosquito breeding with falling humidity levels, rising temperatures, and increasing rainfall in the summer months. Similarly, mental health issues are more prevalent among the urban population with depression and anxiety being experienced more by the residents of Dhaka and Chattogram cities compared to the rest of the country. Climatic conditions are directly associated with mental health status, for example, experiencing a 1°C higher temperature is associated with a 21% higher probability of suffering from anxiety and 24% higher probability of co-occurring depression and anxiety[14]. Air and sound pollution pose great health risks to the urban residents due to persistent traffic, major construction, brick kilns, and industrial sites in and around Dhaka. Climate sensitive diseases are more prevalent in Dhaka and Chattogram than national, rural and all urban areas in Bangladesh. Weather variables are also correlated to climate-sensitive disease as well as mental health.

[11] Hasan, K., Hossain, M.M., Sarwar, M.S., Wilder-Smith, A., Gozal, D., 2019, Unprecedented rise in dengue outbreaks in Bangladesh, The Lancet, Vol 394 December 14, 2019

[12] Germanwatch. 2021. Global Climate Risk Index 2021

[13] Shanjana Haider (2022). Master Thesis, Department of Civil and Environmental Engineering, IUT.

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4.7 Existing Vector Management Practices

41. In urban areas of Bangladesh, there is huge outbreaks of various vectors and associated diseases in the recent years and the City Corporation/Paurashava are facing huge challenges to control mosquitoes and other vectors spreading diseases like dengue, chikungunya, malaria, etc. In recent decades, vector-borne diseases like ZIKA virus, West Nile Virus, yellow fever are re-emerging as major global health problems. Bangladesh, due to its geographical location, is vulnerable to this emerging health problem. In coming years and decades, outbreaks, or even epidemics of these re-emerging vector-borne diseases are likely to be severe and more frequent due to climate change, global warming, increased mobility of people and other factors.

42. Currently, outbreaks of vector-borne diseases and mosquito control programs are undertaken by different entities under the ministries of health and local government in an uncontrolled manner. The health ministry was tasked to control malaria and kala-azar, while city authorities have the responsibility to control mosquitoes in urban areas, where dengue and chikungunya became causes of concern. The current practices for vectors (mosquito) control by the City Corporation/Paurashava include spraying pesticides/larvicides in the breeding waters, insecticide fogging, cleaning weeds and hyacinths and holding combing operations and imposed fines through mobile courts.

43. The vectors (mosquitos) can also be controlled by Keeping canals clean, removing weeds from water banks, installing mosquito magnetic traps at construction sites and public spaces, releasing guppy fish in mosquito-prone waters, eliminating mosquito breeding grounds, effective solid waste disposal, genetic manipulation, sterile insect technique and attractive toxic sugar baits, etc. An Integrated Vector Management (IVM) plan should be undertaken by City Corporation/Paurashava for successfully controlling the mosquitoes.

4.8 Social and economic condition

44. Dhaka North City Corporation and Dhaka South City Corporation: The project site is located in Dhaka North and South City Corporation areas. Dhaka is the most populous city in Bangladesh, the tenth-largest city in the world, and the political, economic and cultural heart of Bangladesh. It lies between 23º53` and 24º06` north latitudes and between 90º01' and 90º37' east longitudes. These two corporations are headed by City Mayor. Dhaka and the municipalities that make up the Greater Dhaka Area have a total population of over 18 million, and the city has shown a population growth of about 4.2% annually. The vibrant culture and thousands of Bangladeshi businesses and international corporations have contributed to migration and population growth. Slum people are most vulnerable in Dhaka and Chattogram city. However, like many other metropolises in the world, the growing population has led to an increase in pollution, congestion, and poverty, amongst other problems[15].The primary language in Dhaka is Bengali, with English being the second most primarily used language. The literacy rate of the city has been increasing over the years, rising from 69.2% in 2001 to 74.6% in 2011. A large number of population work in the household or unorganized labor, while a substantial portion work in the textile industry. The average life expectancy is 72.3 years according to SVRS-2021 data from the Bangladesh Bureau of Statistics, which reflected a significant increase from 2009's 67.2 years average. The average life expectancy for males is 68.8, up from 66.1 in 2009, and for females, the number rose from 68.7 to 71.2.

45. Chattogram City Corporation: Chattogram City Corporation (CCC) area is 160.99 sq km, located in between 22°13' and 22°27' north latitudes and in between 91°40' and 91°53' east

[15] https://worldpopulationreview.com/world-cities/dhaka-population

longitudes. It is bounded by Sitakunda, Hathazari and Raozan upazilas on the north, Anowara upazila on the south, Raozan and Boalkhali upazilas on the east, Sitakunda upazila and Bay of Bengal on the west. The total population of CCC is 2068082. The CCC is now inhabited by the mixed occupational people. Most of the people are engaged in traditional professional activities such as small business, enterprises, jobs, transport vehicle ownership and operation etc. Presently, a significant number of people work in small trades, private sector jobs, government jobs and transport operations.

5 Potential Environmental and Social Risks and Mitigation Measures

5.1 Risk Categorization and Impact Assessment

46. The chapter describes the potential environmental and social impacts, and potential mitigation measures. These need to be modified and adjusted for each sub-project based on screening and other appropriate environmental and social assessments. To address the mitigation measures, detailed activities need to be identified first and thereafter, a set of actions or interventions are to be demarcated and any possible effect due to an action is to be determined.

47. The main anticipated E&S risks and impacts of the UHNP project, mostly related to construction/renovation of the existing healthcare facilities, generation of medical, liquid and solid waste from delivery of services, poor labor and working environment, occupational health and safety of project workers including workplace and community health and safety, noise, vibration and dust pollution during renovation/rehabilitation works, and water pollution by the chemical used for vectors (mosquito) control and inclusion of the potential beneficiaries and stakeholders from diverse background and social strata. However, all these impacts are likely to be site specific, minor to substantial (for medical waste management) in nature, and can be mitigated with proper management plan. The project's E&S risk is rated as **Substantial**.

5.2 Impact Assessment Methodology

48. The identification of risks and impacts depends on type, scale and location of the project as well as the capacity oof the client to manage the risks. A risk assessment is used to define the level of potential environmental and social risks by considering the magnitude, extent and duration. This is developed based on the professional judgement and experience of experts, data, models, and regulatory standards. Impact assessments combine both quantitative and qualitative analysis. The nature and types of impacts that has been addressed in this ESMF are defined below:

- **Negative:** adverse changes to the baseline
- **Positive:** An improvement to the baseline (beneficial)
- **Direct:** An impact that is a direct result of an activity of the project. For example, the loss of vegetation is a direct impact of site clearing.
- **Indirect**: Impacts on the environment, which are not a direct result of the project, often produced away from or as a result of a complex pathway. Sometimes referred to as second or third level impacts, or secondary impacts. An example could be the development of a project, which in turn attracts ancillary developments.
- **Cumulative impacts**: Impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project. An example of cumulative

impacts could be that several impacts of a project – such as noise, dust and visual – together affect the wellbeing of a receptor.

49. The risks and impacts identification process will be based on recent environmental and social baseline data at an appropriate level of detail. The process will consider all relevant environmental and social risks and impacts of the project, including the issues identified in ESS 2 through 10, and those who are likely to be affected by such risks and impacts.

Magnitude of impacts

50. The assessment of potential environmental impacts requires classifications of the risks associated in terms of the following categories.

Scale (Mag): The potential risks of a particular project component refer to the level of disruption to the environment. Three levels have been defined:

- *Negligible*: No perceptible or readily measurable change;
- *Low*: Minimal change in the characteristics and conditions of the environment;
- *Medium*: Noticeable change in certain characteristics and conditions of the environment;
- *High*: Significant change in the environment.

Extent (Ext): This describes the coverage of the potential risks caused by construction activity to the environment. It refers to the distance and area covered by an impact. The terms regional, local and limited are used to describe the scope:

- Site specific (SS): Only within or immediate the project components' site boundaries or no impact at all;
- Local: beyond project components' site boundaries but within the area of influence of the overall project;
- Regional: when an action affects beyond project area;
- National: impacts are national concern;
- Cross boundary: nearby countries expect to be affected by such actions.

Duration (Dur): This is the time aspect of the potential environmental risks. The terms permanent, temporary and short are used to describe the period (or time):

- *Short term*: the effect disappears promptly or even no impact at all;
- *Medium term*: limited during construction period and few months in the operation stage;
- *Long Term*: change and/or impact on the environment throughout the life of the infrastructure or component.

51. In addition to the above aspects, the reversibility may be considered, i.e. the length of time and effort required for baseline conditions to return (e.g. reversible in the short-term or long-term, or irreversible). The overall magnitude of the risks (high, medium, low or negligible) can be defined based on the analysis of the scale, extent and duration of the impact, and if relevant the reversibility.

Receptor sensitivity

52. Receptors may be people, ecological, biological and physical components of the environment, or cultural sites. Receptor sensitivity considers how a particular receptor may be more or less susceptible to a given impact. More sensitive receptors may experience a greater degree of change, or have less ability to deal with the change, compared with less sensitive receptors that may be more resilient or adaptable. As with magnitude, the concept of receptor

sensitivity is based on multiple characteristics, namely:

- Vulnerability: the degree to which a receptor is vulnerable to change (i.e. higher or lower sensitivity);
- Value: the degree to which a receptor is valued or protected, with higher value receptors (based on ecological, cultural, social, economic, or other grounds) having a higher sensitivity; and
- Resilience: the degree to which a receptor is able to recover from an impact.

The sensitivity of a receptor may be rated as negligible, low, moderate or high.

Impact

53. This is assisted by an impact assessment matrix (**Table 5-1**) and the impact significance definitions, which ensure a consistent approach throughout the impact assessment.

Table 5-1. Impact matrix.

		Receptor sensitivity (vulnerability, value and resilience)			
		Negligible	**Minor**	**Moderate**	**High**
Magnitude of impact (scale, extent, duration and reversibility)	**Negligible**	Insignificant	Insignificant	Insignificant	Insignificant / Low
	Minor	Insignificant	Low	Low / Moderate	Moderate
	Moderate	Insignificant	Low / Moderate	Moderate	High
	High	Insignificant / Low	Moderate	High	High

54. The impact significance definitions are as follows:

- **High Significance**: Impacts with a "High" significance are likely to have damaging and lasting changes to the functioning of a receptor, and may have broader consequences (e.g. on ecosystem health or community well-being). These impacts are a priority for mitigation in order to avoid or reduce their significance.
- **Moderate Significance**: Impacts with a "Moderate" significance are likely to be noticeable and result in lasting changes to baseline conditions, which may cause hardship to or degradation of the receptor. Broader consequences for the ecosystem or community are not anticipated. These impacts are a priority for mitigation in order to avoid or reduce their significance.
- **Low Significance**: Impacts with a "Low" significance are expected to be noticeable changes to baseline conditions, beyond what would naturally occur, but are not expected to cause hardship or degradation. However, these impacts warrant the attention of decision-makers, and should be avoided or mitigated where practicable.
- **Insignificant**: Any impacts are expected to be indistinguishable from the baseline or within the natural level of variation. These impacts do not require mitigation and are not a concern of the decision-making process.

5.2 Environmental and Social Risk and Mitigation Measures

Gender and SEA/SH:

55. SEA/SH risks of the project is assessed as 'low', so no standalone SEA/SH risk mitigation

plan will be prepared. Instead, a chapter (see in Annex - 9) on the related risks is included in this ESMF with the ESMP to include the relevant risk mitigation measures. This includes SEA-SH compliant GM, enforcement of a CoC for the workers along with awareness raising and training plan for the PCU and as well as a referral system for potential victims focuing on a survivor centric approach. The relevant provision on SEA/SH risk management will be included in the bid documents.

56. **Table 5.2** summarizes the risks and impacts and mitigation measures associated with the project components and also the general project impacts and possible mitigation measures. A summary of the project environmental and social impacts and their ESS Risk in different project phases is provided in **Table 5.3**.

Table 5.2. Environmental and Social Risks and Mitigation Measures.

Sub-component Activity	Risks and Impacts	Mitigation Measures	Implementation Arrangement	Risk Category and ESSs Requirement
Component 1: Improve urban primary HNP services				
Delivery of the improve urban primary HNP services	Women of reproductive age, adolescent girls and boys, pregnant women, children, and people suffering from NCDs are not aware of the services of CCs/Paurashavas. Risk of SEA/SH during receiving services from the health care centers Under privileged, marginalized and vulnerable social community; i.e.; LGBT, who are primarily the target beneficiary group of this project may not have access to services from the service providers due to social norms and stigma around them.	Follow the **Social and Behaviour Change Communication (SBCC**) strategy, **Stakeholder engagement Plan (SEP)** prepared for the project. * Separate Toilets for Female patients are mandatory in all targeted project areas * Only female attendees for female patients * Gender Sensitization Training for health care service providers * Special provision for the LGBT community; can include working around the policy measures of providing necessary health care services to them * Creating awareness for and inclusive society (This can be part of the gender sensitization workshop)	PCU, city corporations	Environmental-Low Social-Moderate ESMF, ESMP, SEP,
Health care services including essential health service package, infectious diseases services, services for diagnosis, NCD and injuries, etc.	Generate medical, solid and liquid waste from the healthcare services. If waste streams are not adequately managed, there could be impacts/ contamination of	The Primary HNP centers shall follow the medical wastes management guidelines according to MWMP Rules, 2008. Use the color bins for segregation of the medical wastes as the sources, in-house MW collection, transportation and temporary storage shall be done as per Standard	PCU and city corporations	Environmental-Substantial Social-Moderate.ESMF, ESMP, OHS, SEP, HORMP, MWMP, SLWMP

Sub-component Activity	Risks and Impacts	Mitigation Measures	Implementation Arrangement	Risk Category and ESSs Requirement
	the surrounding soil, water and air and worker and community health and safety.	Procedures and also follow the inhouse medical waste treatment procedures like autoclave/microwave technology, small scale incineration and pit burial, etc. The Primary HNP centers shall contact out-house medical waste management operators for MW collection, transportation, treatment and disposal. Adequate infection control measures inside primary HNP service facilities will be undertaken through use of personal protective equipment, medical check-ups, and inoculations. PPEs may include gloves, masks, gowns, adequate facilities for hand washing, facilities for handling dirty linen and contaminated clothing, shower at the end of the working day, use safer needle devices, discarding contaminated sharps immediately, establishing coughing protocol etc. Follow the guidelines of Medical Waste Management, Liquid and Solid Wastes management plan for the project, annexed to this ESMF (Annex 03 and 04).		
Structural strengthening using climate resilient design, renovation/construction, installation of water supply and solar panel, etc.	Pollution of the environment (air, sound water and noise), risk of falling from height, slip etc from construction activities, occupational health and safety risk., community health and safety risk. Demolished wastes and solid wastes will be generated from the minor	Use water suppression measures, use of mufflers in sound generating macheniries, prohibit night time working. Store the demolished wastes on site in a designated place prior to off-site transportation and disposal. Dispose of waste at designated place identified and approved by local authority. Open burning or burial of solid waste shall not be allowed. It is prohibited for the contractor(s) to dispose of any debris or construction material/paint in	PCU Contractors	Environmental-Moderate Social-Moderate ESMF, ESMP, HORMP, OHS, SEP

Sub-component Activity	Risks and Impacts	Mitigation Measures	Implementation Arrangement	Risk Category and ESSs Requirement
	civil works (renovation/reconstruction, etc.)	environmentally and culturally sensitive areas (including watercourse, natural habitats and cultural sites). Use of appropriate PPE during construction works. Recycle the feasible recyclable materials such as wooden plates for trench works, steel, site holding, packaging material, etc. shall be segregated and collected on-site from other waste sources for reuse or recycle (sale).		
Component 2: Improve urban environmental health and preventives services				
Human resources, training, insecticides, equipment, civil works, and technical support for effective and innovative vector control measures.	Water Pollution of by application of chemicals.	For vector management, source reduction, management of wetlands/breeding habitats and drain, releasing guppy fish in water that feed on mosquito larva, use of mosquito traps, latest insecticides and bed nets/materials will be considered. Depending on the method used water pollution may occur by the chemical used for vector control which will be mitigated by effective management plan and avoiding such chemicals.	PCU	Environmental-Moderate Social-Moderate.ESMF,ESMP,ESA SEP,
Behavior change communication interventions to promote healthy lifestyles and creating awareness among people.	Involvement of a wide range of stakeholders with diverse backgrounds and social strata.	Follow the standalone **SEP** developed for this project.	PCU	Environmental-Low Social-Moderate ESMF, SEP

Sub-component Activity	Risks and Impacts	Mitigation Measures	Implementation Arrangement	Risk Category and ESSs Requirement
Human resources, training, equipment, civil works, and technical support to improve medical waste management including waste segregation and proper management.	Medical waste may affect health care providers, cleaning and maintenance personnel, and workers involved in waste management handling, treatment, and disposal. Specific hazards include: exposure to infections and diseases, exposure to hazardous materials / waste, exposure to radiation, fire safety etc.	Recommended measures to reduce risks include: formulation of an exposure control plan for blood-borne pathogens; provide staff members and visitors with information on infection control policies and procedures, immunization use of PPEs .like gloves, masks, gowns, adequate facilities for hand washing, facilities for handling dirty linen and contaminated clothing, shower at the end of the working day, use safer needle devices, discarding contaminated sharps immediately, establishing coughing protocol etc. besides follow the Medical Waste Management Plan annexed to this ESMF (Annex 03).	PCU Out house waste management partners	Environmental-Substantial Social-Moderate. ESMF, ESMP, HORMP, SEP, OHS
Human resources, training, and technical support to ensure plastics, anything containing polyvinyl chloride, batteries, mercury-containing products, and materials treated with flame retardants are not incinerated.	Generation of E-Waste	Follow the E-Waste management guidelines in annex 10		

Sub-component Activity	Risks and Impacts	Mitigation Measures	Implementation Arrangement	Risk Category and ESSs Requirement
			PCU, Contractos	
General Environmental and Social Risks				
Pollution management during repair, renovation, retrofitting and new construction of infrastructures (if needed)	Risk of environmental pollution from civil works including demolished waste, dust, wastewater, noise, lubricants and oils, air emissions from diesel generators, pollution of air, noise and water, drainage congestion.	Apply**, Liquid and general waste management plan** at annex 4	PCU, contractors	Environmental-Moderate Social-Moderate ESMF, ESMP, HORMP
Addressing access to services for the poor, vulnerable and marginalized social groups/ slum dwellers	Risk of inadequate access to healthcare services for people below poverty and in remote locations, lack of accessibility for persons with special needs in existing healthcare facilities	Follow the relevant measures included in the **project design** and the standalone **Stakeholder Engagement Plan (SEP)** prepared for the project.	PCU	Environmental-Low Social-Moderate.ESMF, SEP
Occupational Health and Safety	Health hazards of the construction workers including injuries and accidental death and local community by various construction activities including use of hazardous substances, lifting and handling of heavy equipment, operating of machinery and electric	Primary HNP service workers, staff and relevant workers involve with medical waste management will be provided with proper PPE like: overalls / industrial aprons, leg protectors, boots, heavy duty gloves, helmets, visors / face masks and eye protection (especially for cleaning of hazardous spills), and respirators (for spills or waste involving toxic dust or incinerator residue) etc. as applicable. Besides, the workers will be provided with information on infection control policies and procedures. Immunization for	PCU, contractors	Environmental-Moderate Social-Moderate ESMF, ESMP, OHS, HORMP

Sub-component Activity	Risks and Impacts	Mitigation Measures	Implementation Arrangement	Risk Category and ESSs Requirement
	equipment, construction/ renovation works, etc. Lack of Personal Protective Equipment (PPE) at the construction sites will cause increase exposure risks to construction hazards.	workers will be .implemented, as necessary e.g. vaccination for hepatitis B virus, tetanus immunization as deemed appropriate. Contractor shall provide relevant PPE for all workers based on the work requirements. Workers shall maintain the PPE properly and replacing them with the damaged ones. Workers working at heights shall be provided with fall preventing devices. Contractor shall check all electrical cords, cables and hand power tools for frayed or exposed cords, shall mark all energized electrical devices and lines with warning signs, and conduct isolation procedure for electrical work. Contractor will provide OHS trainings to contracted workers and community workers. Apply the relevant **Environmental and Social Codes of Practice** annexed to this ESMF (Annex 02) and the standalone Human and Occupational Resources Management Plan (**HORMP)** developed for this project.		
Labor, working conditions and labor risks.	Project will employ various labors, during construction/renovation/ expansion of facilities of the existing HCEs. The potential impacts include health hazards, poor living conditions, inadequate sanitation, accidental hazards, traffic and road	Contractor shall construct labor camp with adequate water supply and sanitation, manage the solid waste and wastewater from the camp, provide security and health checkup. Follow the standalone **HORMP** developed for the project.	PCU	Environmental-Moderate Social-Moderate ESMF, OHS, HORMP

Sub-component Activity	Risks and Impacts	Mitigation Measures	Implementation Arrangement	Risk Category and ESSs Requirement
	safety issues, etc.			
Community Health and Safety	During construction/ rehabilitation of Primary HNP centers construction related impacts like sound, noise, vibration, traffic movement, air pollution, and labor activities could expose communities to health and safety risks.Medical waste and hazardous liquid wastes may impact the health of local community and safety, if not properly managed. Also impacted by the noise, dust, drainage congestion during construction works.	A traffic management plan may be required for new construction works, for other locations peak hour to be avoided and night time works to be prohibited. Local communities to be consulted in preparing work schedule and traffic manageent plan. Adequate infection control measures inside Primary HNP service facilities will be undertaken in the form of use of different colored bins for waste disposal, establishing coughing protocol, use of masks, PPEs to mitigate the risk of exposure to patients, attendants, general public etc. Besides practice of unsafe open burning, missing of segregation at delivery point and finally dumping of medical waste with municipal solid waste by the waste handler has become a common practice. As such both in house and out-house waste management have been considered. To ensure effective outhouse waste management relevant clauses of monitoring and inspection by the client will be included in the bidding document.	PCUs	Environmental-Low Social-Moderate. ESMF, OHS, SEP, ESMP
Transmission risks of COVID-19 in the working camp and local community.	Potential risk of spreading Covid-19 among the workers and local community.	Follow **WHO and MoHFW guidelines** for prevention of Covid-19 in the project areas.	.PCU, contractor	Environmental-Moderate Social-Moderate ESMF, OHS

57. **Table 5.3**. **Summary** of the project environmental and social impacts and their significance (ESS Risk).

Potential Impacts	Duration of Impact	Spatial Extent	Reversible	Likelihood	Magnitude	Sensitivity	Significance Prior to Mitigation	Significance after Mitigation
Impacts related to project siting								
Site specific land cover and land use changes	Short term	Local	No	Certain	Low	Mild	Low negative	Low negative
Loss of aquatic habitat	Short term	Local	Yes	Likely	Low	Mild	Low negative	None
Drainage congestion and water logging	Short term	Local	Yes	Likely	Low	Mild	Low negative	None
Impacts during project implementation phase								
Air pollution	Short term	Local	Yes	Certain	Moderate	Moderate	Moderate negative	None
Noise Pollution	Short term	Local	Yes	Likely	Moderate	Moderate	Moderate negative	None
Water pollution	Short term	Local	Yes	Certain	Moderate	Moderate	Moderate negative	None
Soil contamination	Short term	Local	Yes	Certain	Moderate	Mild	Moderate negative	None
Generation of Solid waste and Hazardous wastes (including Medical Waste)	Short term	Local	Yes	Certain	Moderate	Mild	Moderate negative	None
Site clearance and restoration	Short term	Local	Yes	Certain	Moderate	Mild	Moderate negative	None
Occupational health and safety	Short term	Local	Yes	Certain	Moderate	Moderate	Moderate negative	None
Impacts on Livelihoods and Income	Short term	Local but beyond project footprint	Yes	Certain	Moderate	Moderate	Moderate Positive	Substantial Positive
Impacts on Labor Impacts, working condition and labor risk	Short term	Local	Yes	Likely	Low	Low	Moderate negative	None
Involuntary Resettlement Impacts	Short term	Local	Yes	Likely	Low	Low	Moderate negative	None
Impacts during post project operational period								
Generation of Medical Waste, Solid and Chemical Waste	Short term	Local	Yes	Certain	Moderate	Moderate	Moderate negative	None
Community Health and Safety	Short term	Local	Yes	Certain	Moderate	Moderate	Moderate negative	None
Staff Health and Safety	Short term	Local	Yes	Likely	Low	Mild	Moderate negative	None
Management of Hygiene within Primary HNP centers	Short term	Local	Yes	Likely	Moderate	Moderate	Moderate positive	Substantial positive

Potential Impacts	Duration of Impact	Spatial Extent	Reversible	Likelihood	Magnitude	Sensitivity	Significance Prior to Mitigation	Significance after Mitigation
Water Pollution and Drainage Congestion	Short term	Local	Yes	Certain	Moderate	Moderate	Moderate negative	None

6 Procedures and Implementation Arrangements

6.1 Environmental and Social Risk Management Procedures

58. The **environmental** and social risk management procedures will be implemented through the Project's activity selection process. In summary, the procedures aim to do the following **(Table 6.1):**

Table 6.1. Project Cycle and E&S Management Procedures

Project Stage	E&S Stage	E&S Management Procedures
a. Screening	**Assessment & Analysis**: activity identification	- During activity identification, ensure project activities eligibility by referring to the ***Exclusion List in Table 6.2*** below. - For all activities, use the ***Screening Form in Annex 1*** to identify and assess potential environmental and social impacts, and identify the appropriate mitigation measures for the project activity. For any sub-project with Substantial risk rating, ESIA needs to be conducted. An indicative guideline for preparing ESIA is provided in **Annex 7**.
b. Planning and E&S documentation	**Formulation & Planning**: Planning for project activities, including human and budgetary resources and monitoring measures.	- Based on ***Screening Form*** adopt and/or prepare relevant environmental and social procedures and plans. - For activities requiring Environmental and Social Management Plans (ESMPs), submit the first few ESMPs for prior review by the World Bank. - Ensure that the contents of the ESMPs are shared with relevant stakeholders in an accessible manner and consultations are held with the affected communities. -LMP and MWMP will be consulted while preparing plan for project activities. - Train staff responsible for implementation of plans. - Incorporate relevant environmental and social procedures and plans into contractor bidding documents; train contractors on relevant procedures and plans.
c. Consultation and stakeholder engagement	Throughout the project lifecycle	A standalone SEP has been prepared to identify the potential stakeholders, detail how stakeholders will be engaged throughout the course of the project and methods that will be used as part of the process. The feedback from these stakeholders have been incorporated in the project design and implementation approaches including in the

Project Stage	E&S Stage	E&S Management Procedures
		design of the E&S risk mitigation measures. The details are provided in Annex 7 and Annex 8.
d. Review and approval of E&S instruments	Throughout the project lifecycle	ESMF, LMP, SEP, ESIA, MWMP etc. will be reviewed and approved by PCU and WB. Few initial ESMP will be reviewed by WB then, rest will be reviewed and approved by WB.
e. Implementation & Monitoring: Implementation support and continuous monitoring for projects.	Implementation	- Ensure implementation of plans through site visits, regular reporting from the field and other planned monitoring. - Track grievances/beneficiary feedback. - Continue awareness raising and/or training for relevant staff, volunteers, contractors, communities.

59. **Table 6.2**. Exclusion List

- Activities requiring land acquisition or resettlement activities with significant environmental impacts, including those that significantly increase GHG emissions
- Any activity affecting biodiversity, natural habitat and critical habitat.
- Purchase or use of banned/restricted insecticides, herbicides and other dangerous chemicals
- Any activity affecting physical cultural heritage such as graves, temples, churches, historical relics, archeological sites, and other cultural structures
- Activities that cause or lead to forced labor or child abuse, child labour exploitation or human trafficking or activities that employ or engage children, over the minimum age of 14 and under the age of 18, in connection with the project in a manner that is likely to be hazardous or interfere with the child's education or be harmful to the child's health or physical, mental, spiritual, moral or social development
- Any activity that may significantly restrict access to common property resources and livelihood activities of communities and groups. .
- Any activity with significant environmental and social risks generating ES risk of high category
- Any adverse impacts on IPs/FPIC

6.2 Scope and Objectives of ESMP

60. The **basic** objective of the ESMP is to manage adverse impacts of program interventions in a way that minimizes the possible adverse impact on the environment and people of the program influence area. The specific objectives of the ESMP are to:

- ✓ Identify the mitigation measures during ESMF and ESIA; and facilitate implementation of those during implementation of the project;
- ✓ Maximize and sustain potential program benefits and control negative impacts;
- ✓ Draw responsibilities for program proponent, contractors, consultants, and other members of the program team for the environmental and social management of the program;
- ✓ Define a monitoring mechanism and identify monitoring parameters in order to:
  - Ensure the complete implementation of all mitigation measures,
  - Ensure the effectiveness of the mitigation measures,
  - Maintain essential ecological process, preserving biodiversity and where possible restoring degraded natural resources and habitats;
  - Assess environmental training requirements for different stakeholders at various levels.

61. The ESMP will be managed through a number of tasks and activities and site-specific management plans. One purpose of the ESMP is to record the procedure and methodology for management of mitigation measures identified for each negative impacts of the program. The management will clearly delineate the responsibility of various participants and stakeholders involved in planning, implementation and operational phases of the project.

6.2.1 Inclusion of Relevant Components of ESMP in Contract Documents

62. The specific IEE/ESIA should include a section on special environmental clauses (SECs) to be incorporated in the Tender Document under General/Particular Specification. These clauses are aimed at ensuring that the Contractor carries out his responsibility of implementing the environmental and social management plan (ESMP), monitoring plan as well as other environmental and safety measures Such clauses may specify, for example, penalties for non-compliance as well as incentives to promote strong compliance. ES specification mentioning detail ES requirements of ESMP to be included in the bidding document. The contractors must be made accountable to implement the plans and mitigation measures which pertain to them through contract documents and/or other agreements of the obligations and importance of the environmental and social components of the program. In addition, the specific ESIA will require to submit an Environmental and Social Management Plan (ESMP) to encompass all of the detailed plans, measures and management systems they are required to develop and implement, to be based on the ESMF recommendation and ESIA findings, their work methodology, work force involvement, equipment's standard, and work scheduling.

6.2.2 Payment Milestones

63. Payments to contractors would be linked to environmental performance, measured by completion of the prescribed environmental and social mitigation measures. Contractors would be required to join forces with the executing agency, project management unit, supervising consultants and local population for the mitigation of adverse impacts of the program. For effective implementation of the proposed mitigation and monitoring measures they would employ trained and experienced environmental management staffs.

6.2.3 Guideline to Incorporate Environmental Management in Bid Documents

64. The main consultants of project will be responsible to incorporate environmental management requirements in the bidding documents, with the assistance of the environmental consultants. The generic guidelines to incorporate environmental aspects in the bidding documents are listed below:

- Prepare cost estimates, to be incorporated in Bid Documents.
- Contractor version of the Environmental Management Plan to be incorporated in the bid document 's work requirements.
- Penalty clauses for not complying with ESMP requirements to be incorporated.

65. Indicative penalty clauses are presented below:

- The contractor has to follow all traffic safety measures as defined in the technical specification.

- The contractor has to follow all environmental mitigation and management measures as defined in the technical specification along with the Environmental Management Plan for the specific project activities.
- The contractor has to ensure that prior to every monsoon season, during the construction period; all the temporary and permanent cross drainage structures are free from debris as defined in the Technical Specifications read along with the ESMP.
- The contractor has to ensure that a comprehensive Health and Safety program is in during the construction. Implementation of the program will include, among other aspects, ensuring that sufficient numbers and good quality Personnel Protective Equipment (PPE), should be provide to staff and labor all time as defined in the labor codes along with the ESMP.
- Since many contractors do not have clear understanding the need of environmental management, some quote very low price for implementation of ESMP and eventually cannot implement ESMP as per specific requirement of ESMP and project design. To avoid this problem, fixed budget may be assigned for ESMP implementation. The contractors may need orientation on the requirement of the ESMP in the pre-bidding meeting.

6.3 General ESMP

66. A general environmental and social management plan (ESMP) for the project is provided in **Table 6.3**

Table 6.3. General ESMP for each phase of the project

Issues/Activities	Potential Impacts	Proposed Mitigation Measures	Responsibilities	Monitoring
Planning Phase				
General Site and Worker Safety	Notification and Worker Safety	Follow the relevant measures and the standalone *Human and Occupational Resources Management Plan (HORMP)* prepared for the project.	Contractor responsibility at site; PCU to ensure relevant clauses being included in the contract document	Site level monitoring by primary HNP service In-charge
Setting up labor camps	Land encroachment Solid and liquid waste from the labor camp	Follow the relevant measures of ESMP and the standalone *Labor Management Procedures (HORMP)* prepared for the project.	Contractor	PCU, primary HNP service providers
Removal of Utilities (if needed) (renovation)	Vulnerable for workers health and safety; Due to carelessness or incautiousness death from sudden electric shocks may occur.	Follow the relevant measures of ESMP *to* avoid any incidents.	Contractor	PCU, primary HNP service providers
Dismantling	Dust pollution,	Follow the relevant measures of ESMP and the standalone	Contract	PCU, primary

Issues/Activities	Potential Impacts	Proposed Mitigation Measures	Responsibilities	Monitoring
	Health hazard for the workers and community works, Noise level increase, Vibration, Surface water contamination, Blockage of drainage.	HORMP prepared for the project.		HNP service providers
Implementation/Construction Phase of the Project				
Structural strengthening using climate resilient design Renovation/construction, installation of water supply and solar panel, etc.	Pollution of the environment (air, sound water and noise), risk of falling from height, slip etc. from construction activities, occupational health and safety risk., community health and safety risk.	Use water suppression measures, use of mufflers in sound generating macheniries, prohibit night time working.. Dispose of waste at designated place identified and approved by local authority. Open burning or burial of solid waste shall not be allowed. It is prohibited for the contractor(s) to dispose of any debris or construction material/paint in open areas .Use of appropriate PPE during construction works. Recycle the feasible recyclable materials.	Contractor responsibility at site; PCU to ensure relevant clauses being included in thecontract document	Primary HNP service providers in charge/ Hospital Administration; PCU
	Noise Pollution	Same as above	Same as above	Primary HNP service providers in charge/ Hospital Administration; PCU
	Drainage Congestion	Contractor must not dispose of any debris or construction material/paint in the drainage system	Contractor responsibility at site; PCU to ensure relevant clauses being included in thecontract document	Primary HNP service providers in charge/ Hospital Administrator; PCU
	Construction waste management, Toxic	Apply the Liquid and general waste management plan	Contractor responsibility	Primary HNP

Issues/Activities	Potential Impacts	Proposed Mitigation Measures	Responsibilities	Monitoring
	or hazardous waste management	annexed to this ESMF.	at site; PCU to ensure relevant clauses being included in thecontract document	service providers in in charge/ Hospital Administration; PCU
	Potential transmission of diseases including Cholera, dengue, sexually transmitted infections and HIV/AIDs and COVID-19.	Follow the relevant measures included in the standalone HORMP	Contractor	PCU, Primary HNP service providers in charge
	Occupational Health & Safety (OHS): Health hazards of the construction workers may be due to injuries and accidental death from various construction activities like falling from height, use of hazardous substances, operating of machinery and electric equipment, etc. Lack of Personal Protective Equipment (PPE) at the construction sites will cause increase exposure risks to construction hazards.	Contractor shall provide relevant PPE for all workers based on the work requirements. Workers working at heights shall be provided with fall preventing devices. equipment will be checked regularly.. Contractor shall ensure safety of electrical devices, provide OHS trainings to workers. Also apply the relevant provision of ESCoP and HORMP.	Contractor	PCU, Primary HNP service providers in charge
	Lack of first aid facilities and health care facilities in the immediate vicinity will aggravate the health conditions of the victim.	Follow the relevant measures included in the standalone *HORMP* prepared for the project	Contractor	PCU, Primary HNP service providers in charge
Community Health and Safety	During construction/ rehabilitation of Primary HNP centers construction related impacts like sound, noise, vibration, traffic movement, air pollution, and labor	A traffic management plan may be required for new construction works, for other locations peak hour to be avoided and night time works to be prohibited. Local communities to be consulted	Contractor	PCU, Primary HNP service providers in charge

Issues/Activities	Potential Impacts	Proposed Mitigation Measures	Responsibilities	Monitoring
	activities could expose communities to health and safety risks.	in preparing work schedule and traffic manageent plan.		
Poor labor and working environment	The potential impacts include health hazards, poor living conditions, inadequate sanitation, accidental hazards, traffic and road safety issues, GBVetc.	Contractor shall construct labor camp with adequate water supply and sanitation, manage the solid waste and wastewater from the camp, provide security and health checkup.Follow the relevant measures included in the HORMP and SEA/SH prepared for the project, Training of the workers and awareness, no child labor or forced labor, working conditions and terms of employment fully comply to Bangladesh labor laws.	Contractor	PCU Primary HNP service providers in charge
Operations Phase of the project				
Generation and disposal of medical waste	Medical waste hazards may affect health care providers, cleaning and maintenance personnel, and workers involved in waste management handling, treatment, and disposal. Specific hazards include: exposure to infections and diseases, exposure to hazardous materials / waste, exposure to radiation, fire safety etc.	Recommended mitigation measures include personal protective equipment, medical check-ups, and inoculations. Risks reduction measures include: formulation of an exposure control plan; use of separate bins for different medical waste, provide workers and visitors with information on infection control policies, immunization, use of PPEs .like gloves, masks, gowns, adequate facilities for hand washing, facilities for handling dirty linen and contaminated clothing, shower at the end of the working day, use safer needle devices, discarding contaminated sharps immediately, etc, also apply Environmental Codes of Practice, Medical Waste Management Plan, and Liquid and general waste management plan annexed to this ESMF.	Primary HNP service providers in charge/ Hospital Administrator at the field level	MoHFW, City Corporation/ Paurashava

Issues/Activities	Potential Impacts	Proposed Mitigation Measures	Responsibilities	Monitoring
Liquid and Wastewater from Primary HNP centers	Pollution of groundwater and surface water, if not treated and disposed properly, Spread of diseases	Apply Environmental Codes of Practice, Liquid and general waste management plan annexed to this ESMF.	Primary HNP service providers in charge/ Hospital administrator and MoHFW	MoHFW, City Corporation/ Paurashava
Used of chemicals for Vectors Control	Pollution of surface water by the spraying of pesticides/chemical for vectors control.	For vector management, source reduction, management of wetlands/breeding habitats and drain, releasing guppy fish in water that feed on mosquito larva, use of traps, latest insecticides and bed nets/materials will be considered. Water pollution by the chemical will be mitigated by effective management plan and avoiding harmful chemicals.	City Corporation/ Paurashava	City Corporation/Paurashava
Staffs Health and Safety	Exposed to hazardous wastes and incidents like accidents, etc.	Staffs involve with medical waste management will be provided with proper PPE like:aprons, leg protectors, boots, heavy duty gloves, helmets, face masks and eye protection and respirators etc.. Besides, they will be provided with information on infection control policies and procedures. Immunization for workers will be .implemented, e.g. vaccination for hepatitis B virus, tetanus immunization as appropriate..	Safeguard Consultant at PCU, Private Operator(s)	MoHFW, City Corporation/Paurashava
Management hygiene within Primary HNP service providers	Health risks of the healthcare staffs, patients and visitors	Adequate infection control measures inside Primary HNP service facilities will be undertaken in the form of use of different coloured bins for waste disposal, establishing coughing protocol, use of masks, PPEs to mitigate the risk of exposure to patients, attendents, general public etc..	Primary HNP service providers in charge	MoHFW

Issues/Activities	Potential Impacts	Proposed Mitigation Measures	Responsibilities	Monitoring
Community Health and Safety	Exposure to hazardous MW from Primary HNP centers,	Both in house and out-house waste management have been considered to reduce exposure. To ensure effective outhouse waste management under PPP relevant clauses of monitoring and inspection by the client will be included in the bidding document.	Primary HNP service providers in charge , City Corporation/ Paurashava or Private Operator(s)	MoHFW, City Corporation/Paurashava.

a. Project Assessment and Analysis – E&S Screening

67. As a first step, all proposed activities should be screened to ensure that they are within the boundaries of the Project's eligible activities, and they are not considered as activities listed on the E&S Exclusion List provided in **Table 6.2.**

68. As a second step, **the MoHFW and the MoLGDR&***C* will use the ***E&S Screening Form in Annex 1*** to identify and assess relevant environmental and social risks specific to the activities and identify the appropriate mitigation measures. The *Screening Form* lists the various mitigation measures and plans that may be relevant for the specific activities (such as the ESMP, the HORMP, Chance Find Procedures etc.)

b. Project Formulation and Planning – E&S Planning and documentation

69. Based on the process above and the Screening Form, the *MoHFW and the MoLGDR&C* will adopt the necessary environmental and social management measures already included in the Annexes of this ESMF (such as ESMP, ESA etc.) or develop ESIA for substantial risk activity. . LMP and MWMP will be consulted while preparing plan for project activities.

70. The PCU/ES Consultant will prepare these ESMPs and other applicable documents as needed. The *MoHFW and the MoLGDR&C* will approve the ESMPs. The contents of the ESMPs will be shared with relevant stakeholders in an accessible manner and consultations will be held with the affected communities on the environmental and social risks and mitigation measures.

71. The first few ESMPs will also be submitted to the World Bank for prior review and no objection. After these few , the World Bank and the *MoHFW and the MoLGDR&C* will reassess whether prior review is needed for further ESMPs.

72. Staff and volunteers who will be working on the various activities will be trained in the environmental and social management plans relevant to the activities they work on. The PCU will provide such training to field staff.

73. The PCU should also ensure that all selected contractors understand and incorporate environmental and social mitigation measures relevant to them as standard operating procedures for civil works. The PCU should provide training to selected contractors to ensure that they understand and incorporate environmental and social mitigation measures.

74. Consultation and stakeholder engagement will be conducted throughout the project lifecycle. A standalone SEP has been prepared to identify the potential stakeholders, detail how stakeholders will be engaged throughout the course of the project and methods that will be used as part of the process.

The feedback from these stakeholders has been incorporated in the project design and implementation approaches including in the design of the E&S risk mitigation measures.

75. Review and approval of E&S instruments will be conducted throughout the project lifecycle. ESMF, LMP, SEP, ESIA, MWMP etc. will be reviewed and approved by PCU and WB.

c. Implementation and Monitoring – E&S Implementation

76. During implementation, the PCUs will conduct regular monitoring visits. The MoHFW and the MoLGDR&C will be the implementing agencies for this project. Each of these government entities will be fully responsible for implementing assigned project-financed activities (while ensuring coordination with each other). Implementation mechanisms will differ according to the existing structures and capacities of each implementing entity. Under component 1, the project will mobilize the resources to the MoHFW's ongoing Fourth HPNSP and relevant Line Directorates will be responsible for project implementation. After the closure of the Fourth HPNSP, currently the closing date is being extended to June 2024, the Fifth Health Sector Program (currently under preparation) has planned to include an operational plan titled Primary Health care (PHC) for both rural and urban health that will reflect the budget for the project activities. A line director along with a team of technical specialists with relevant qualifications and experience, will be assigned for this operational plan who will be responsible for implementation of activities under component 1.

77. For component 2, the project implementation arrangement will include: a project coordination unit (PCU) at the MoLGRD&C that will be responsible for coordinating activities of the city corporations, maintaining the project account to receive and utilize World Bank funds, preparing financial reports, and undertaking procurement of goods, works and services for the city corporations. Each of the targeted city corporations and municipalities will assign focal persons for the project. The PCU can include technical experts with relevant technical qualification and experience (e.g., entomologist, botanist, researcher, etc.). The PCU will include: a full-time Project Coordinator, a procurement specialist, a financial management specialist, a social and environmental specialist, and an M&E specialist..

78. The Contractor along with PCUs working to implement the project will ensure that monitoring practices include the environmental and social risks identified in the ESMF and will monitor the implementation of E&S risk management mitigation plans as part of regular project monitoring.

79. At a minimum, the reporting will include: (i) the overall implementation of E&S risk management instruments, (ii) any environmental or social issues arising as a result of project works and how these issues will be remedied or mitigated, (iii) OHS performance (including incidents and accidents), (iv) community consultation updates, (v) public notification and communications, (vi) progress on the completion of project works, and (vii) summary of grievances/beneficiary feedback received, actions taken and complaints closed out. Reports from the local levels will be submitted to the PCUs at the national level, where they will be aggregated and submitted to the World Bank on a quarterly basis.

80. Throughout the Project implementation stage, the PCUs will continue to provide training and awareness raising to relevant stakeholders, such as staff, selected contractors, and communities, to support the implementation of the environmental and social risk management mitigation measures. An initial list of training needs is proposed below, in **Section 6.3.**

81. The PCUs will also track grievances/beneficiary feedback during project implementation to use as a monitoring tool for implementation of project activities and environmental and social mitigation measures.

82. Lastly, if the PCUs becomes aware of any incident which may have adverse effects on the environment, the affected communities, the public or workers, it should notify the World Bank within 48 hours of becoming aware of such incident. A fatality is automatically classified as a serious incident, as are incidents of forced or child labor, abuses of community members by project workers (including gender-based violence incidents), violent community protests, kidnappings, etc.

d. Review and Evaluation – E&S Completion

83. Upon completion of Project activities, the PCUs and PCU will review and evaluate progress and completion of project activities and environmental and social mitigation measures. Especially for civil works, the PCU will monitor activities with regard to site restoration and landscaping in the affected areas to ensure that the activities are done to an appropriate and acceptable standard before closing the contracts. The sites must be restored to at least the same condition and standard that existed prior to commencement of works. Any pending issues must be resolved before a any project is considered fully completed. The PCUs will prepare the completion report describing the compliance of E&S risk management measures, and submit it to the World Bank.

6.4 Implementation Arrangements

84. The MoHFW and the MoLGRD&C will be the implementing agencies for this project. Each of these government entities will be fully responsible for implementing assigned project-financed activities (while ensuring coordination with each other). Implementation mechanisms will differ according to the existing structures and capacities of each implementing entity. Under component 1, the project will mobilize resources to the MoHFW's ongoing Fourth HPNSP and relevant Line Directorates (LDs) will be responsible for project implementation. After the closure of the Fourth HPNSP, currently scheduled to close in June 2024, the relevant operational plan(s) under the Fifth HPNSP (currently under preparation and expected to start implementation from July 2024) will reflect the budget for the project activities under component 1. For component 2 to be implemented by the MoLGRD&C, a development project proposal (DPP) will be prepared which will identify the budget and activities for the project. For component 2, a project coordination unit (PCU) set-up at the MoLGRD&C will be responsible for coordinating activities of the city corporations and municipalities, maintaining the project account to receive and utilize World Bank funds, preparing financial reports, and undertaking procurement of goods, works and services The PCU will include at least: a full-time project coordinator/director, a procurement specialist, a financial management specialist, a social and environmental specialist, and an M&E specialist. Each of the targeted city corporations and municipalities will assign focal persons for the project. The PCU can include technical experts with relevant technical qualification and experience (e.g., entomologist, botanist, researcher, etc.).

85. Overall technical oversight and coordination will be ensured by the existing Urban Health Coordination Committee headed by the Secretary, Health Services Division (HSD), MoHFW, and co-chaired by the Additional Secretary, MoLGRD&C, with participation of MoHFW officials and the focal persons of the targeted city corporations and municipalities. The Urban Health Coordination Committee will meet at least twice a year, or more frequently if required. For technical oversight the existing Urban Health Working Group will continue to function, which is co-chaired by the Additional Secretary (Planning), HSD, MoHFW and the Additional Secretary (Urban Development), Local Government Division, MoLGRD&C, and will meet once every quarter of more frequently as needed. The MoLGRD&C may set-up committees to be chaired by the respective Mayors for regular monitoring of the project, to meet as frequently as needed

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86. Environmental &Social specialist will be responsible for regular E&S reporting and monitoring.

At a minimum, the reporting will include: (i) the overall implementation of E&S risk management instruments, (ii) any environmental or social issues arising as a result of project works and how these issues will be remedied or mitigated, (iii) OHS performance (including incidents and accidents), (iv) community consultation updates, (v) public notification and communications, (vi) progress on the completion of project works, and (vii) summary of grievances/beneficiary feedback received, actions taken and complaints closed out. Reports from the local levels will be submitted to the PCUs at the national level, where they will be aggregated and submitted to the World Bank on a quarterly basis.

87. Throughout the Project implementation stage, the PCU will continue to provide training and awareness raising to relevant stakeholders, such as staff, selected contractors, and communities, to support the implementation of the environmental and social risk management mitigation measures.

88. **Local contractors** will be required to comply with the Project's E&S risk management plans and procedures, including the ESMP, ECOPs, HORMP, and local legislation. This provision will be specified in the contractor's agreements. Contractors will be expected to disseminate and create awareness within their workforce of environmental and social E&S risk management compliance for their effective implementation.

89. **The World Bank** will provide training, technical support and implementation support through the project cycle on ESMF, Code of Conduct, SEP, HORMP, Medical waste management, etc. It will conduct prior review for the first 5 ESMPs that will be prepared. During implementation support visits, it will review monitoring reports and progress on implementation of environmental and social risk mitigation measures.

6.5 Proposed Training and Capacity Building

90. Successful implementation of the Project will depend among others on the effective implementation of the environmental and social risk management measures outlined in this ESMF. Training and **capacity** building will be necessary for the key stakeholders in order to ensure effective implementation ESMF and the SEP. An initial training approach is outlined in **Table 6.4** below. To the extent possible, training on environmental and social risk management will be integrated into the project cycle and operational procedures. Given the need to raise awareness among project workers and stakeholders at many levels, a cascading model is proposed where information will follow from the national level to the field levels.

91. Table 6.4. Proposed Training and Capacity Building Approach

Level	Responsible Party	Audience	Topics / Themes that may be covered
National Level	World Bank	National Staff responsible for overall implementation of ESMF	ESMF and approach: - Identification and assessment of E&S risks - Selection and application of relevant E&S risk management measures / instruments - E&S monitoring and reporting - Incident and accident reporting
Regional Level	National Staff	Regional Staff Contractors	ESMF and approach: Identification and assessment of E&S risks Selection and application of relevant E&S risk management measures E&S monitoring and reporting Incident and accident reporting

Level	Responsible Party	Audience	Topics / Themes that may be covered
			Application of SEP and the grievance/beneficiary feedback mechanism
Local/site level	Regional Staff	Local Staff Local Contractors	Application of SEP and the grievance/beneficiary feedback mechanism Application of HORMP, including Code of Conduct, incident reporting, SEA/SH, COVID-19 mitigation Application of ECOPs or ESMPs, as relevant
Community Level	Local staff	Community members Community Workers, if relevant	Basic OHS measures and Personal Protective Equipment (PPE) Community health and safety issues Worker Code of Conduct SEA/SH issues, prevention, measures COVID-19 mitigation Grievance redress Workers' grievance redress

6.6 Estimated Budget

92. The following are estimated cost items for the implementation for the ESMF, which have been included in the overall project budget (**Table 6.5**):

Table 6.5. ESMF Implementation Budget

Sl.no	ESMF Implementing Activities	Total Cost (US $)
1	ES Consultants Salaries	90000
	Site specific ESIA	30000
2	Training on Stakeholder Engagement, SEA/SH and GRC issues	12,000
4	Stakeholder/Community/Sensitization meeting in Project areas	10,000
8	Behavioral transformation related activities (training, workshop for health care service providers)	4500
10	Satisfaction Survey	4000
12	Communication materials (Poster, Brochure, flier, billboards, website)	7000.00
15	GRM /GRC expenses	10000.00
	Sub-Total	167,500.00

6.7 Monitoring

93. The MoHFW, MoLGRDC and City Corporations/Paurashavas will be responsible for the overall coordination and supervision of the M&E tasks through its existing structures. The E&S expert will prepare periodic monitoring report as required (monthly, quarterly, six-monthly, annual, etc.) by the project Implementation unit. In case consolidated report on E&S management is prepared, s/he will

ensure that specific sections/chapters on the SEP implementation are entered in such reports.

94. Monitoring and reporting will include involving Project Affected Parties, internal and external stakeholders, interested group and the vulnerable in monitoring mitigation measures that will be agreed on the stakeholder concerns; thus, promoting transparency. The Project will establish a monitoring system that is participatory, which will utilize indicators that are sensible to concerned stakeholders. Furthermore, the project will involve affected parties by gathering their observations to triangulate scientific findings and involve them in participatory discussions of external and monitoring and evaluation missions. Monitoring and evaluation will be adjusted accordingly based on restrictions due to COVID-19.

6.7.1 Internal and External monitoring

95. PCU will conduct regular monitoring and evaluation of the updating and implementation of the ESMF. Monitoring and evaluation are intended to help ensure that the resettlement action plan is prepared and implemented according to the resettlement policy framework (if relevant). Moreover, external monitor of the project will review all the E&S documents prepared for this project. External monitor will establish dialogue with the affected communities and ensure that their concerns and suggestions are incorporated and implemented in the project. External monitor will work closely with the PCU and internal monitoring team to implement the ESMP and other plans. He or she will prepare r training programs and workshops for the staff of the PCU and contractors.

96. PCU will establish procedures to monitor and evaluate the implementation of the plan and will take corrective action as necessary during implementation to achieve the objectives of the ESS. The extent of monitoring activities will be proportionate to the project's risks and impacts. For this project PCU will ensure competent professionals to monitor the implementation of ESMF, design corrective actions as necessary, and NGO/consulting firms on compliance with ESS and periodic monitoring reports will be prepared and affected persons will be informed about monitoring results in a timely manner.

Table 6.6 Monitoring process of key indicators

Monitoring Aspects & Relevant ESS	Potential Indicators
Consultation ESS1, ESS10	✓ Strategy for consultation and information disclosure is prepared ✓ Consultations organized as scheduled ✓ Project information's are disclosed ✓ Affected, interested, disadvantage and vulnerable groups are identified ✓ views of disadvantage and vulnerable groups are considered during designing the entitlement and special measures are taken ✓ Schedules are planned for the various stakeholder engagement activities ✓ Knowledge of entitlements by the relevant stakeholders including project affected people
Grievances ESS2, ESS4, ESS10	✓ Operationalization of the grievance redress mechanism proposed with ESMF. ✓ Operationalization of the GRM for labor and SEA/SH ✓ Information on the resolution of the grievances ✓ Process by which people affected by the project can voice their grievances and concerns ✓ Process to document complaints and concerns ✓ Grievance recording (e.g. MIS, grievance log book) ✓ Stipulated timeframes for acknowledgement and resolution of complaints

Monitoring Aspects & Relevant ESS	Potential Indicators
	✓ Awareness raising, to inform stakeholders about the GRM and appeals process ✓ Grievance reports published and frequency
Communications and Participation ESS10	✓ Number of general meetings (for both men and women). ✓ Percentage of women out of total participants. ✓ Number of meetings exclusively with women. ✓ Number of meetings exclusively with vulnerable groups. ✓ Number of meetings at new sites. ✓ Number of meetings between hosts and the displaced persons. ✓ Level of participation in meetings (of women, men, and vulnerable groups). ✓ Level of information communicated—adequate or inadequate. ✓ Information disclosure. ✓ Translation of information disclosure in the local languages.
Budget and Time Frame ESS1	✓ Social Safeguard Specialist/expert appointed and mobilized on schedule for the field and office work. ✓ Capacity building and training activities completed on schedule. ✓ Achieving resettlement implementation activities against the agreed implementation plan. ✓ Funds allocation for resettlement to implementing agencies on time. ✓ Receipt of scheduled funds by resettlement offices. ✓ Funds disbursement according to the resettlement action plan. ✓ Social preparation phase as per schedule.
Contractors and sub-contractors ESS2	✓ setting a special score board approach based on the activities accomplished during project interval ✓ project parties and laborers as well based on the set criteria.
Implementation of mitigation measures ESS1, ESS2, ESS3, ESS4, and ESS10	✓ environmental and social monitoring parameters as per approved ESMPs based on screenings and/or ESIAs

6.7.2 Reporting

97. The PCU E&S consultants will prepare a Quarterly report to be submitted to the PCU. These reports will summarize the following:

- ✓ Progress in implementing this ESMP and subsequent other safeguard documents, etc.;
- ✓ Findings of the monitoring programs, with emphasis on any breaches of the control standards, action levels or standards of general site management;
- ✓ Summary of any complaints by external bodies and actions taken / to be taken; and
- ✓ Relevant changes or possible changes in legislation, regulations and international practices.

98. Monitoring and reporting on the project must be complemented by an effective GRM proposed in ESMF in order to address issues arising from project implementation. GRM will help to detect unanticipated or recurring problems, and to manage them. The project implementing agency sets up and supports the GRM, in a manner satisfactory to the World Bank, to receive, manage and facilitate resolution of stakeholders' concerns and grievances in a timely manner. It is important that the GRM is designed to accommodate all issues raised, including issues related to labor influx. The way to make complaints needs to be simple and well publicized. The GRM is usually scaled to the risks and

potential adverse impacts of the project. The following factors will be considered in the project for the effective GRM: (i) their publicity and accessibility, (ii) the transparency of their operation, (iii) the credibility of their decision-making process and structure, (iv) their confidentiality and hence protection from any potential retaliation, and (v) the effectiveness of the associated business processes to resolve grievances where appropriate.

Table 6.7. Reporting Requirements

Report/Document	**Description**	**Prepared By**	**Submitted To**	**When**
Training Records	Register of all Trainings and Capacity Building activities conducted under the project	PCU; Consultants; NGO	PD	Within 3 weeks of any training/capacity building activity
Completed Safeguards Screening Forms	Identifies Potential Environmental and Social Issues	PCU; Consultants	PD	After completing forms
GRM Records	Register of grievances received and actions taken	GRC or Consultants during construction phase and then relevant Implementing Agency officer thereafter	PD	Monthly
Internal Monitoring	Monitoring data as defined in the ESMF	PCU, City Corporations, and/or Consultants	PD	Monthly
External Monitor	Monitoring data as defined in the ESMF	External monitor	World Bank	Every quarter

7 Stakeholder Engagement, Disclosure and Consultations

99. This Stakeholder's Engagement Plan (SEP) is prepared for *Bangladesh Urban Health, Nutrition and Population Project* financed by World Bank and implemented by the Ministry of Health and Family Welfare (MoHFW), and the City Corporations of Dhaka South, Dhaka North, Chattogram, and some other selected areas by the Ministry of Local Government, Rural Development and Cooperatives (MoLGRDC). The details are available in the project SEP including the potential engagement approach and methods of the stakeholders along with identifications of the relevant stakeholders to the project.

100. The preparation of the project involved extensive consultations with the stakeholders and potential beneficiaries. The feedback from these stakeholders have been incorporated in the project design and implementation approaches including in the design of the E&S risk mitigation measures. The details are provided in Annex 7 and Annex 8.

Disclosure

101. The final environmental and social risk management documents, namely: ESMF, SEP, LMP along with the ESCP will be disclosed by the client on their respective websites with the Bangla translation of the Executive summaries of the respective documents. Hard copies of these documents will be made available at the project offices and at the sub-project/site level as well. Any site-specific E&S assessments and plan that are developed during the project implementation will also be disclosed and publicly made available.

Grievance Redress Mechanism (GRM)

102. The project will establish a Grievance Redress Mechanism (GRM) for addressing grievances and complaints received from the target group beneficiaries, any project affected parties (beneficiaries and affected persons), other interested parties and stakeholders on any implementation issues including environmental and social impacts. The GRM will have two tiers; community level, and PCU level. The project GRM will also be equipped to receive SEA/SH related complaints with a protocol of survivor centric approach proportionate to sensitivity. Labor GRM will be constituted where minor civil works will be involved at any sites. The GRM spans the entire implementation period and will cater to both the beneficiary communities and the directly and indirectly affected population including the staff, beneficiaries and other stakeholders. Though the GRM proposed here a mechanism of redress has been designed to address environmental and social problems identified during implementation, it will also cater to manage any disconnects that emerge from the site level and that has implications for effective implementation of the project interventions. The project GRM will be mainstreamed with the centralized national level Grievance Redress System (GRS) and the corporate complaints handling mechanism available with MoHFW. A detail discussion on the entire process of GRM is discussed in the main SEP.

GRM for SEA/SH related complaints

103. All two tiers of the GRM will be sensitized to receive SEA/SH related complaints. PCU, the project unit and the contractor are not equipped to handle complaints or provide relevant services to survivors but will refer any person to relevant service providers, including health facilities, law enforcement's gender unit or others, as relevant using the information on available services. Grievances related to gender-based violence be reported through the project/contractor, the nature of the complaint will be recorded along with the age of the complainant and relation to the project will be

recorded. After consultation with the service providers and assessing the complaint, appropriate disciplinary measures will be taken against the perpetrator. Also, the ESA may identify additional mitigation measures related to gender and such measures will be reflected in site-specific ESMPs, including the contractors ESMP or contractors specific Human and Occupational Resources Management Plans, and Codes of Conduct for laborers where required. This will include engagement with communities on gender-related risks, grievance and response measures available, as identified in the manual. PCU, with support from consultants, will identify institutions and services provides who are actively engaged in the prevention of gender-based violence, sexual exploitation and workplace sexual harassment to establish a manual available for all project actors to create awareness and mitigate risks of SEA/SH.

GRM for involved human resources (Labor)

104. Just like the SEA/SH related GRM, all two tiers of the GRM will be sensitized to receive complaints related to any human resources or labor related issues. Grievances related to labor be reported through the project/contracts and relation to the project will be recorded. After consultation with the service providers and assessing the complaint, appropriate disciplinary measures will be taken. Also, the ESA may identify additional mitigation measures in addition to gender and such measures will be reflected in site-specific ESMPs, including the contractors ESMP or contractors specific Human and Occupational Resources Management Plans, and Codes of Conduct for laborers where required. This will include engagement with communities on gender-related risks, grievance and response measures available, as identified in the manual.

Communication & Awareness Raising on GRM

105. The final processes and procedures for the GRM will be translated into local language (i.e., Bangla) and disseminated at all project locations. These shall be made available (in handout/leaflet and poster format) to all project locations with the staff on site and in the offices of City Corporation. Project beneficiaries, affected persons and communities will be informed of the project's grievance mechanism in open meetings at important locations and in FGDs and open meetings. Bangla translations of information brochures will be distributed among the communities and stakeholders. The communities and stakeholders will also be briefed on the scope of the GRC, the procedure for lodging grievances cases and the procedure of grievance resolution at the project level. The GRM approach and procedures will be conducive to the sensitivity of social stigma to the women and girls alleged to eh affected. Traditional conflict resolution existing system of the tribal communities will also be accommodated in the project GRM.

OPERATIONALIZATION OF CENTRAL GRS FOR THE PROJECT

106. All Government offices have been using the Government's web-based Central GRS (http://www.grs.gov.bd) following the GRS Guideline 2015 issued by the Cabinet Division of the Ministry of Law, Justice and Parliamentary Affairs. The Central GRS is linked with the MoHFW official website at http://www.mohfw.gov.bd/. The Central GRS online platform has windows for Frequently Asked Questions, Feedback, Request for Appeal, and Suggestions for Improvement links. It also includes a User Manual, GRM Process map, Citizen Charters, GRM Guidelines and Contact Points. The site is both in Bangla and English languages.

107. PCU level GRM will also establish and operate Grievance Redress Committee (GRC) with the

GROs as the key member with applicable responsibility to coordinate and communicate with the Central GRS. The GRCs will deal with the project related questions, complaints, and suggestions. The SEP discussed in detail; all GRC must have one woman representative and one representative from LGBT community (if possible).

108. Any question, complaint or suggestion can be placed with the Central GRS (http://www.grs.gov.bd/) referring the project. PCU level GRM will also arrange for dedicated phone number to call or send SMS and an email address to ask questions, produce complaints or share suggestions. The centralized National GRS has guidelines (available at http://www.grs.gov.bd) for grievance redressal system with clearly defined roles and responsibilities and timelines, which will be followed for design and operation of project GRM.

109. The PCU will develop a Project GRM Manual with clearly defined mandates, roles, and responsibilities of itself, the implementation partners and service providers, channels for producing complaints and grievances, the project GRCs and a road map to mainstream the Central GRS dealing with project specific issues (Figure 3). A GRM Handout will also be produced in national Bangla language, circulated among the stakeholders, and briefed in formal and informal discussion sessions. The GRM Manual and the Handout will be developed within 3 months of activation of the PCU, and adopted following the approval by MoLGRD&C and concurrence from the World Bank.

Annex 1 (a): Environmental Screening Form

Bangladesh Urban Health, Nutrition and Population Project

Instructions

The purpose of this checklist is to identify potential environment and safety issues related to the sub-project proposal. This is a generalized checklist format for all categories of funding. However, it is anticipated the research proposals under 'Arts, Humanities and Social Sciences' and 'Business and Law' will not have any environment impacts and thus the proposals under these disciplines will not be required to submit this checklist unless the city corporations specifically requests it.

The screening form covers aspects of: ESS1, ESS3, ESS4 and ESS6.

The applicant will fill-up the format, which will be reviewed and signed by the Head of proposal submitting entity. THEF the checklist shows potential negative environmental impacts the applicant will submit a separate sheet for mitigation measures for it (Attachment A).

Title of the Sub-project: _____
Institution: _____
Funding Type (please tick): [] Research [] New Construction [] Renovation/Refurbishment
[] CERC [] Other: _____
Tentative Start Date: _____
Proposed Duration of Sub-Project: _____ Months
Brief Description of Sub-Project Activity (Within 200 words)

Checklist

Sl #	Screening Questions		Yes	No	Remarks
1	Will the sub-project work be laboratory based? [If answer is No, then go to question 6.]				
2	Does the laboratory have				
	i	Environment, health and safety SOPs, protocol or guidelines? (Attach to form)			
	ii	Adequate fire safety provision?			
	iii	Safety provision for gas cylinder handling?			
	iv	Proper waste disposal facilities? (Attach supporting documents, including e-wastes management information)			
	v	Adequate liquid waste management facilities?			
	vi	Proper storage facilities for hazardous chemicals, pesticides, acids etc.?			
	vii	Adequate ventilation system?			
	viii	First-aid facilities?			
	ix	Emergency exit facilities?			
	x	Trained professional to guide the hospital/waste workers about safety procedures?			
3	Will the laboratory-based research work				
	i	Require procurement of hazardous products (WHO Hazard Class I & II)?			Approx. Amount: _____ kg
	ii	Produce hazardous waste materials?			Approx. Amount: _____ kg
	iii	Generate infectious waste?			Approx. Amount: _____ kg
	iv	Cause emissions of gas harmful to health?			Approx. Amount: _____ m^3
	v	Generate liquid waste?			Approx. Amount: _____ L
	vi	Cause any major noise?			Approx. Amount: _____ dB
4	Has the applicant received formal training on laboratory operation (e.g. SOPs) and safety rules?				
5	Does the applicant have previous work experience in laboratories for similar works?				

Sl #	Screening Questions		Yes	No	Remarks
6	Will the sub-project work require interventions at field level? (If no proceed to question 8)				
7	Will the field have based sub-project work				
	i	Be located at or near an environmentally sensitive area?			
	ii	Require procurement of hazardous products (WHO Hazard Class I & II)?			Approx. Amount: _____ kg
	iii	Discharge any liquid waste in the environment?			Approx. Amount: _____ L
	iv	Discharge large quantities of waste/used water?			Approx. Amount: _____ L
	v	Generate hazardous waste?			Approx. Amount: _____ kg
	vi	Impair downstream water quality?			
	vii	Have any possible degradation in land and ecosystem?			
	viii	Cause local air pollution from any plant/system operation?			
	ix	Generate excessive noise and/or dust?			Approx. Amount: _____ dB
8	Will medical, biophysical or clinical research be conducted using human subjects?				
9	Will the project have any indirect impact on environment and ecosystem?				
10	Will the research work involve permission or clearance of any government department or agency?				
11	Will future expansion or implementation of research finding cause any major environment problem?				

Has an ESMP been attached? [] YES [] NO

Have SOPs been attached? [] YES [] NO

Have waste management related information been attached? [] YES [] NO

The above answers are true and complete. I understand that the city corporations will depend on them to make its decision.

Name of Head of Proposal Submitting Entity and Signature with Date:
Name: _____
Signature with Date _____
Contact Telephone Number and E-mail: _____

Please sign below to verify that the information in this document is accurate and complete to the best of your knowledge.

Environment Professional's Signature & Date:

Name: _____

Signature with Date: _____

Contact Telephone Number and E-mail: _____

Annex 1(b): Social Screening Form

This form will be filled up by the PCU along with the community representative at local level and must be submitted to PD and PCU. Before final selection World Bank approval is required.

General Information

Title of the acitivity : …… ……..

Complete address of screening locations including coordinates……

Screening Date: …….

Funding Type (please tick): [] Research [] New Construction [] Renovation/Refurbishment [] CERC [] Other: _____

Probable social effects -	Yes	No	Not Known	Remarks
Information on Displaced Persons:				
Any estimate of the likely number of persons that will be displaced by the Project? [ ] No [] Yes If yes, approximately how many?				
Are any of them poor, female-heads of households, or vulnerable to poverty risks? [] No [ ] Yes				
Are any displaced persons from indigenous or ethnic minority groups? [ ] No [ ] Yes				
During Screening, project authority will conduct consultation with the primary and secondary stakeholders and provide their observations in the following sections (13 to 18)				
13: Who are the stakeholders of the project?				
Answer:				
14: What social and cultural factors affect the ability of stakeholders to participate or benefit from the proposed policy or project?				
Answer:				
15: Are project objectives consistent with their needs, interests and capacity?				
Answer:				

Probable social effects -	Yes	No	Not Known	Remarks
16: What will be the impact of the project or sub-project on the various stakeholders, especially women and vulnerable groups?				
Answer:				
17: What social risks might affect project or sub-project success?				
Answer:				
18: Has the project authority or any other organizations conducted any consultations with the affected community or people? If yes. Please provide a summary.				
Answer:				

1. Prepared by (Name): ……

Signature: …….. **Date:** …….

2. Project Implementation Unit

Name of City Corporations

01. Names of Members participated in Screening

02.

3. name of the Participants from local Government

01……

02…….

Annex 02: Medical Waste Management Plan

Chapter 01: Introduction to Medical Waste

1.1 General

Wastes generated from healthcare facilities (Primary HNP centers) like hospital, clinic, diagnostic laboratory and medical research institution are infectious and hazardous which poses threats to human health and environmental and requires specific management and treatment prior to its final disposal. Appropriate and safe management of medical waste is acknowledged globally. WHO and Environmental Protection Agency (EPA) have emphasized the need to handle and dispose of medical wastes from the healthcare service providers in a proper way. According to City Corporation/Pourashava Act (2009), City Corporation/Pourashava is responsible for solid waste management including the medical waste management in the country. In the recent years, generation of the medical waste has increased in the hospitals, clinics, and diagnostic laboratories both in the public and private sectors in the urban areas of Bangladesh. The proper management of the ever-increasing medical waste together with municipal solid wastes is becoming a challenge for the local authorities (City Corporation/ Pourashava). It is thus essential to adopt the appropriate medical waste management based on Medical Waste (Management & Processing) Rules 2008 to improve the environment of the Primary HNP centers and also the safeguard of urban environment.

The World Bank is supporting the Government of Bangladesh in Urban Health, Nutrition and Population (UHNP) project (P171144) to improve delivery of primary health, nutrition and population (HNP) and environmental health and preventive services for urban population in Dhaka South and North and Chattogram City Corporations and few selected urban areas. The Ministry of Health and Family Welfare (MoHFW) and the Ministry of Local Government, Rural Development and Cooperatives (MoLGRD&C) will be implementing the Project activities.

The healthcare workers, patients, waste-pickers, community people are exposed to health risks from medical solid and liquid wastes. The environment is also contaminated by medical waste, solid and liquid waste generated from the healthcare facilities. **Component 2** will support outhouse management of medical waste management, which includes (i) implementation of out-house medical waste management through a public-private partnership strategy for contracting-out arrangements; and (ii) revision and/or development of required guidelines, policies, and standards.

The project would require the development of the **Medical Waste Management Plan (MWMP)** and a **Solid and Liquid Waste Management Plan (SLWMP),** as part of ESMF. The specific timeframe and details of the plans to be required for the project as well as training, awareness raising, and capacity of health care workers and waste handlers for the project will be included Environmental and Social Commitment Plan (ESCP). Currently, the medical waste management and practices in the country are below the expected standards and the government with the help of non-governmental organizations (NGOs) is trying to solve the problem but cannot cope with the growing demands. The UHNP project will support improvement in medical waste management, which will need close collaboration between the MoHFW and the relevant City Corporations by engaging contractor/NGO. It is expected that the project activities will potentially increase the generation of medical, solid and liquid wastes in healthcare facilities and the existing insufficient waste management practices, the environmental risk from the wastes will also substantially increase. This document is a part of the ESMP which will be followed by the healthcare service providers and City Corporations and Paurashavas under the project for the management of medical, solid and liquid wastes.

1.2 Medical Waste

According to World Health Organization (WHO) 2013, medical waste includes all the waste generated within healthcare facilities, research centers and laboratories related to medical procedures. Thus, the

wastes generated by **medical activities** like diagnosis and treatments from human healthcare institutes (diagnostics center, hospitals and other) and from veterinary health care institutes. Medical waste is **highly infectious** and **hazardous** and thought to be a **mode for transmission of diseases**. It poses **threats** to environmental health, thus requires specific treatment and management prior to final disposal. Medical waste should be managed **separately** from general municipal solid waste and its management systems should also be controlled strictly. Healthcare facilities generate various kinds of wastes as a result of a variety of medical treatment and research.

1.3 Classification of the Medical Waste

According to WHO (2011), medical wastes can be broadly categorized as non-hazardous and hazardous wastes. Hazardous wastes are further classified into pathological wastes, sharps, infectious wastes, chemical wastes and radioactive wastes as shown in **Table 1.1.**

Table 1.1. WHO (2011) classification of medical wastes.

Waste Categories		Description and Examples
Non-Hazardous	General Wastes	No risk to human health (office paper, packing, wrapper, kitchen or food waste, general sweeping, etc.)
Hazardous	Pathological Waste	Human tissues or fluid (body parts, blood, body fluid, etc.)
	Sharps	Disposable Needle, syringe, saw, knives, blades, scaples, broken glass, infusion sets, etc. that could cause a cut.
	Infectious Waste	Which may **transmit bacterial, viral or parasitical diseases to human**, wastes suspected to contain pathogen (lab culture, tissues, bandages, tissues, etc.). These materials can cause diseases, if exposed.
	Chemical waste	Laboratory reagents, expired solvents, disinfectants, film developer, etc.
	Pharmaceutical waste	Drugs and chemicals that return from wards, spilled, outdated, contaminated or are no longer required.
	Radioactive waste	Solids, liquids and gaseous wastes contaminated with radioactive substances used in diagnosis and treatment of diseases (Unused liquid from radiotherapy or lab research, contaminated glass wares, packages, adsorbent papers, etc.).

Bangladesh Medical Waste (Management and Processing) Rules 2008 has classified the medical waste into 11 categories as shown in **Table 1.2.**

Table 1.2. Category of medical waste as per Schedule 1 of MW (M&P) Rules, 2008.

Category/ Class	Classification	Examples
01	**General waste** (non-hazardous/disinfectant/ non-infectious), bio-degradable, recyclable)	Used paper/parcel, Plastic or metallic cane, Medicine strip, Empty boxes & carton, packing boxes, Polythene bag, Mineral water bottle, Empty glass bottle, Biscuit parcel, Empty injection vial, Non-infectious saline bag and set, Non-infectious used syringe, Non-infectious cloth/gauze/cotton, Non-infectious rubber material/cork, Fruit and vegetable husk, Leftover food, Kitchen waste, Egg husk and Coconut shell, Pressurized containers etc.
02	**Anatomical Waste** (hazardous and infectious)	Different dissected organ and body parts of human body, Tissue, Removed Tumor, The Placenta, Pregnancy related wastes.

Category/ Class	Classification	Examples
03	**Pathological Waste** (hazardous, infectious)	Laboratory culture, Stock or different vaccine sample. Biological toxin. Blood/cough/stool /Serum/body fluid sample given for laboratory test.
04	**Chemicals Wastes** (treatment, diagnosis, cleaning, disinfection, others) **Hazardous**	Formaldehyde, Chloroform, azylene, methanol, tri-chloroethylene used in pathology and histopathology. Organic Chemical: Perchloroethylene. Different types of acid and base (Acid of pH,2 & Base of pH.12.0). Fixtures used in the X-Ray department (10% Hydroquinone, 1.5% Potassium Hydroxide < 10% Silver) and developer (45% Glutaraldehyde) Amino acid.
05	**Pharmaceutical waste Hazardous**	Refused, expired, infectious or useless solid and liquid medicine, serum, vaccine, etc. Medicine can and infectious bottle, vial, cloth, etc.
06	**Infectious /Bacterial Waste (hazardous)**	**Anatomical, Pathological and Infectious wastes** Gauge/bandage/cotton/sponge, Mop/plaster, Catheter/drainage tube and Blood transmission bag/tube etc. infected by blood/pus/body fluid, Saline set infected by blood and clotting blood/body fluid, Blood for HIV patient, Infected cloth of diarrhoea patient and Infected syringe.
07	**Radioactive Waste** (**Hazardous**)	Radio Active Isotope, Un-used head of X-Ray machine. All wastes contaminated by radiation of the radioactive substances.
08	**Sharp Waste** (infectious and non-infectious) **Hazardous**	All types of needles used in medical purpose, all types of blades, Broken spade, used ampoule, broken bottle/glass/test tube/pipet/ jar/Nail/ steel wire, screw, Steel plate, pin etc. used in orthopaedic operation.
09	**Re-used General Waste** (non-Hazardous/ disinfectant/non-infectious)	**Reusable/ recyclable** Used paper/parcel, Plastic or metal cane, Medicine strip, Empty box and carton, packing box, Polythene bag, Mineral water bottle, Empty glass bottle, Biscuit parcel, Empty injection vial, Non-infectious used saline bag and set, Non-infectious used syringe, Non-infectious cloth/gauze/cotton, Non-infectious rubber material/cork etc.
10	**Liquid Waste** (Infectious/Non-infectious), **Hazardous**/Non-hazardous.	Used water, Water from gurgle, Un-used liquid medicine, Liquid waste from drainage bag, Urine/Cough/Vomiting, Blood /Serum, Body fluid, Uterus fluid, Suction liquid, Liquid Chemical.
11	**Pressurized Waste**	Pressurized cans, containers and others containing different gases like **Oxygen, Ethylene Oxide, Air, Heating Gas like Butane, Propane**, etc.

Regarding composition, about 80% of the medical waste is general (non-hazardous) waste that can be disposed safely with municipal solid waste (MSW). The remaining 20% are hazardous, chemical and radioactive wastes, of which 15% are infectious (hazardous wastes), 3% are chemical and pharmaceutical waste, 1% are sharps and 1% are genotoxic, radioactive and heavy metals. This part

of the waste would need special management including safe collection, transport, treatment and final disposal for safeguard of human health and environment.

Chapter 02: Policy and Legal Provisions for MWM

2.1 Existing Legislative/Regulatory Framework for MWM in Bangladesh

The GOB's environmental laws and policies are deemed adequate for both protection and conservation of the environment from medical waste, although enforcement capacity needs to be improved. The GOB has comprehensive laws and policies for medical waste management, which includes:

- National Environmental Policy, 1992
- Bangladesh Environmental Conservation Act (ECA), 1995 and its subsequent amendment
- Environment Conservation Rules (ECR), 1997 and its subsequent amendment
- Environment Court Act, 2000
- Medical Waste (Management and Processing) Rules, 2008
- Manual for Hospital Waste Management, 2001
- Guidelines on Infection Prevention and Control (IPC) and Biosafety, 2016
- GOB 7th 5-year Plan (FYP)
- Environmental Assessment and Action Plan for HPNSDP, 2011-2016.
- Municipal Solid Waste Management Rules, 2021
- Hazardous Waste (e-waste) Management Rules, 2021

2.2. World Bank Policy and Guidelines

The **World Bank's Environmental, Health and Safety Guidelines (EHS)** are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP) and are referred to in the Environmental and Social Framework (ESF). The EHS Guidelines contain the performance levels and measures that are normally acceptable to the World Bank Group, and that are generally considered to be achievable in new facilities at reasonable costs by existing technology. WB requires borrowers/clients to apply the relevant levels or measures of the EHS Guidelines. When host country regulations differ from the levels and measures presented in the EHS Guidelines, projects will be required to achieve whichever is more stringent. The EHS contains descriptive and details references and guides to use in medical facilities, especially hazardous material and waste material transport and management, biological hazards, transport of hazardous material and disease prevention all of which are applicable to medical facilities (**EHS 1.5, 1.6, 2.5, 3.5, 3.6**).

The **WB's Environmental, Health, and Safety Guidelines for primary HNP service providers** include information relevant to the management of EHS issues associated with primary HNP service providers' which includes a diverse range of facilities and activities involving general hospitals and small inpatient primary care hospitals, as well as outpatient, assisted living, and hospice facilities. Ancillary facilities may include medical laboratories and research facilities, mortuary centers, and blood banks and collection services. It contains specific guides for primary HNP service providers including Industry-Specific Impacts and Management, Performance Indicators and Monitoring and a number of references.

The **WB Environmental and Social Framework's ESS** (Resource Efficiency and Pollution Prevention and Management) is triggered because due to generation of amount of medical waste the Project will produce negative environmental impacts that should be prevented and mitigated. A Medical Waste Management Plan (MWMP) is therefore prepared as an instrument to be followed in order eliminate the adverse effects of medical waste on the environment and human health for sustainable development in this sector.

Chapter 03: Medical Waste Management Procedure

3.1. Medical Waste Management Service Chain

Medical waste management (MWM) means the practice of minimizing, identifying, separating, collection, handling, carrying, storage, treatment and final disposal of the waste according to national policy of the government. Proper management of MW is crucial to minimize human health risks and environmental pollution. MW requires specialized management and treatment from its source of generation to final disposal.

Although, Medical Waste (Management and Processing) Rules, 2008 has been enacted in Bangladesh, in most cases the Health Care Facilities (Primary HNP centers) does not follow the MWMP rules to manage MW inside the Primary HNP centers, while City Corporation/Municipality are not aware of the importance of medical waste management. The management of medical waste consists of two parts:

- In-house waste management
- Off-site (out-house) waste management.

In Bangladesh, Ministry of Health and Family Welfare (MoHFW) is responsible for in-house waste management, which includes waste minimization, segregation, identification, separate storage according to color code, temporary storage and on-site treatment inside the Primary HNP centers. Local government agencies like City Corporations/Pourashavas under the Ministry of Local Government Rural Development and Cooperation (MoLGRD&C) are responsible for managing out-house waste, including waste collection from temporary storage, transportation and final treatment and disposal according to MWMP Rules, 2008. **Figure 3.1** shows the general service chain of MW management in the urban areas of Bangladesh.

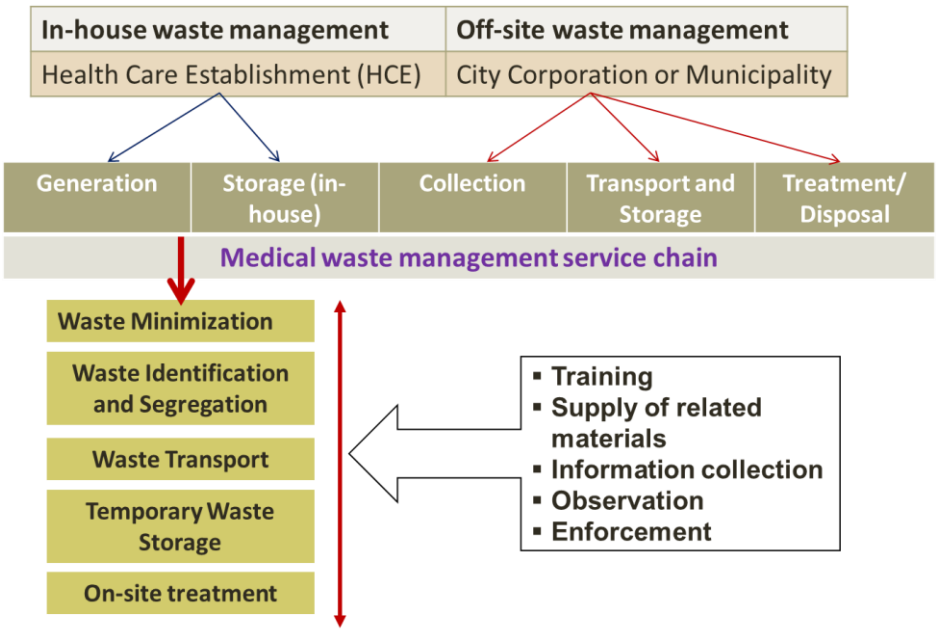


Figure 3.1. General service chain of medical waste management and responsibility (as per MWMP Rules, 2008)

3.2. In-house Waste Management

The in-house management of the medical wastes include:

- Waste minimization and recycling
- Waste identification and segregation according to color-coded bins/containers at the source of generation

- Collection and transport of the segregated wastes
- Interim/temporary storage of the wastes
- In-house treatment of the medical wastes managed by integrated autoclave/microwave sterilizer with shredder treatment plant with required civil structure.

The following general guidelines should be followed by the Primary HNP centers for in-house management and handling of the medical wastes:

- Medical Waste should be segregated at the point of generation by the person who is generating the waste and disposed into the designated color-coded bins/containers.
- Medical Waste and General Waste shall not be mixed during the collection, wrapping, storing and transportation.
- Storage time of waste should be as less as possible so that waste storage, transportation and disposal is done within 48 hours.
- No secondary handling or pilferage of waste shall be done at healthcare facilities.
- Laboratory and highly infectious waste shall be pre-treated onsite before sending for final treatment and disposal through Private Operator/City Corporation/Paurashava.
- Provide bar-code labels on all color-coded bags or containers containing segregated medical waste before for final disposal through Private Operator/City Corporation/Paurashava.

3.2.1 Waste Minimization and Recycling

Waste minimization is the reduction of waste or the prevention of waste production. It involves specific strategies of changes in management and behavioral change. Waste minimization can be achieved through:

- Waste reduction at source (product substitution, product change, good practices)
- Recovery, reuse and recyclable (onsite and off-site).

Waste Reduction at Source

Waste reduction involves measures that either completely eliminates use of a material or generate less waste. Reduction can be achieved through product change, process change and good practices as shown in **Figure 3.2**. For example, simple changes to patient care procedures can be made to minimize the waste generated. Some of the reduction policies include:

- Purchasing reductions: selection of supplies, which are less wasteful or less hazardous
- Use of physical rather than chemical cleaning methods (e.g. steam disinfection instead of chemical disinfection)
- Prevention of wastage of products, e.g. in nursing and cleaning activities.
- Control the entry of visitors carrying with various materials in the HCE and awareness building of the visitor and take their assistance.
- Training for the manpower of health service provider and its supporting organization.
- Efficient operation of store management.
- Ensure the implementation of government strategy for 3R (Reduce, Reuse and Recycle) policy.

Recovery, Reuse and Recycling

Product recycling and reuse can minimize the volume of healthcare waste to some extent. For example, medical and other equipment such as scalpels, glass bottles and containers used in primary HNP service centers may be reused provided that it is designed for the purpose and will undergo through sterilization process. After use, reusable items should be collected separately from non-reusable items, carefully washed and sterilized properly.

Primary HNP centers should critically examine the current waste streams and determine what product can be separated out at the point of generation for recycling. Before beginning any recycling program,

it is recommended to review the possible uses for these products. Some of the materials which can be recycled are: Glass, plastics, aluminum cans, paper and card board and iron.

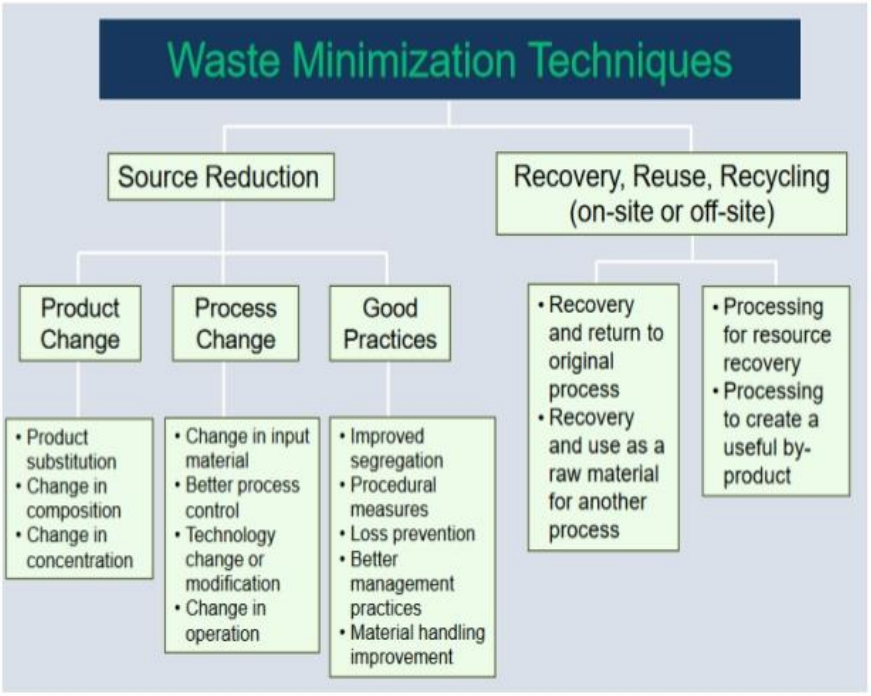


Figure 3.2. Waste minimization techniques in primary HNP centers.

3.2.2 Waste Identification and Segregation

Waste segregation refers to the process of separation of waste at the point of generation and keeping them separate during handling, collection, interim storage and transportation. Waste segregation at source at the time of generation is the key of successful and safe waste minimization and management. Segregation at source reduces the quantity of hazardous wastes, which needs special attention and treatment. For example, when an injection is given, needle and syringe are placed in a different waste container. Only 15-20% of the HCW is hazardous, thus waste segregation can reduce the treatment and disposal costs significantly, if done properly at the point of generation.

The following guidelines shall be followed to ensure proper waste segregation:

- Waste must be segregated at the point of generation and not in later stages. Point of generation means the location where wastes initially generate, accumulate and are under the control of doctor/nursing staff who is providing treatment to the patient and in the process generating medical wastes (for example, patient bed site, operation theater, ward, laboratory, others).
- Posters/placards for medical wastes segregation should be provided in all wards as well as in places colored bins/containers are provided.
- Segregation of the medical wastes shall be done using the color-coded bins/containers stipulated under Schedule 3 of **MWMP Rules, 2008.**
- Bins are fully and securely covered and properly labeled and stored. An adequate number of color-coded bins/containers and bags should be available at the point of generation of medical waste.
- If, in any case, the general waste is **mixed** with hazardous/ infectious waste, then mixed waste must be treated as a hazardous/infectious waste.
- If not possible to identify waste during the segregation process, then waste should consider as **hazardous waste**.
- Personnel Protective Equipment (PPE) shall be provided to the medical waste handling staffs in the primary HNP centres. .

Color Code and Waste Category

As per Schedule 3 of the MWMP (2008), 6 color codes are recommended to use to separate and collect the generated medical wastes in categories of general, infectious, sharp, recyclables, liquid and radioactive wastes as shown in **Table 3.1**. The content in each container must be written in **Bangla** according to color code and also each container must be labeled with appropriate Symbol as approved by WHO. **Table 3.1** also shows the categories of MW and the responsible organizations. The general waste including non-infectious waste is collected by City Corporation with other MSW and the infectious, sharp and recyclable waste are collected by CC/Paurashava or private operator/NGO for final treatment and disposal.

Table 3.1. Waste category, color code, container types for MW segregation and responsible organization(s).

Type of Waste	Category of Waste	Color Code	Color Code of the Container	Type of Container	Responsible Organization
General Waste/ Non-hazardous Waste	Category 1	Black		Leak proof plastic container/bag	City Corporation (CC)
Anatomical/Pathological/ Infectious/Bacillus Waste	Category 2,3,6	Yellow		Leak proof plastic container/bag	CC/Private Operator/NGO
Chemical/Pharmaceutical Waste (If less volume)	Category 4,5	Yellow		Leak proof plastic container/bag	CC/Private Operator/NGO
Radioactive Waste	Category 7	Silver		Lead Box, labeled with radioactive symbol	BAEC
Sharp Waste (Infectious or non-infectious)	Category 8	Red		Puncture-proof plastic container	CC/Private Operator/NGO
Liquid Waste (Hazardous, Infectious, Bacillus, Germ free, Chemical and Non-hazardous)	Category 10	Blue		Leak proof plastic container/bag	Primary HNP centers
Recyclable waste	Category 9	Green		Leak proof plastic container/bag	CC/Private Operator/NGO

3.2.3 Waste Collection and Transport

Waste must be collected and transported from the generation points/sources to the central storage area within the primary HNP service centers at regular basis for subsequent processing and treatment. The following guidelines should be followed during waste collection.

- Waste shall be collected according to the **color code.**
- Waste containers should be resilient and strong from breakage during handling process and **covered** at all the times during collection.
- No more than **three quarters** of the waste can be collected in the bin or container for waste collection. In case of bag, when it became full of three-quarters, then it should be tightened at the neck, have to catch the throat for transport.
- Containers should be replaced immediately with new ones of the same type. A supply of fresh collection bags/containers should be readily available at all locations of waste generation.
- Before collecting the waste, waste collectors must **weigh** the waste according to their department and type and keep record of the waste in kg.
- Waste collector bin shall be clean properly after disposal of waste.
- **Radioactive waste** must be collected and transfers in a **leak proof lead plated box** as approved by the Bangladesh Atomic Energy Commission.
- If any reason the hazardous waste is spread, hazardous waste shall be collected in a new container. Spray 2% Benzylammonium Chloride (Laisol) solution at the waste disposal place and wait 15 to 20 minutes and then rinse the place with water.
- Sharp waste is collected separately from other waste and dispose of in a specified bin or box. If necessary, transfer directly to a removal place from the generation point.

Time of Collection

- Medical waste should be collected daily from each ward of the primary HNP service centers at a fixed interval of time. There can be multiple collections from wards during the day.
- HCF should ensure collection, transportation, treatment and disposal of medical waste as per Medical Waste (M&P), 2008 and Primary HNP service centers should also ensure disposal of medical wastes within 48 hours.
- The time schedule of waste collection shall be displayed at each location of placing waste bins.
- General waste should not be collected at the same time or in the same trolley in which hazardous medical waste is collected.
- General waste collection must be done immediately after the visiting hours of the Primary HNP service centers, as visitors coming generate a lot of general waste and in order to avoid accumulation of such general waste in the HCF. The collection timings must enable the HCF to minimize or nullify the use of interim storage of waste in the departments.
- Medical waste collected by the staff should be provided with PPEs. In the context of Bangladesh, Ayah, ward boy or cleaner is responsible for the waste collection. They have to collect the waste from the container/bin in the scheduled time fixed by HCF authority.

Labelling

All the bags, containers or bins used for collection and storage of medical waste, must be labelled with the Symbol of Biohazard or Cytotoxic Hazard as the case may be as per the type of waste in accordance with MWMP Rules, 2008. The content of the waste shall be written in **Bangla**.

Internal Waste Transportation

This includes the transportation of the waste from the waste storage bins/containers to the temporary/central storage facility within the HCF for subsequent off-house transport, treatment and disposal. The waste must be transported in closed trolleys, containers or carts preferably fitted with wheels for easy movability. Such trolleys or carts are designated for the purpose of Medical Waste

collection only. Patient trolleys must not be used for MW transportation. The size of such waste transport trolleys should be as per the volume of waste generated from the Primary HNP centers. Wherever possible, the transport of clinical waste should be separate from general wastes and the hazardous/infectious MW and non-risk MW should be transported on separate trolleys. The transportation must follow specific routes through the HCF to reduce the passage of loaded carts through wards and other clean areas.

The following general guidelines shall be followed during waste transportation.

- Transport **risky waste (Waste in a yellow and red bin) first**, afterward recyclable waste and finally general waste bin.
- Waste transport trolley will not be used for any other purpose to avoid risk.
- Trolley design: can be transported and dropped **four bins** at a time.
- Waste transport must be done at a **pre-define time** by the hospital authority or the waste management officer.
- The personnel responsible for transporting waste must wear **PPE**
- The lid of the vessel or bin will be well fitted or enclosed during the transport of waste and there should be no spillage of the wastes on floor or other places during transport.

3.2.4 Internal/Temporary Storage of Medical Waste

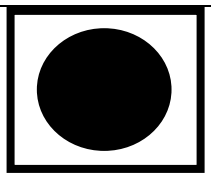
There should be a designated central waste storage area within each HCF for storage of the medical wastes, till the wastes are picked and transported for off-site treatment and disposal by City Corporation/Private Operator. This area must be marked with a warning sign. This area should be suitably established within the HCF; however, these areas should be located away from patient rooms, laboratories, hospital function/operation rooms or any public access area. The storage facility should be under the responsibility of a designated person and should be lockable, hygienic and appropriately sign-posted. The area must keep secured for all times. In modern management, waste storage room is air-conditioned (< 4^{O}C) and protected. It is recommended to have a separate system approved by the Atomic Energy Commission for radioactive waste.

The following general guidelines to be followed for the construction and operation of the medical waste storage facility:

- The storage area/facility must be adequate to accommodate the waste generated from the HCF for at least 24 hrs.
- The location of the waste storage area must be away from the public/visitor's access.
- The entrance of this location must be accessible through a concrete ramp for easy transportation of waste collection trolleys. The area must have easy access for waste collection vehicle for off-site transport and treatment.
- The area should have adequate lighting, well ventilation and provision for the containment of spills within the storage area.
- Adequate water supply for cleaning and washing purposes with sufficient drainage facility.
- The area must be security and restriction of access to authorized persons only.
- The area must be protected from sun, rain, strong winds and floods.
- Bio-degradable general and hazardous waste should not be stored longer and should be removed within 24 hours to minimize microbial growth, putrefaction and odors.
- Facilities for waste storage according to color code with proper label.
- Should maintain a logbook for recording.

Symbol Used Waste Bin/Container during Storage

The following symbols with appropriate label as per **Schedule 4 of MWMP (2008)** should be placed on the storage containers or packages during storage.

(i) Oxidizing Substance **S**ymbolic Sign: The flame of the fire on the circle- black color. Background: Yellow color	
(ii) Toxic Substances **S**ymbolic Sign: Scalp on two bones- black color. Background: White color	
(iii) Infectious Substance **S**ymbolic Sign: On the circle are three substituted moons- black color. Background: White color	
(iv) Radioactive Substance **S**ymbolic Sign: Rotating fan- black color. Background: Half upper is yellow and half bottom is white color	
(v) Corrosive Substance **S**ymbolic Sign: Liquid overflow from two bins that are attracted to a hand and a metal- black color. Background: Half upper is white and half bottom is white color with black border.	
(vi) Other Corrosive Substance **S**ymbolic Sign: There are seven long black spots on the white background in the upper half-black color. Background: Half bottom is black border and white color.	
(vii) General Waste Bins **S**ymbolic Sign: Black colored circle. Background: Black border and white color	
(viii) Toxic Waste Bins **S**ymbolic Sign: Black colored circle. Background: Black border and white color	
(ix) Sharp Waste Bins **S**ymbolic Sign: Inside the red circle white colored scalp over two bones. Background: Red border and white color	

(x) Recyclable Waste Bins **S**ymbolic Sign: Inside the green circle three black colored arrows. Background: Green border and white color	

3.2.5 Inhouse Treatment and Disposal

The following inhouse treatment and disposal practices can be done inside the HCEs.

- Crushing of sharps waste
- Sterilization
- Chemical disinfection
- Incineration (small scale)
- Integrated autoclave/microwave sterilizer with shredder treatment plant .
- Pit burial
- Selling of recyclable waste.

3.3 Out-house Medical Waste Management

The City Corporation/Municipality is responsible for out-house/off-site medical waste collection and treatment in their jurisdiction area. Any competent NGO or private operator may engage on behalf with prior permission under **Section-3** of Medical Waste (Management and Processing) Rule 2008. The concern City Corporation/Municipality/NGO or private operator will collect the waste from Primary HNP centers for final treatment and disposal.

In Dhaka (North and South) City Corporation, PRISM is engaged to operate out-house management of medical waste from 1121 HCEs. The service includes collection, transportation, processing, treatment and disposal of medical waste. PRISM has established a MWM plant at Matuail, Dhaka. PRISM, at present has 7 specialized collection vehicles, 2 incinerators, 2 autoclaves, 12 pits and 1 chemical disinfection unit for waste transportation, treatment and disposal. Currently, PRISM collects infectious waste (yellow bins), plastic waste (green bins) and sharp waste (red bins) from the contracted Primary HNP centers in Dhaka. The wet part of medical waste is put into an autoclave chamber to disinfect the waste for further disposal at the landfill. Sharp (middle, glass etc.) items, body parts are buried at designated sites of the Matuail landfill. Recyclable plastic items are separated and chemically treated, shredded and sold as raw materials for plastic factories. All other dry items from medical waste are incinerated and the ash are buried at the landfill.

In Chattogram City Corporation (CCC) area, Chattogram Sheba Sangstha (CSS) has been working on medical wastes collection, transportation and treatment from the Primary HNP centers in the city. In 2021, a total of 22.7 tons/day MWs are generating in CCC area, of which 16.9 tons/day (74.45%) is non-hazardous and about 5.8 tons/day (25.55%) are hazardous. In CCC, a fumeless incineration has been installed recently, with a daily handling capacity of 4.8 tons. CSS is currently collecting medical wastes from 163 Primary HNP centers out of total 283 amounting to about 1.5 tons/day, which are now treated by incineration. The rest of the MWs are mixed with general wastes that are burned openly at the Anandabazar dumping ground at Halishahar.

For out-house treatment of medical waste, there must be an appropriate landfill site for the treatment and disposal of medical waste. City Corporation/Pourashava shall provide the landfill site for medical waste treatment and disposal, develop infrastructure and installation of machinery. The City Corporation/Municipality or private organization shall procure the necessary collection vehicles for waste collection and disposal complying with the legislative requirements. The waste shall be carried by the leak proof covered vans registered by the City Corporation/Municipality with appropriate signs and symbols. In the treatment and disposal site, there must be a storage area where the MW will be stored for further processing and treatment. The general requirements of the storage area are:

- The area has an impermeable, hard-standing floor with good drainage system, easy to clean and disinfect (a tiled floor and walls are recommended)
- Have facility to keep general waste separated from infectious and other hazardous waste
- Have easy access for waste handling staff and prevent access by unauthorized persons
- Have easy access for waste-collection vehicles
- Have adequate water supply for cleaning purposes, be protected from the sun, rain, good ventilation and lighting, and inaccessible to animals, insects, and birds.
- The area is labeled in accordance with the hazardous signs of the stored waste.
- The area has capacity appropriate to the volumes of waste generated.
- The area shall be labeled in accordance with the hazardous level of the stored waste.
- The area has a washing basin with running tap water and soap for the staffs and cleaning facility once in a week.

3.3.1 Collection and Transportation of the Medical Waste

As per City Corporation/Paurashava Acts (2009), the City Corporation/Paurashava are responsible for collection and transportation of the Medical Waste from HCEs to the treatment and disposal site(s). The City Corporation/Paurashava can lease out the service to Private Operator(s) or NGO(s). The private operator(s) must have to obtain license for medical waste transportation and treatment. The HCEs are responsible for safe packaging and appropriate labeling of the medical waste to be transported off-site. Vehicles used for transporting medical waste should be reserved for this purpose only. They must be easy to load, unload and clean, and should be equipped with spillage collection sumps or other suitable spill controls. The vehicle should be marked with the name and address of the waste carrier. The hazardous/infectious sign should be displayed on the vehicle container. The vehicle must be covered and must registered by the City Corporation/Paurashava.

Requirement for Waste Transporter(s)

- Must registered under the country's regulations for healthcare waste transport
- Licensed to drive the type of vehicle used for off-site transport.
- Declared **medically fit** to drive vehicles
- Certified to have been trained on healthcare waste transport
- Received vaccination against tetanus and hepatitis A+B.

Requirements of the Transport Vehicle and Routing

- The vehicle has a maximum allowable loading greater than the expected payload
- The transport vehicles must be marked with national or international laws.
- There must be separate **cabins** for drivers/staff and waste containers
- The base of the waste cabin should be leak proof to avoid spillage of liquid waste during transportation.
- Waste cabin shall be so designed that it is easy to wash and disinfect, easily loaded and unloaded.
- Vehicles should be properly maintained and kept clean.
- Vehicle **tracking system** should be installed.
- The transportation routes of the vehicle shall be designed for optimum travel distance and to cover maximum number of healthcare units.
- Transportation shall be carried out during **non-peak traffic hours** (if possible)
- Total time taken from generation of medical waste to its treatment, which also includes collection and transportation time, shall not **exceed 48 hours**.

3.3.2. Out-house Treatment of the Medical Waste

The following treatment and disposal methods can be adopted for different categories of the medical wastes:

- Incineration (As per Schedule 6 of MWMP Rules, 2008)
- Chemical Disinfection
- Stream disinfection
- Microwave disinfection (As per Schedule 6 of MWMP Rules, 2008)
- Reverse Polymerization
- Autoclaves (As per Schedule 6 of MWMP Rules, 2008)
- Needle Extraction or Destruction
- Shredders
- Encapsulation
- Sanitary Landfill or Deep Burial Pit (As per Schedule 6 of MWMP Rules, 2008).

The treatment and destruction procedures for different categories of MW according to MWMP Rules (2008) are provided in **Table 3.2.**

Table 3.2. Treatment and destruction procedures for different categories of MW (according to MWMP Rules, 2008).

Waste Category	Sample of Waste Class	Treatment and Destruction Procedure
Category 1	General waste (Non-hazardous/sterile/ non-infectious)	a) Disposal at yard or mass waste dumping place. b) Ensured to stop reuse of plastic waste by crushing before disposal.
Category 2	Anatomical waste	a) Treatment and destruction at yard/safe place by concrete pit method. b) Deep burial (if less quantity) c) Steam autoclaving/microwave treatment/ incinerator
Category 3	Pathological waste	Same as Category 2 (like anatomical waste)
Category 4	Chemical waste	a) Date expired chemical waste return to the supplier (if quantity large) b) Making inactive by mixing with sufficient water to make more liquefied for disposal into a sewerage system (if quantity is less) c) Treated/inactive by chemically and dispose to a sewerage system.
Category 5	Pharmaceutical waste	Same as category 4 (like chemical waste)
Category 6	Infectious /bacterial waste	a) Treatment and destruction at yard/safe place by concrete pit method. b) Deep buried (if less quantity) c) Steam autoclaving/microwave treatment/ incinerator.
Category 7	Radioactive waste	If per kg radioactive emission doses > 0.1 MBQ, must be treated/destructed by the rule of AEC.
Category 8	Sharp waste	a) Treatment and destruction at yard/safe place by concrete pit method. b) Encapsulation c) Deep burial (less quantity) d) Use of incinerator.
Category 9	Re-used general waste	a) Re-use and re-cycle after treated by steam autoclave. b) Re-use and re-cycle after treated by chemical material.

Waste Category	Sample of Waste Class	Treatment and Destruction Procedure
Category 10	Liquid waste (infectious/non-infectious)	a) Mixing with sufficient water to make more liquefied for disposal into a sewerage system (less quantity) b) Treated chemically by mixing with 1% hypochlorite solution and disposal to a sewerage system. c) ETP may be installed if quantity of liquid waste is more.
Category 11	Pressurized waste	a) Return to the supplier (if quantity is more). b) Making de-pressurized by an acceptable method and dispose with general/re-cyclable waste (less quantity)

3.3.3 Gaps and Challenges in Out-house Medical Waste Management

The following are the gaps and challenges that need to be addressed for successful medical wastes management (Table 3.3).

Table 3.3. Gaps and challenges for out-house medical waste management.

Issues	Gaps and Challenges
Lack of inadequate MW management in HCEs	Inadequate segregation of wastes and use of specific color bins for segregation of waste at the sources, Lack of secure intermediate storage of MW at HCEs, inadequate monitoring and lack of trained manpower and resources.
Inadequate collection of MW by Private Operator(s) or City Corporation/Paurashava	Currently, PRISM in Dhaka and CSS in Chattrogram are working for medical waste collection from the HCEs having contract agreement mostly with large HCEs. Small and medium HCEs largely have no agreement, these small and medium sized HCEs are managing their medical waste inhouse, but a part of the MW is dumped with the municipal solid waste. The current coverage of MW collection by the private operator(s) in the project area is partial, a 100% coverage is needed for safeguard of the environment from MW.
Inadequate Legal Provisions	There is no specification of vehicles for the transportation of the medical wastes in the legislation, occupational health and safety measures for the workers are practiced. Lack of standards in MWMP Rules (2008) for various treatment options other than incineration, microwave disinfection, autoclave and sanitary landfill or deep burial pit. There is no Standard Operation Procedure (SOP) for MW treatment options in MWMP Rules (2008), which needs to be developed and promoted extensively for safe treatment and disposal as well as safety of the workers and environment.
Strengthening the Capacity of Out-house MW management including treatment and disposal.	Presently, the capacity of the operator(s) is inadequate for 100% Medical wastes collection from all the HCEs located in the project areas, also have limited capacity for the treatment of disposal of medical wastes at Matuail and Anandabazar landfill sites. Capacity building of the Operator(s) by undertaking appropriate training program on Occupational Health and

	Safety protocols for handling out-house MW management, lack of appropriate monitoring and reporting.
Resources Constrains	Lack of resources of the Operator(s) for out-house MW Management. The City Corporation/Paurashava shall have to provide support especially for providing the vehicles and land for MW collection, treatment and disposal.
Inter-ministerial coordination and cooperation	Two ministries (MoHFW and MoLGRD&C) are responsible for in-house and out-house MW management, an inter-ministerial coordination is needed for effective MW management. The MoHFW is responsible for providing the legal framework managing environmental and social risks in the health sector and develop various instruments to address priority health issues including in-house medical waste management plan (MWMP) in the country. The plan defines in a clear and precise way the roles, responsibilities and field competencies of actors involved in MWM, outlining the processes of MW collection, transportation, storage and treatment within the Primary HNP centers, capacity building and awareness program. The MoLGRD&C is responsible for providing support to City Corporation/Paurashava for out-house medical waste management.

3.3.4. Stakeholders in MW Management

The key stakeholders for medical waste management are:

- Health Care Establishment (HCE)
- City Corporation/Paurashava
- Private Operator(s)/NGOs
- MoHFW
- MoLGRD&C

- The key responsibilities of the stakeholders in medical waste management service chain and linkage to each service chain need to be clearly defined including the institutional arrangement, roles and responsibilities. It is also needed to ensure adequate and qualified staff are in place, including those in charge of infection control and biosafety and waste management facility operation and establish an information management system to track and record the waste streams in HCE and out-house operator(s) as well as capacity building and training should involve medical workers, waste management workers and cleaners. Third-party waste management service providers should be provided with relevant training as well.

Obligation of HCEs

- In hospitals, a waste management committee is to be formed and develope a medical waste management plan in coordination with City Corporation/Paurashava and Private Operators.
- Allocate sufficient financial and personnel resources from this project to effective operation of the MWM plan
- Coordinate and monitor of the MWM activities, organize training on MWM and awareness building of the key staff members and coordinate with City Corporation and Private Operators for off-site (out-house) management of MW.
- Preparation of records of all wastes management activities and auditing the reports

- Adequate arrange for wastes segregation, collection, internal transport, storage and treatment (sterilization, thermal treatment, etc.) as per MWMP Rules (2008) in the HCEs, infectious wastes are not mixed with the general wastes in HCEs.
- Implement the health safety protocol for waste collection, transport and storage and also to promote 3R for in-house waste management hierarchy.

Obligation of City Corporation/Paurashava

- City Corporation/Paurashava is **legally responsible** for selecting an appropriate **place for medical waste disposal**, develop infrastructure, installation of machinery and to create a friendly environment for treatment.
- Collection, transport of MW from Primary HNP centers and treatment and disposal of medical waste, if capable of handling medical waste with existing manpower and logistics.
- If not capable, may **arrange and appoint private operators or NGOs** to handling medical waste, arrange for getting license from DoE.
- Awareness building campaign for general public and other stakeholders.
- May enforce regulation to all health care establishments for an environmentally sound medical waste management within their jurisdictions.

Obligation of the Private Operators/NGOs

- Collect the MW from the storage area of Primary HNP centers, transport using the appropriate vehicles to the treatment and disposal sites, processing and final treatment of MW as per MWMP Rules (2008) and WHO guidelines.
- Appoint adequate and qualified manpower for waste collection, transport and treatment
- Procure appropriate vehicles for MW collection and transport and get license from the authority for off-site MW management.
- Must comply the legislative requirements for MW collection, treatment and disposal.

3.3.5 Monitoring and Reporting

Monitoring and evaluation mechanisms shall be specified for each department of the Primary HNP centers with role and responsibility and resources available for carrying out the MW management activities. HCF should establish an information management system to track and record the waste streams from the point of generation, segregation, packaging, temporary storage, transport carts/vehicles, to treatment facilities. The larger HCF shall develop an IT based information management system. Details of procedures for supervision and monitoring of MWM to include the following key aspects of MWM:

- MW management practices like segregation levels, sharps management systems, duration of storage of BMW in facilities, etc.
- Occupational health and safety provisions at facilities and their implementation (PPE availability, immunization status of health functionaries, etc.)
- Incidents and accidents monitoring including sharps injuries, hospital acquired infections, mercury spills and their management etc.
- Training and capacity building at various levels of the healthcare delivery system on MW Management.
- Availability and use of clean water and proper sanitation in health facilities
- Number of health facilities accredited with Quality certification.
- Internal reporting and filing systems.
- Externally, reporting per government and World Bank requirements.

Primary HNP centers shall submit the Accident reports (**Form 3**) and Annual MW Management Report (**Form** 4) according to MWMP Rules 2008 to the Health Directorate.

Annex 03: Liquid and General Wastes Management Plan

Liquid Waste Management Plan

1. Introduction

In every Primary HNP centers, the liquid waste from dental, medical, nursing, pharmaceutical, laboratory investigation, treatment and research units are generated every day. Amongst all the category of biomedical waste, liquid wastes pose a threat to human health and the environment because of their ability to enter watersheds, pollute ground water and drinking water when improperly handled and disposed. Around 90% of the liquid waste produced globally from HCF remains untreated, causing widespread water pollution, especially in low-income countries.

According to MWMP Rules (2008), the liquid waste from the Primary HNP centers can be categorized as infectious and non-infectious and some of the examples of liquid wastes are used water, water from gurgle, un-used liquid medicine, liquid waste from drainage bag, Urine/Cough/Vomiting, Blood /Serum, Body fluid, Uterus fluid, Suction liquid, Liquid Chemical and others.

2. Types of Liquid Waste

The liquid waste generated from a medical facility is usually of the following types:

i. Infectious waste
ii. Blood and body fluids
iii. Laboratory wastes (cultures of infectious agents, cultures from laboratories, biological,
iv. discarded vaccines, culture dishes and devices)
v. Chemically hazardous including chemicals and reagents
vi. Formaldehyde (obtained from pathology labs, autopsy, dialysis, embalming)
vii. Mercury (broken thermometers, sphygmomanometer, dental amalgams)
viii. Solvents (pathology and embalming)
ix. Radioactive isotopes
x. Pharmaceutical liquid waste (discarded/unused/ expiry date medicines)
xi. Photographic chemicals (fixer and developer)
xii. From floor cleaning and washing water channeled into the drain.

3. Liquid Waste Management Plan

3.1 Segregation and Management of Liquid Waste

The liquid pathological and chemical waste should be appropriately treated before being discharged into the public sewer systems. Pathological waste must be treated with chemical disinfectants, neutralized and then can be flushed into the sewage system while the chemical waste needs to be first neutralized with appropriate reagents before being flushed into the sewer. Thus, liquid waste management includes procedures and practices that prevent discharge of untreated pollutants to the drainage system or to water bodies as a result of the creation, collection, and disposal of non-hazardous liquid wastes.

Thus, the liquid wastes should be first segregated and contained in leak proof, rigid containers and then has to be disinfected or neutralized, with an approved chemical decontamination agent at the site of generation. These containers are labeled with the biohazard symbol and clearly mentioned in the label. If transport is required before decontamination, then it should be collected ideally in a twin bin container and transported through public hallways is to be kept to a minimum. The twin bin container consists of, a primary container containing the liquid waste which is placed within another secondary leak proof, rigid container (e.g., pail, box, or bin), so as to avoid an impending spill response,

during transport. The secondary container must be labeled with the biohazard symbol and clearly written its content in Bangla (infectious or biomedical waste). The outer container can either be protected from contamination by a disposable liner, which is replaced when the biohazardous waste is removed, or the outer container can be decontaminated following each use.

3.2 Liquid and Wastewater treatment: HCF liquid and wastewater is related to hazardous waste management practices. Proper waste segregation and handling as discussed above should be conducted to minimize entry of solid waste into the wastewater stream. In case wastewater is discharged into municipal sewer sewerage system, the HCF should ensure that wastewater effluent comply with all applicable permits and standards, and the municipal wastewater treatment plant (WWTP) is capable of handling the type of effluent discharged. In cases where municipal sewage system is not in place, HCF should build and properly operate onsite primary and secondary wastewater treatment works, including disinfection. Residuals of the onsite wastewater treatment works, such as sludge, should be properly disposed of as well. There're also cases where HCF wastewater is transported by trucks to a municipal wastewater treatment plant for treatment. Requirements on safe transportation, due diligence of WWTP in terms of its capacity and performance should be conducted.

3.3 Disposal Procedures for Infectious Liquid Waste

Sanitary Sewer Disposal Methods

The sanitary sewer system is designed for the disposal of certain liquid wastes. Use of the sanitary sewer reduces the chance for leaks or spills during transport and thereby reduces disposal costs. Chemical disinfection is done prior to sewer disposal with the aim to eliminate microorganisms or to reduce the microbial load. Chemical treatment usually involves the use of 1% sodium hypochlorite solution with a minimum contact period of 30 min or other standard disinfectants like, 10-14 gm of bleaching powder in 1 liter water, 70% ethanol, 4% formaldehyde, 70% isopropyl alcohol, 25% povidone iodine, or 6% hydrogen peroxide. The liquid waste can also be diluted with significant amount of fresh water before being disposal into the public sewerage system. However, the liquid waste must comply the following standard (**Table 1**) before being disposed into the public sewerage system as per MWMP Rules, 2008.

Table 1. Standard for liquid waste for disposal into the sewerage system

Parameters	Permissible Limits
pH	6.3-9.0
Suspended solids	100 mg/L
Oil and Grease	10 mg/L
BOD_5	30 mg/L
COD	250 mg/L
Bio-assay test	90% survival of fish after 96 hours in 100% effluent.
These limits are applicable to those hospitals which are either connected with sewers without Terminal Sewerage Treatment Plant or not connected to public sewers.	

Disinfection of culture media differs a little from the usual disinfection process, where due to the high microbial load and the rich protein content of the media plates, rigorous disinfection is required, where inactivation should be done by 5.23% sodium hypochlorite, in a 1:10 dilution and should be left for a minimum of 8 h covered and then finally disposed down the sanitary sewer, followed by flushing with a lot of cold water for a minimum period of 10 min.

Sodium hypochlorite solution, also known as bleach, is a broad-spectrum disinfectant that is effective for enveloped viruses (HIV, HBV, HSV), vegetative bacteria (Pseudomonas, Staphylococcus, and Salmonella), fungi (e.g., Candida), mycobacterium (M. tuberculosis and M. bovis), and non-enveloped viruses (Adenovirus and Parvovirus), should be stored between 50 and 70°F.

Recommended Guidelines for Pouring Medical Liquid Waste down the Sanitary Sewer

- All microbiological liquid biohazardous waste (spent liquid growth culture media containing microbial or human/nonhuman primate or other animal cells, diluted blood and tissue fluids, plasma, etc.) should be autoclaved in a certified autoclave and then finally put down the sanitary sewer system.
- The worker should wear personal protective equipment (PPE) which include a lab coat, latex or nitrile glove, safety glasses to protect from spillage and aerosols generated during the disposal process.
- The liquid waste should not be poured where people wash their hands and should be poured close to the surface of water so as to avoid splashing. The waste basin should be rinsed and the container disinfected after pouring of the liquid waste.
- In order to assure adequate inactivation time for exposure of the liquid waste to the bleach, it is the lab supervisor's responsibility, to maintain an official log book listing each lot of biohazardous liquid waste so treated by date and notation of biohazard content (i.e., E. coli culture media, human cell cultures, etc.) and exposure time (e.g., 8:00 AM to 8:00 PM). Hence, bleach treated liquids being held for inactivation in the labs must have a memo note sticker on the covering lid, showing date and time of bleach exposure (to avoid mistakes regarding the time of bleach addition). Thus, any biohazardous waste undergoing bleach inactivation and found lacking such a treatment time tag laced on to the tub cover or lacking an up-to-date official log book is considered to be violation of the approved inactivation process. Such log books must be kept for a minimum of 3 years and then finally turned over to a Biosafety Office thereafter for long-term retention.
- The lab in charge or lab supervisor must use good judgment in using chlorine inactivation. For example, inactivation of concentrated microbial cell culture plates by disinfectants might require hours to days of exposure to still higher concentrations of (12-15%) bleach to achieve disinfection. Considering the high protein levels often present in microbial culture wastes they should be treated for at least 8 h to allow the bleach to kill the cultured microbes or any other microbial contaminants. Though the presence of a tag noting date and time of exposure will avoid mishaps and the recording of the inactivation period will ensure adequate killing time but these should be ideally autoclaved rather than sanitized.
- Microbes like Legionella that can be readily transmitted to humans by aerosols should not be inactivated by bleach exposure or poured down the drain, for the generation of aerosols during such processes can infect the worker. These also need to be autoclaved; however, during the process of transportation to the site for autoclaving, they should be tightly packed so as to prevent the aerosolization of legionella. Hence, spore forming microbes and pathogens that can be readily transmitted by the aerosol route should be autoclaved when present in liquid wastes. These wastes which need to be autoclaved should be directly put into the red bin.

Placing the Liquid Waste into Biohazardous Waste Bin

The liquid waste from the Primary HNP centers can be disposed into the **yellow or red** color bins depending upon the further treatment options as followed by the Primary HNP centers. If the HCF has an incinerator facility, then the liquid waste can be placed in the yellow biohazard bin. But, if the HCF has no incinerators, then the liquid waste can be placed in the red bin to be autoclaved. Typical cycle times for sterilizing liquid waste range from 45 to 90 min at 250°F and autoclave pressure should be 15 psi.

Solidification of the Liquid Waste

This process involves pouring a powdered solidifying agent into the liquid waste containers, which turns the liquid content into a gelatinous solid mass after 5 to 10 min, thus eliminates the need to transport the biohazardous fluids in a liquid form. Then these containers can be disposed of as Infectious/hazardous waste (Yellow color-coded waste). The solidification process is based on a microencapsulation technology that converts liquid waste into solid waste. These are dry granular super absorbent polymers that can absorb and retain large volumes of liquids, while some solidifiers include sanitizing agents in addition, such as chlorine or glutaraldehyde, which may allow the treated medical waste to be disinfected prior to solidification. Though they can rapidly absorb fluids up to 300 times its weight the expansion in volume is less than 1%. They can also be used to solidify and encapsulate water-based spills and the disposal and transport costs are thought to be reduced by as much as 50%.

Disposal Procedures for Chemically Hazardous Liquid Waste

Among the various hazardous waste, important ones are formaldehyde, solvents (Xylene, Acetonitrile, Acetone, Ethanol, Isopropranol, Toluene, Methanol, Ethyl acetate- obtained from pathology laboratories and during embalming procedures), mercury from broken thermometers and instruments.

Larger quantities of formalin are generated from pathology, autopsy, dialysis, embalming, and nursing units. The permissible exposure limits (PEL) of air borne concentration is 1 ppm over an 8 h time weighted average (TWA). Large quantities of formalin have to be incinerated for disposal. Some of the solvents are halogenated compounds. The various unused or discarded solvents can be stored in gallon drums and then incinerated or recycled.

Disposal Procedure of Radioactive Liquid Waste

Radioactive wastes are usually generated from nuclear medicine department and from clinical laboratories. These materials can be retained on the site until they have been decayed to nonhazardous level or they can be transported off site for land disposal. The treatment and disposal must follow the guidelines provided by the Bangladesh Atomic Energy Commission.

Disposal Procedure for Pharmaceutical Liquid Waste

These wastes account for the largest volume of liquid waste produced by hospitals. If they are in small amounts, they can be diluted with water and discharged into the sewers. They can also either be transported off site to a secured land fill or returned to the supplier or small amounts can be incinerated.

3.4 Wastewater Treatment Plant

Liquid medical waste from the points of generation like the operation theatre, labor ward, laboratory, canteen, laundry, and toilet are segregated, disinfected and disposed as effluent into a common drainage facility. However, the effluent quality standard as mention in Table 1 must be followed as the compliance requirement (Schedule 6 of the MWMP Rules 2008).

Since PRISM or CSS is not collecting the liquid waste from the hospitals, the hospitals should set up their own Effluent Treatment Plants (ETPs), for treating the waste water including the liquid waste. In hospitals that do not have ETPs, the liquid waste shall be chemically treated and released into the common sewage pipeline, provided it is connected to the local municipal wastewater treatment facilities.

This wastewater and liquid waste are usually treated by a process that removes the majority of the contaminants and produces a liquid effluent that is suitable for disposal to the natural environment and generation of a sludge, which can be incinerated or composted. In hospitals that have ETP facility,

the wastewater and liquid waste are treated in three stages: primary, secondary and tertiary levels of treatment.

Primary treatment
Consists of temporarily holding the sewage in a basin where the settled and floating materials are removed and the remaining liquid subjected to secondary treatment. Primary treatment usually removes from 30 to 40% of BOD. After this treatment, BOD and COD levels usually comes down to 25% of its initial levels.

Secondary treatment
Removes the dissolved and suspended biological matter and is typically performed by indigenous, water borne microorganisms in a managed habitat. This treatment uses microbial degradation, aerobic or anaerobic, to reduce the concentration of the organic compounds. The combined use of primary and secondary treatment reduces approximately 80 to 90% of the BOD. In this stage, there is settling down of the suspended solid contents of the biological waste as thick slurry called sludge, while the treated fluid undergoes tertiary treatment. Through this process, 95% of the pollutants from the waste water are removed.

Tertiary treatment
Uses chemicals to remove inorganic compounds and pathogens. This is the final stage of treatment where the effluent after secondary treatment first is mixed with sodium hypochlorite and then the effluent is passed through dual media filter (DMF) and activated carbon filter (ACF) where sand, anthracite, and activated carbon are used as filtration media. Finally, the treated water is let into a small well to recharge the water table. This treated waste water now can be used for gardening, toilets, and laundry purposes.

Annex 04: Solid Waste Management (General non-hazardous wastes)

1. Introduction

Health care services provided in healthcare facilities generate considerable amount of general solid waste, which is non-hazardous, non-infectious, bio-degradable and recyclable. This portion accounts to about 75-80% of the total medical wastes generated in a HCF and the waste is similar to those generated in households. The rest of the MW is considered hazardous due to pathogenicity, toxicity and radioactivity and thus requires different processes for management and treatment before disposal into the environment. More than half of all non-hazardous waste from hospitals is paper, cardboard and plastics, while the rest comprises discarded food, metal, glass, textiles, plastics and wood. Examples of general non-hazardous wastes are provided below:

General waste/Re-used General Waste (non-hazardous/ disinfectant/ non-infectious), bio-degradable, recyclable as per MWMP Rules, 2008.	Used paper/parcel, Plastic or metallic cane, Medicine strip, Empty boxes & carton, packing boxes, Polythene bag, Mineral water bottle, Empty glass bottle, Biscuit parcel, Empty injection vial, Non-infectious saline bag and set, Non-infectious used syringe, Non-infectious cloth/gauze/cotton, Non-infectious rubber material/cork, Fruit and vegetable husk, Leftover food, Kitchen waste, Egg husk and Coconut shell, Pressurized containers etc.

2. Types of Solid Wastes in Primary HNP centers

Infectious Waste: These wastes may be, among other materials from patient isolation rooms, biological materials, human blood and blood products, anatomical-pathological and surgical waste, sharps waste and animal waste.
Special Waste: They constitute a health danger for their hazardous characteristics such as corrosivity, reactivity, explosiveness, toxicity, flammability or radioactivity. They can be, among others, chemicals and hazardous waste, pharmaceutical waste and radioactive waste.
General Solid Waste: They do not represent health hazard and its characteristics which are similar to those from normal household wastes. Included in this category are papers, cartons, boxes, plastic, leftover from food preparation and waste from the cleaning of patios and gardens, among many others as provided above. This part of the wastes can be disposed safely with the MSW.

3. Solid Waste (General) Management Plan

Segregation

- Healthcare facilities must ensure that the general solid waste generated from the HCF is segregated properly and collected in two separate bins (Black and Green Color) filled in with non-chlorinated bags and shall not be mixed up with other MW generated in the facility.
- Use two color coded separate bins, **Black Color** bins for segregated bio-degradable wastes and **Green Color** Bins for reusable/recyclable wastes.
- Bio-degradable waste shall be disposed into the municipal waste bins for subsequent collection by the municipality/city corporation or handed over to authorized waste collectors as assigned by the local authority.
- The reusable/recyclable wastes (wastes from Green Color Bins) shall be stored in a designated place in the premise of the Primary HNP centers and sell to the recycling industries for resource recovery, reuse and recycling.
- General waste should not be mixed with the hazardous medical wastes. If mixed with hazardous wastes, then consider the mixed waste as hazardous waste.

- Instruct all visitors and patients to follow the guidelines of segregation of general wastes before to disposal into specific bins.

Storage

- Only the recyclable general wastes can be stored in a separate place within the Primary HNP centers premises for selling or handed over to recycling industries.
- Items like empty injection vial, non-infectious saline bag and set, non-infectious used syringe, non-infectious cloth/gauze/cotton, non-infectious rubber material/cork and others will be separated, packed and handed over to PRISM or CSS for subsequent treatment and disposal.

Disposal

- Biodegradable waste shall be disposed with other MSW or authorized waste collection operators like PRISM or CSS.

Annex 05: World Bank GRM Checklist

Checklist to accompany the Guidance Note for ESS10: Stakeholder Engagement and Information Disclosure

This Checklist provides guidance for the Borrower on the application of the Environmental and Social Standards (ESSs), which form part of the World Bank's 2016 Environmental and Social Framework. Checklists help to illustrate the requirements of the ESSs and propose sample approaches to implement some of the requirements of the ESSs; they are not Bank policy, nor are they mandatory. Checklists do not substitute for the need to exercise sound judgment in making project decisions. In case of any inconsistency or conflict between the Checklists and the ESSs, the provisions of the ESSs prevail.

Grievance Redress Mechanism Checklist

The appropriate level of complexity of a project's Grievance Redress Mechanism (GRM) depends on the risks and impacts of the project and the project context. The following checklist describes a complex GRM that adheres to good international practice, which may not be necessary for all projects. Nevertheless, this checklist helps to determine whether a grievance mechanism conforms to good international practice.

A. System issues

1. Does the project invite feedback/grievances? Yes___ No___
2. Does the organization have a policy on grievance redress? Yes___ No___
   a) Is the policy available to all staff, beneficiaries, and potential users? Yes___ No___
   b) Is the policy written in the local language(s)? Yes___ No___
3. Does the grievance mechanism have the following features?
   a) A clearly understood procedure for people to provide feedback and/or submit grievances. Yes___ No___
   b) A statement of who is responsible for dealing with feedback/ grievances. Yes___ No___
      Procedures for resolving or mediating and investigating grievances depending on their seriousness and complexity. Yes___ No___
   c) A system for keeping complainants informed of status updates. Yes___ No___
   d) A system for recording feedback/grievances and outcomes. Yes___ No___
   e) Procedures for protecting confidentiality of complainants Yes___ No___

B. Staff management

1. Is there a grievance manual for staff? Yes___ No___
2. Do the grievance policy and/or procedures provide guidance on:
   a) What is a grievance/feedback? Yes___ No___
   b) What information to collect from complainants? Yes___ No___
   c) What remedies can or should be used to resolve grievances? Yes___ No___
3. 3. Are the grievance policy and procedures communicated to all staff? Yes___ No___
4. Are adequate resources allocated for the GM to function effectively? Yes___ No___
5. Does the organization provide training on grievance management to staff? Yes___ No___

C. Communication to grievance mechanism users

1. Are users told how to submit grievances/feedback? Yes___ No___

a) Is an information brochure on the grievance mechanism available to users? Yes___ No___
b) Are feedback/grievance forms available to users? Yes___ No___
c) Are grievance forms or signs displayed prominently and readily accessible? Yes___ No___
d) Are contact details of staff receiving feedback/grievance published and displayed in public areas? Yes___ No___
e) Is information on grievance management available in local languages? Yes___ No___

2. Are users able to submit grievances/feedback:
   a) In writing Yes___ No___
   b) By email Yes___ No___
   c) By fax Yes___ No___
   d) By telephone Yes___ No___
   e) In person Yes___ No___

3. Are users provided with assistance to submit feedback/grievances where needed? Yes__ No___
4. Can the grievance mechanism be accessed free of charge? Yes___ No___
5. Are users promised confidentiality? Yes___ No___
6. Are users informed about the appeals process? Yes___ No___

D. Feedback/grievance recording

1. Are all feedback/grievances recorded? Yes___ No___
   a) Are grievances/feedback logged and documented? Yes___ No___
   b) Are inquiries/suggestions and recommendations recorded? Yes___ No___
   c) Are the outcomes and responses to all grievances/feedback recorded? Yes___ No___

E. Business standards

1. Are there business standards in place for the process and timing with which grievances/feedback are dealt with? Yes___ No___
   a) Is receipt acknowledged within a stipulated time frame? Yes___ No___
   b) Are the grievances supposed to be resolved within a stipulated time frame? Yes___ No___
2. Is there a quality control system in place to:
   a) Check if all grievances have been dealt with or acted upon. Yes___ No___
   b) Check if all aspects of a grievance have been addressed. Yes___ No___
   Check if all necessary follow-up action has been taken. Yes___ No___

F. Analysis and feedback

1. Are regular internal reports on grievances/feedback produced for senior management? Yes___ No___
2. Grievances/feedback reports include data on:
   a) Numbers of grievances/feedback received. Yes___ No___
   b) Compliance with business standards. Yes___ No___
   c) Issues raised in grievances/feedback. Yes___ No___
   d) Trends in grievances/feedback over time. Yes___ No___
   e) The causes of grievances/feedback. Yes___ No___
   f) Whether remedial action was warranted. Yes___ No___
   g) What redress was actually provided? Yes___ No___
   h) Recommendations/strategies to prevent or limit future recurrences. Yes___ No___

Annex 06: Outline Procedures for ESIA (If required)

Environmental and Social Impact Assessment (ESIA): The purpose of ESIA is to give the environment and people its due importance in the decision-making process by clearly evaluating the environmental and social consequences of the proposed interventions before implementation. Early identification and characterization of critical environmental and social impacts allows the public and the government to review about the environmental viability and social acceptability of a proposed development project and what conditions should apply to mitigate or minimize those risks and impacts.

The ESIA will utilize a well-planned and all-inclusive communication and consultation strategy and include a baseline survey covering the prevailing status of income, employment, education, age, skills and other socio-economic aspects along with cultural and community aspects in the areas. Since the project will be implemented initially in 3 City Corporation and 2 Paurashava areas, the activities those need ESIA will be implemented at different periods and hence, multiple ESIAs would be required clustering the similar activities prior to the actual intervention start. In the preparation phase, the ESIA shall achieve the following objectives:

- ✓ To establish the environmental and social baseline in the project area, and to identify any significant environmental issue;
- ✓ To assess these impacts and provide for measures to address the adverse impacts by the provision of the requisite avoidance, mitigation and compensation measures;
- ✓ To integrate the environmental issues in the project planning and design;
- ✓ To develop appropriate management plans for implementing, monitoring and reporting of the environmental mitigation and enhancement measures suggested.

The impact assessment will be conducted using the 04 major steps as follows:

1. Planning
2. Scoping
3. Environmental and Social Impact Assessment
4. Public Consultation

An indicative Table of Content (ToC) for ESIA is provided at the end of this Annex.

Specific Activities and Responsibilities in the Environmental and Social Assessment Process

In Bangladesh, the environmental assessment procedure will pass through three major tiers in order to optimize the resources required for conduction of environmental assessment studies, these two tiers are: i) Screening, ii) Initial Environmental Examination (IEE), and iii) Detailed Environmental and Social Impact Assessment (ESIA). Screening decides whether the ESIA process should be applied to a development project and if it is required, its type, that is, IEE or ESIA. The major activities and the relevant responsibilities for each sub-activity are shown in the T**able 1.1** below.

Table 1.1. Major activities and responsibilities during different project stages for conducting ESIA

Project Stage	Steps/ Activities	Description	Responsibility
Step-1: Screening			
Planning and Pre-feasibility	Undertake Screening	Prepare a document containing environmental and social information covering potential environmental and social impacts, mitigation measures, evidence of public consultation etc. Take no further action for projects, which do not require environmental assessment.	MOHFW/ MoLGRDC as proponent or qualified professionals/ Consultants.

Project Stage	Steps/ Activities	Description	Responsibility
Step-2: Scoping to identify types of environmental and social assessment study			
Pre-feasibility/ planning	Scoping Exercise	Identify, by using checklists and based on preliminary field examination the necessity to conduct an IEE or an ESIA.	MOHFW/ MoLGRDC as proponent assisted by qualified professionals/ Consultants
		Produce environment related document to competent authority for approval.	
Step-3: Terms of Reference (ToR) for environmental and social assessment study			
Pre-feasibility/ planning	Preparation of ToR	Define the main environmental and social concerns and issues related to any infrastructure program, which must be addressed by environmental and social assessment.	MOHFW/ MoLGRDC assisted by professional environmental and social assessment team/consultant
	Approval of ToR	Review, comment and approve ToR	DoE, Bangladesh
Step-4: Preparatory work for environmental and social assessment study			
Pre-feasibility and planning	Assigning the work	Determine whether to conduct environment and social assessment using in-house staff or whether to outsource it.	MOHFW/ MoLGRDC assisted by professional environmental and social assessment team/ consultant
	Environmental and social Assessment team formation	Form team as per approved ToR.	Environmental and social Assessment Team
	Prepare Work Plan	Establish a work plan that gives appropriate weight to all activities.	
Step-5: Undertake environmental and social assessment study			
Step-5.1: Desk Studies			
Planning and design	Secondary data	Collect and review relevant and appropriate published data, such as maps, reports etc.	Environmental and social Assessment Team
	Initiation, interaction and consultation	Discuss the proposed infrastructure and its potential environmental impacts with knowledgeable persons and concerned stakeholders.	
	Preparation of information summary	Draft a summary of the information that is relevant to the project and its possible environmental effects.	
	Methods and Techniques	Determine the methods by which the field work for Environmental and social Assessment will be conducted.	

Project Stage	Steps/ Activities	Description	Responsibility
	Work Plan	Revise the work plan on the basis of desk studies.	
Step-5.2: Field Work			
Planning and design	Field equipment	Collect and arrange field equipment required for Environmental and Social Assessment Studies	Environmental and social Assessment Team
	Field survey for collection of baseline information	Survey at project location, interaction with the local community and investigate the issues identified during desk study; collect baseline (physical, biological and socioeconomic aspects) information	
Step-5.3: Data Analysis and Interpretation			
Planning and design	Impacts Identification	Establish what environmental impacts will be taken place as result of interaction of environmental settings and infrastructure construction, rehabilitation and maintenance activities.	Environmental and social Assessment Team
	Impact Prediction	Establish the extent of environmental consequences of the proposed infrastructure construction and operation.	
	Impact assessment	Judge whether the consequences are significant enough to require action to be taken.	
	Mitigation Measures	Design mitigation measures to avoid, reduce, minimize & compensate for adverse impacts & maximize beneficial impacts.	
	Environmental and social Management Plan	Prepare ESMP covering monitoring and project management to ensure the implementation of mitigation measures.	
	Stakeholder/Public Consultation	Carry out at various stages in the assessment process to ensure quality, comprehensiveness and effectiveness and make sure that stakeholders' views are adequately addressed.	Environmental and social Assessment Team/ MOHFW/ MoLGRDC
Review and Approval	Review & approval of environmental and social assessment report	Check completeness, adequacy, credibility, facilitate the decision-making process; decide if project should proceed or if further alternatives must be examined.	MOHFW/ MoLGRDC will review and forward to DoE for approval of IEE/ESIA report
		Approval of environmental and social assessment report or rejection.	DoE, Bangladesh
Design Implementation	Implementation of ESMP, Monitoring	Determines compliance with ESMP.	MOHFW/ MoLGRDC or appointed professionals
Step-6: Undertake audit			

Project Stage	Steps/ Activities	Description	Responsibility
Environmental and social Audit	Auditing	Environmental and social audit: Annually during Construction and two years after project completion.	MOHFW/ MoLGRDC or appointed professionals

Environment and Social Management Plan (ESMP)

This section presents the outline environmental and social management plan (ESMP) of the project. A more detailed version of ESMP must be included in the IEE and if required in ESIA of the respective sub-project.

Scope and Objectives of ESMP

The basic objective of the ESMP is to manage adverse impacts of program interventions in a way that minimizes the possible adverse impact on the environment and people of the program influence area. The specific objectives of the ESMP are to:

- ✓ Identify the mitigation measures during ESMF and ESIA; and facilitate implementation of those during implementation of the project;
- ✓ Maximize and sustain potential program benefits and control negative impacts;
- ✓ Draw responsibilities for program proponent, contractors, consultants, and other members of the program team for the environmental and social management of the program;
- ✓ Define a monitoring mechanism and identify monitoring parameters in order to:
  - Ensure the complete implementation of all mitigation measures,
  - Ensure the effectiveness of the mitigation measures,
  - Maintain essential ecological process, preserving biodiversity and where possible restoring degraded natural resources and habitats; and
  - Assess environmental training requirements for different stakeholders at various levels.

The ESMP will be managed through a number of tasks and activities and site-specific management plans. One purpose of the ESMP is to record the procedure and methodology for management of mitigation measures identified for each negative impacts of the program. The management will clearly delineate the responsibility of various participants and stakeholders involved in planning, implementation and operational phases of the project.

Tentative Table of Content of the ESIA is as follows (Consultant to obtain approved EIA Terms of Reference from DoE):

Executive Summary

Chapter 1. Introduction

1.1 Background
1.2 The Proposed Project
1.3 Objectives of the Study
1.4 Scope of ESIA
1.5 Study Area of ESIA
1.6 Approach and Methodology

Chapter 2. Legal and Regulatory Compliance

2.1 Introduction
2.2 Applicable Regulations of GOB
2.3 World Bank ESF Policy, Directives and Standards
2.4 Procedure for obtaining ECC from DoE, Bangladesh

Annex 07: Summary of Stakeholder Consultation Outcomes

Issues	Discussion	Actions taken by IAs
Environmental Risks and Management	Followings are some key environmental factors that were identified and asked to take into consideration during implementation of the project: • Air and Noise pollution would be one of the vital issues, particularly during the period when the existing building would be refurbished. There should be a proper plan in place to minimize air and noise pollution during the implementation period. • Medical Waste Management System during construction will be one of the major issues and a proper management system will be in place to mitigate the impacts. • Most of the government health service centers premises has decent number of trees inside their compound. During the implementation of the project, need to make sure minimal to no trees are being cut down, and if cut down, according to the rules, three times the number of trees must be planted.	Capacity building of the Paurashavas considering the project, regarding the medical waste collection
Social Risks and Management	• Accidents and fatalities during construction; Proper measures must be taken to avoid the incidents. • Temporary resettlement of the trainees living in the compound of YTCs' sites; proper management and related issues has to be considered with utmost care. There are no squatters/informal occupants at any sites. • Mosquitoes and pesticides control measures; mostly forgotten but one of the crucial issues since serious health issues like dengue, chikungunya, etc. are associated with this. • Traffic congestion: During the construction period, the amount of usable land will be reduced, hence creating traffic congestion inside the compound. An alternative plan needs	Capacity building of the Paurashavas considering the project, regarding the medical waste collection

	to put in place to minimize the congestion. • Concern over the present medical waste collection and disposal.	
Planning and Operational Management	• During the project implementation, there will be temporary arrangement for many issues, like labor sheds, server reinstallation, and many more. It needs to make sure that the temporary operational issues are smooth and not interrupting the daily activities. • Integrated Vector management to be considered involving different ministries to cover the whole country effectively. Besides, adequate technical support to be arranged to check the efficiency of the vector control method. • HNP capacity building; in small urban body (Porashava) with one medical officer needs to be improved by assigning additional manpower. • Mayors of the urban bodies may be integrated with the project for increased patronization. • For medical waste management, a model/piloting with innovative ideas may be developed and later on followed by others. • Monitoring and Evaluation: Efficient reporting system may be developed by using the existing MIS systems. • Sustainability of the present modalities of service delivery through NGOs	Further consultation with the Bank and other stakeholders for adapting an appropriate institutional arrangement
Operational Arrangement	• Proper institutional arrangements for improved effectiveness of the project interventions. • Clarity in the scope and the work items. • Environmental and Social Documents like ESMF, HORMP, SEP, ESCP, SEA/SH.	The DPP being prepared by LGD will clearly define the scope, working modalities and the project activities.

Annex 08: List of Stakeholder Consultations

No.	Date	Main Participant Groups	No. of Participants	
			Male	Female
01	19 September 2022	Consultations with the NGOs and private sectors to debrief about the overall project	19	3
02	27 September 2022	Consultations with the doctors and medical personnel	30	3
03	27 September 2022	Local level consultation with the government officials of MoHFW	30	3
04	28 September 2022	Consultations with the local health service providers	18	4
06	13 April 2023	Local level consultation with the participants of MoLGRD&C and MOHFW	28	9

Annex 9: Gender and SEA/SH Risk Identification and Mitigation Measures

Bangladesh has made significant progress on health, nutrition and population (HNP) outcomes, both nationally and among the urban population, although there remains significant gaps and inequalities in coverage among the urban people. Consistent with progress nationwide, key reproductive and child health outcome indicators have improved among urban populations in Bangladesh. In the decade between 2007 and 2017-18, the total fertility rate (TFR) among urban populations declined from 2.4 to 2.0. The estimated infant mortality rate in urban areas declined from 50 to 42 per 1,000 live births, while the prevalence of chronic malnutrition (stunting) among under-five children improved from 36 to 25 percent.[16] Between 2007 and 2017-18, coverage of all basic child immunizations remained around 85 percent, while the proportion of mothers who delivered in a health facility doubled from 31 to 63 percent. However, there are significant gaps and inequalities in service provision and quality. In 2016, the Dhaka North and Dhaka South City Corporations had the lowest levels in the country of coverage of all basic child immunizations. In 2017-18, only 27 percent of urban pregnant women received the recommended quantity and quality of antenatal care services.[17] Furthermore, in 2021, only 40 percent of pregnant women residing in urban slums received the recommended quantity and quality of antenatal care services compared to 53 percent in non-slums areas.[18] TFR increased by 13 percent in urban slums in seven years (from 2.01 births per woman in 2013 to 2.14 in 2021), while teenage pregnancy was 22.1 percent in urban slums in 2021. This may partly be due to conservative gender norms and limited awareness about health information and available SRH services. Besides, prevalence of child marriage increased substantially in 2020 up to 13 percent as girls discontinued school due to COVID-19[19]. This will have an immediate and lifelong consequence on the health status of adolescent girls and their unborn children as child marriages increase the risk of early and unplanned pregnancy, in turn increasing the risk of maternal complications and mortality[20]. Gender based violence (GBV) remains a particular challenge – in 2018, around 50% of women reported intimate partner violence during their lifetime, causing around 14 percent of maternal deaths in Bangladesh[21]. GBV survivors often face difficulties in accessing essential service due to social norms and lack of information/awareness.

SEA/SH Risks:

The SEA/SH risks of the project are assessed as 'low', so no standalone SEA/SH risk mitigation plan will be prepared. Instead, a separate chapter on the related risks is included in the ESMF with the ESMP to include the relevant risk mitigation measures. This includes SEA-SH compliant GM, enforcement of a CoC for the workers along with awareness raising and training plan for the PCU and as well as a referral system for potential victims focusing on a survivor centric approach. The relevant provision

[16] 2007 and 2017-18 Bangladesh Demographic and Health Surveys. The total fertility rate is the average number of births a group of women would have by the time they reach age 50 if they were to give birth at the current age-specific fertility rates. While estimates for the maternal mortality ratio are not available for urban populations, trends are likely consistent with national estimates - 343 per 100,000 live births in 2005 and 173 in 2017. (Maternal Mortality Estimation Inter-Agency Group. Maternal mortality in 2000-2017: Bangladesh).

[17] 2016 Bangladesh Expanded Programme on Immunization (EPI) Coverage Evaluation Survey; 2017-18 Bangladesh Demographic and Health Survey.

[18] National Institute of Population Research and Training (NIPORT), Urban Health Survey 2021. Dhaka: NIPORT

[19] https://www.dhakatribune.com/bangladesh/law-rights/2021/03/28/child-marriage-up-13-during-covid-19-pandemic-in-bangladesh

[20] https://www.unicef.org/bangladesh/en/press-releases/10-million-additional-girls-risk-child-marriage-due-covid-19-unicef

[21] Moyeen, Sabah, Tara Lonnberg, Marufa Akter, Samera Chowdhury, Sabina Parvin, Jayati Sethi, Erisha Singh Suwal, Mohsiu Rashedin Tazrin, and Sanan Isaba Zaman. 2022. *Bangladesh Country Gender Assessment 2021*. Washington, D.C.: World Bank

on SEA/SH risk management will be included in the bid documents. The SEA/SH risk mitigation plan takes a comprehensive approach to include both prevention measures—sensitizing the communities and other stakeholders, strengthening the institutional capacities and mitigation measures targeting project related potential risk of SEA/SH in the project affected population. A detailed SEA/SH risk and mitigation measure matrix is attached here:

SEA/SH Risks and Mitigation Measures:

Sub-Component Activities	**Risks and Impacts**	**Mitigation Measures**	**Responsible Agencies**
	Access to facilities for better inclusion	* Separate toilets and WASH facilities for female patients are mandatory in all targeted project areas * A separate space in the service centers for women for personal use/breastfeeding/prayers * Only female attendees for female patients * Gender Sensitization Training for health care service providers	PCU
	Under privileged, marginalized and vulnerable social community; i.e.; LGBT, who are primarily the target beneficiary group of this project may not have access to receive services from the service providers due to social norms and stigma around them.	* Special provision for the LGBT community; can include working around the policy measures of providing necessary health care services to them * Creating awareness for and inclusive society (This can be part of the gender sensitization workshop)	PCU
Strengthen existing mechanisms to respond to GBV/SEA/SH	The existing system may not be capable to handle SEA/SH victims	*Gender sensitization workshop for all health care service providers in project sites. *A Code of Conduct (CoC) stating proper behavioral standards; will be circulated in and around the hospital/health care service area premises. The CoC has to be written in Bangla and circulated for awareness raising	PCU with the support from The World Bank

		*Have CoCs signed by all those with a physical presence at the project site. * Identify service providers and establish linkages to provide referral and support services to survivors as per the Grievance Mechanism guidance on SEA/SH * Develop appropriate training module to build capacity of different health service providing organizations on safeguarding mechanisms including CoC, GRM, GBV response protocols on and reporting and procedures to handle cases.	
	The project sites may not be women workers friendly, if employed	*Have separate, safe and easily accessible facilities for women and men working on the site. Latrines should be located in separate areas, well-lit and include the ability to be locked from the inside. *Visibly display signs around the project site (if applicable) that signal the workers and the community that, the project site is an area where SEA/SH is prohibited	
	Regular monitoring and evaluation; Undertake regular monitoring and evaluation (M&E) of progress on SEA/SH activities.	*Conduct M&E field visits. *Quarterly Review of the action plan and progress to strengthen oversight and provide guidance to IA's staff and management. *Provide quarterly report and performance reviews	

This project will commit specific budget for the implementation of activities around mitigating SEA/SH. This includes dedicated staffs to support the Project Director at the PCU in the implementation and as well as commensurate resources for other associated issues. The PCU will include: a full-time Project Coordinator, a procurement specialist, a financial management specialist, a social and environmental specialist, and an M&E specialist. Each of the targeted city corporations and municipalities will assign focal persons for the project.

GRM FOR SEA/SH COMPLAINT

All two tiers of the GRM will be sensitized to receive SEA/SH related complaints. For SEA/SH related complaints, the project unit and the contractor are not equipped to handle complaints or provide

relevant services to survivors but will refer any person to relevant service providers, including health facilities, law enforcement's gender unit or others, as relevant using the information on available services. Grievances related to gender-based violence be reported through the project/contractor, the nature of the complaint will be recorded along with the age of the complainant and relation to the project will be recorded. After consultation with the service providers and assessing the complaint, appropriate disciplinary measures will be taken against the perpetrator.

Also, the ESA may identify additional mitigation measures related to gender and such measures will be reflected in site-specific ESMPs, including the contractors ESMP or contractors specific Labor Management Plans, and Codes of Conduct for laborers where required. This will include engagement with communities on gender-related risks, grievance and response measures available, as identified in the manual. PCU, with support from consultants, will identify institutions and services provides who are actively engaged in the prevention of gender-based violence, sexual exploitation and workplace sexual harassment to establish a manual available for all project actors to create awareness and mitigate risks of SEA/SH. As already discussed in the SEP, the Grievance Redress Committee (GRC) of each GRM tier will have female member and ideally a representative from LGBT community (If possible).

Annex 10: Guidelines for E-Waste Management for Primary HNP centers

In June 2021, Bangladesh's Department of Environment (DOE) published the **Hazardous Waste (e-waste) Management Rules, 2021** under the Bangladesh Environmental Protection Act, 1995. The E-waste rule covers products including home appliances, monitoring, and control equipment, automatic machines, IT and communication equipment, and medical equipment, and clarifies obligations for manufacturers, assemblers, collectors, sellers, and consumers of these products. The rules will help to improve the e-waste management and may assist in creating systematic storage and recycling of the rising quantity of e-waste in Bangladesh.

The UHNP project will procure and use equipment needed for computerization (office electronics, desktop, laptop, servers) medical equipment, monitoring instruments and inhouse waste treatment equipment (microwave based) and others. These items will become the sources of electronic wastes (E-waste). These products can contain heavy metals like cadmium, lead, copper, and chromium that can contaminate the environment. The management of these e-wastes from the Primary HNP centers shall comply the requirements and guidelines as stated in the **Hazardous Waste Management Rules (2021)**.

The list of the electrical and electronics goods and equipment considered as e-wastes is provided in Schedule 1 of the Hazardous Waste Management (e-wastes) Rules 2021. The following table provides common examples of different types of e-wastes.

Table 1. Types of E-wastes

Type of E-wastes	Examples
ICT and Telecommunications equipment	Mainframes, Printers, Personal computers (CPU, mouse, screen and keyboard), Laptop computer, Networking equipment, Scanners, Mobile phones, CD / DVDs, UPSs, Radio sets, Television sets, Video cameras, Video recorders, Hi-fi recorders, Audio amplifiers and electronic Musical instruments

Office electronics	Photocopying equipment, Electrical and electronic typewriters, Pocket and desk calculators, Facsimile and Telephones
Lighting	Fluorescent tubes, Compact fluorescent lamps, High intensity discharge lamps, including pressure sodium lamps and metal halide lamps; Low pressure sodium lamps, solar panels, other lighting or equipment for the purpose of spreading or controlling light with the exception of filament bulbs.
Medical equipment	Scanners, Operating equipment, Stethoscopes, Radiotherapy equipment, Cardiology, Dialysis, Pulmonary ventilators, Nuclear medicine equipment, Laboratory equipment for in-vitro diagnosis, Analyzers, Freezers, Fertilization tests. Other appliances for detecting, preventing, monitoring, treating, alleviating illness, injury or disability.
Monitoring and control instruments	Smoke detectors, Heating regulators, Thermostats, Measuring, weighing or adjusting appliances for household or as laboratory equipment and other monitoring and control instruments used in industrial installations (e.g. in control panels).
Batteries	Lead Batteries, Lithium batteries, Nickel and Cadmium batteries, etc.

Environmentally sound E-waste management and treatment technology can be considered at three levels:

1) Decontamination, dismantling and segregation.
2) Shredding and special treatment processes like electromagnetic separation, eddy current separation, CRT breaking and treatment and density separation using water.
3) Recovery of metals and disposal of hazardous E-waste fractions including plastics with flame retardants, CFCs, capacitors, Mercury, lead and other items.

The establishment of E-waste collection, transportation, storage, recycling and treatment facility shall be in line with the Guidelines in for establishing and operating "Recycling and Treatment and Disposal Facilities" for hazardous wastes. The procedures for setting up and management of e-waste facility shall include licenses from Department of Environment (DoE) under the **Hazardous Waste (e-waste) Management Rules, 2021**, obtaining of consents under relevant act and authorization from the government authority. Best practice for e-waste management is shown in Figure 1 below.

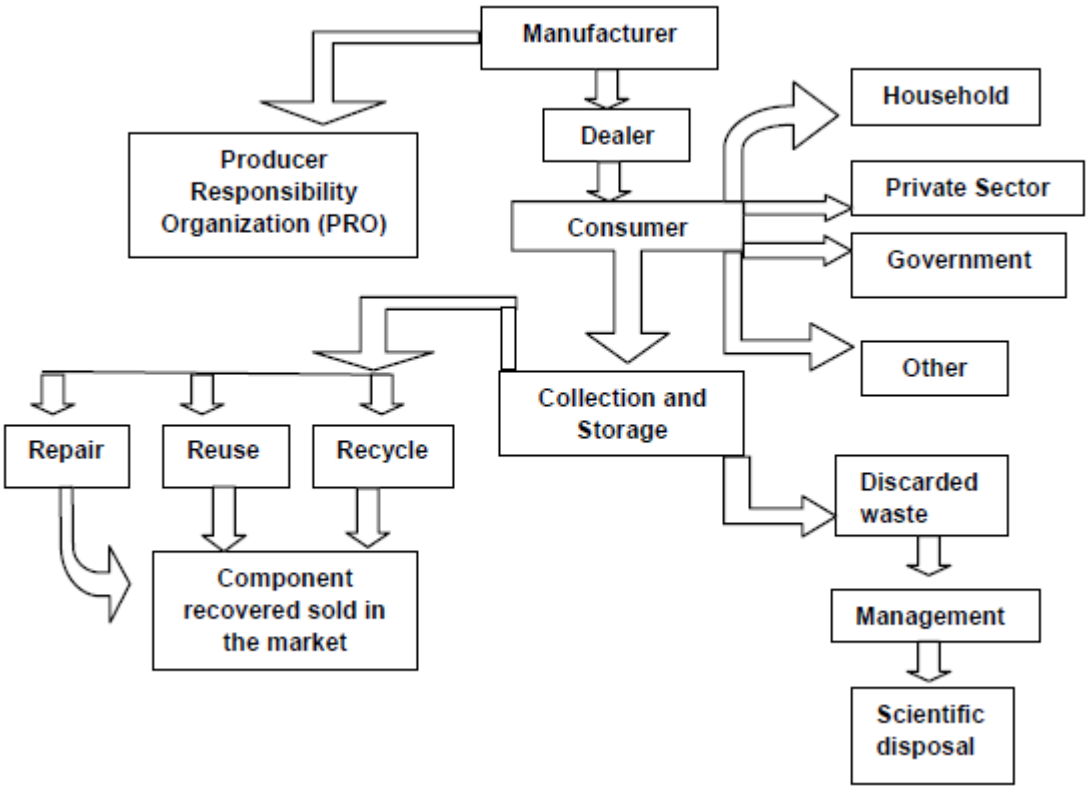


Figure 1. Flow chart for the E-waste management (best practice management).

General guidelines for handling and disposing e-wastes under this project are as follows:

(i) *E-Waste cannot be disposed of in trash or recycling bins*. All the e-wastes shall be separately collected and disposal.

(ii) The vendors will provide an e-waste Management Plan which details arrangements for the collection, transport, storage and disposal of the wastes which needs to be endorsed by the World Bank.

(iii) All the Primary HNP centers under the project shall develop the appropriate guidelines for inhouse e-waste collection, storage, dismantling and segregation of electrical and electronics equipment and machinery (if needed), recycle and recovery of valuable materials like metals, plastics from e-waste.

(iv) The e-waste shall be stored inside the Primary HNP centers following the guidelines as per Hazardous Waste (e-waste) management rules, 2021.

(v) The e-waste cannot be sold to any informal scrap collectors.

(vi) Create awareness and conduct sensitization campaigns on responsible e-waste management.

(vii) The Primary HNP centers shall develop Memorandum of Understandings (MoUs) with e-waste handlers/recyclers for collection, recycling and refurbishing of e-waste at life-end.

(viii) The Primary HNP centers shall develop mechanisms to ensure that inspection certificates of electronic items clearly specify end-of-life date and thereafter dispose to e-waste handlers/ collectors/recyclers for possible disposal.

(ix) The Primary HNP centers shall prepare an annual report of e-waste generation, management and disposal.

(x) The Primary HNP centers shall provide Environmental health and safety (EH&S) training of personnel, including training with regard to material and equipment handling, worker exposure, controlling releases and safety and emergency procedures.